

**'What if we never make it!? What's going to happen to us?': Routine Psychosocial Care to
Promote Patients' Adjustment to the End of Unsuccessful Fertility Treatment**

Mariana dos Reis Oliveira de Sousa Leite

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Thesis Summary

Around four in every ten people undergoing in vitro fertilisation (IVF) end treatment without a live birth - referred to as end of unsuccessful fertility treatment (EoT). There is a lack of accessible, evidence-based care to support these patients. The present thesis aimed to develop and evaluate psychosocial care initiatives to promote patients' adjustment to EoT, including preventive (i.e., to inform and prepare patients for EoT) and early intervention (i.e., to support patients in the aftermath of EoT) care.

The work followed the Medical Research Council (MRC) framework to develop complex interventions. A cross-sectional mixed-methods online survey investigated patients' willingness and preferences to receive EoT psychosocial care. Cross-sectional focus groups, a prospective pilot feasibility single-arm trial, and a definitive registered (ISRCTN85897617) multicentre RCT, evaluated the acceptability, feasibility and efficacy of Beyond Fertility: a brief face-to-face psychosocial intervention integrating EoT preventive and early intervention care. Cross-sectional multi-country focus groups with stakeholders' involvement evaluated the acceptability and feasibility of multi-lingual web-based educational resources to promote the routine implementation of EoT preventive care at fertility clinics.

Results showed stakeholders' high acceptability and demand for routine EoT psychosocial care at clinics; patients' high willingness to receive EoT preventive care early in treatment, but staff's concerns about its adequacy; Beyond Fertility was considered needed and acceptable; RCT-modified intention to treat analysis revealed Beyond Fertility was not efficacious in ameliorating declines in quality of life (primary outcome), mental health and well-being (secondary outcomes); Implementation practicalities regarding identifying

patients reaching the treatment ends; web-based resources were considered highly needed and adequate (now freely accessible for public use).

Findings suggest a need for a normative change in fertility clinics towards the routine implementation of EoT preventive and early intervention care, providing foundational knowledge about the acceptability, feasibility and efficacy of its content, time and delivery mode.

Keywords: Assisted reproductive technology, IVF, end of unsuccessful fertility treatment, intervention development and evaluation, preventive care, early intervention care, quality of life, mental health, well-being.

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Sousa-Leite, M. (2023, Aug). Should we prepare fertility patients for ending treatment without a baby? *Progress Educational Trust (PET) BioNews flagship*, Online. <https://www.progress.org.uk/should-we-prepare-fertility-patients-for-ending-treatment-without-a-baby/>

Sousa-Leite, M. (2023, Apr). Digital support interventions reviewed at counselling Campus meeting. *Focus on Reproduction*, Online. <https://www.focusonreproduction.eu/article/ESHRE-News-Fertility-Counselling>

Presentations

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Posters

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Sousa-Leite, M., & Gameiro. (2021, Jan). *Association between an unfulfilled child-wish and wellbeing in an UK population representative sample*. *Fertility* 2021, Online.

Glossary of Abbreviation

3TM: Three Tasks Model of adjustment to unmet parenthood goals

ACT: Acceptance and Commitment Therapy

AI: Artificial Insemination

APF: Portuguese Fertility Association [Associação Portuguesa de Fertilidade]

ART: Assisted Reproductive Technology

CBT: Cognitive Behavioural Therapy

CCBT: Contextual Cognitive Behavioural Therapy

CNPMA: Conselho Nacional de Procriação Medicamente Assistida

DPM: Dual Process Model of Grief

EOt: End of unsuccessful fertility treatment

ESHRE: European Society for Human Reproduction and Embryology

FNUK: Fertility Network UK

GYN/OBS: Gynaecologist/obstetrician

HBM: Health Belief Model

HCP: Healthcare professional

HFEA: Human Fertility and Embryology Authority

ICSI: Intracytoplasmic Sperm Injection

IVF: In Vitro Fertilisation

MRC: Medical Research Council

NHS: National Health System

NICE: National Institute of Clinical Excellence

OECD: Organisation for Economic Cooperation and Development

PGT: Preimplantation genetic testing

RCT: Randomised Controlled Trial

TGD: Transactive Goal Dynamics theory

TIDieR: Template for Intervention Description and Replication

TPB: Theory of Planned Behaviour

WHO: World Health Organisation

CHAPTER 1 GENERAL INTRODUCTION AND THESIS OVERVIEW

End of Unsuccessful Fertility Treatment (EoT)

Parenthood is a desire most people share at some point in their lives but that not all achieve (Berrington, 2004; Duvander et al., 2020; Martinez et al., 2006). In Western societies, more than seven in ten people (77-96%) intend or desire to have children at some point in the future and have, on average, two children (Almeida-Santos et al., 2017; Berrington, 2004; Martinez et al., 2006; Weston, 2004). This intention tends to be shaped by societal beliefs, whereby achieving parenthood is an expected and normative developmental goal to be reached in adulthood (Bavel & Nitsche, 2013; Heckhausen et al., 2010; Riggs & Bartholomaeus, 2016). However, demographic data has shown a critically halved decline in European fertility rates during the past decades, in many countries to below replacement levels (Beaujouan et al., 2023; European Society of Human Reproduction and Embryology [ESHRE] Capri Workshop Group, 2005; Kreyenfeld & Konietzka, 2017; Organisation for Economic Cooperation and Development [OECD] Family Database, 2023). The latest report from the OECD database showed this trend tends to be characterised across most OECD countries by (i) a continuous increase in the mean age at first childbirth (an increase of two to five years from 1970 to 2017), (ii) an increase in the number of people who remain (in)voluntary childless (reaching levels of about 20% in 2010), and (iii) a decrease in the total number of born children (total fertility rates of 2.84 children per women of childbearing age in 1970 to 1.58 in 2021; OECD Family Database, 2023). Vast research has identified several factors contributing to this complex demographic alteration, such as access to birth contraception, women's increased participation in the labour market, gender equity, value changes, partnerships changes and financial and economic uncertainties (Mills et al., 2011). Psychological motivational lifespan theories (Brandtstädter & Rothermund, 2002;

Chapter 1

Heckhausen et al., 2010) and survey data research from representative samples indicated that people who do not meet their parenthood goals (i.e., do not have children or have fewer children than desired) tend to adjust down these goals as they age (Gray et al., 2013; Liefbroer, 2009). Notwithstanding, cross-sectional mixed-methods and longitudinal panel survey research showed that overall, remaining childless or having just one child is considered undesired for the majority of people (Gray et al., 2013; Maříková, 2023; Weston, 2004).

Infertility constitutes a global public health issue (World Health Organisation [WHO], 2023). It was considered the fifth-most moderate to severe prevalent condition under the age of 60 (WHO & The World Bank, 2011) and can be regarded as the primary threat to one's achieving their parenthood goals. Infertility can be classified as primary (i.e., when individuals are unable to achieve a first clinical pregnancy) or secondary (i.e., when individuals are unable to achieve a clinical pregnancy but were able in the past; Zegers-Hochschild et al., 2017). Infertility prevalence varies across more- (3.5% to 16.7%) and less- (6.9% to 9.3%) developed countries, with an estimated overall median prevalence of 9-17.5% (Boivin et al., 2007; Cox et al., 2022; Datta et al., 2016). Global estimates suggest that around between 48.5 million couples (for the year of 2010) and 72.4 million women (for the year of 2006) of reproductive age live with infertility (Boivin et al., 2007; Mascarenhas et al., 2012), approximately 300 thousand in Portugal (Silva-Carvalho & Santos, 2009).

People who postpone parenthood are at a higher risk of being confronted with infertility when they decide to pursue parenthood later due to age-related fertility decline (Baird et al., 2005). Notwithstanding, infertility can affect anyone, even those within the optimal reproductive age, mainly due to cases of health conditions (e.g., endometriosis, polycystic ovary syndrome, amount and quality of the sperm, cancer treatment, genetic or sexually

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transmitted diseases), but also unexplained factors (i.e., no objective causes for a diagnosis) and social barriers to reproduction (same-sex couples, single women; Lo & Campo-Engelstein, 2018; Olmedo, 2001; Zegers-Hochschild et al., 2017). Other factors also directly or indirectly contribute to worsening people's reproductive health, such as changes in lifestyle behaviours (e.g., nutrition, smoking and sedentary habits) and environmental conditions (e.g., exposition to pollutants and chemicals), which play an increasingly significant role nowadays (Bala et al., 2021; Sharpe & Franks, 2002).

Assisted reproductive technology (ART), in particular the use of in vitro fertilisation (IVF)^a, is, for many people, the only option to achieve one's (biological) parenthood goals. Around half of those experiencing infertility seek medical assistance to conceive (Boivin et al., 2007; Datta et al., 2016), corresponding to approximately 40.5 million women worldwide (for the year 2006; Boivin et al., 2007). These numbers might be expected to be higher nowadays due to the increased risk of infertility and the increasing number of those who are infertile due to social barriers to reproduction (e.g., same-sex couples, single women) resorting to medical assistance (HFEA, 2023b; Meads et al., 2021). A total of 12,804,441 ART treatment cycles were carried out in Europe between 1997 and 2019, with a continuous increase reported over the years (Smeenk et al., 2023). The latest report of the Human Fertilisation and Embryology Authority (HFEA, 2023b) identified around 52,000 patients who have initiated an IVF cycle in the UK in 2021. The majority of these patients were heterosexual (89.8%) or female same-sex couples (4.2%), and only a minority were single women (5.5%) or acted as surrogates (0.5%). Particularly in Portugal, the latest report of the National

^aIVF is the most sophisticated type of fertility treatment and encompasses a complex series of procedures involving fertilising gametes outside the body. This procedure includes conventional IVF and intracytoplasmic sperm injection (ICSI; Zegers-Hochschild et al. 2017).

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Council for ART (Conselho Nacional de Procriação Medicamente Assistida [CNPMA], 2023) identified 7,120 IVF cycles initiated in 2020, from which 93.3% were initiated by heterosexual couples and 6.7% by female same-sex couples or single women.

Overall, the most up-to-date available data suggest that at least four in every 10 patients who initiate fertility treatment end all treatment cycles without achieving a live birth. Patients may undergo more or less than three treatment cycles^b depending on whether they resort to the private sector and the country's regulation and public financing (Berg Brigham et al., 2013; Gameiro et al., 2012). Data from the UK Fertility Authority national database indicated that most patients only undergo one cycle of treatment, 25-40% undergo two cycles of treatment, around 10-15% undergo three cycles, with a small minority (~5%) undergoing up to nine cycles (McLernon, Steyerberg, et al., 2016; Smith et al., 2015). Prognostic-adjusted cumulative estimations on these data showed that a significant majority (70.5%) do not achieve a live birth after one treatment cycle, and almost half (45.7%) do not achieve with up to three cycles (Smith et al., 2015). Even the most optimistic cumulative estimations indicate that around two-fifths (41-43%) of patients starting treatment will not achieve a live birth with up to three treatment cycles and around one-sixth (12.5-18%) with up to nine treatment cycles (McLernon, Maheshwari, et al., 2016; Smith et al., 2015).

The end of unsuccessful fertility treatment, referred to in this doctoral thesis as EoT, is defined as the point when patients complete the last treatment cycle without achieving a live birth and decide not to attempt more treatment cycles. According to systematic reviews, facing EoT can trigger an intense and protracted grief process (Gameiro & Finnigan, 2017;

^bThe number of cycles recommended by fertility authorities (in order to optimise the chances of parenthood) and covered by the majority of the European national health systems (including the Portuguese; National Institute for Health and Care Excellence [NICE], 2017).

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Verhaak, Smeenk, Evers, et al., 2007). Fertility (inter)national guidelines and regulatory bodies (Gameiro et al., 2015; HFEA, 2023a; NICE, 2017) have been stressing the need to address the lack of evidence-based support to promote patients' psychosocial adjustment to this adverse and undesired outcome. According to the most recent European fertility guidelines, supporting patients after EoT is the responsibility of all fertility clinic staff that have contact with patients and should be incorporated as part of the routine psychosocial care provided at fertility clinics (Gameiro et al., 2015). Meta-synthesis research showed that vast attention has been drawn to supporting patients coping with fertility treatment, with more than 40 (specialised) psychosocial interventions being identified to promote patients' adjustment while they are undergoing treatment (Dube et al., 2023; Frederiksen et al., 2015). However, less attention has been drawn to providing psychosocial care when and in the aftermath of EoT (Dube et al., 2023; Frederiksen et al., 2015; Gameiro et al., 2015; HFEA, 2023a; NICE, 2017). To the author's knowledge, only two evidence-based interventions were developed to this end (Kraaij et al., 2015; Rowbottom et al., 2022). One evidence-based intervention is a specialised self-help programme aiming to support childless women with reported depressive symptomatology to adjust in the aftermath of EoT (Kraaij et al., 2015). It uses mindfulness, cognitive coping strategies (i.e., focused on changing the way individuals think about their inability to have children) and goal adjustment (i.e., seek new, realistic, and concrete goals) to improve women's depressive mood. This intervention is not available for public use, but its acceptability and promising effectiveness results indicate that specialised psychosocial interventions can help promote patients' adjustment to EoT (Kraaij et al., 2015). Another evidence-based intervention is a self-help psychosocial web app (freely available online at www.myjourney.pt). This intervention uses contextual cognitive behavioural therapy to support users' psychosocial adjustment to one's unmet parenthood

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goals - including those who faced EoT (Rowbottom et al., 2022). Feasibility results so far have shown moderate acceptability, good feasibility, and promising efficacy in promoting users' adjustment, translated into improved well-being (Rowbottom et al., 2022). However, efficacy in the population of fertility patients facing EoT has not yet been tested.

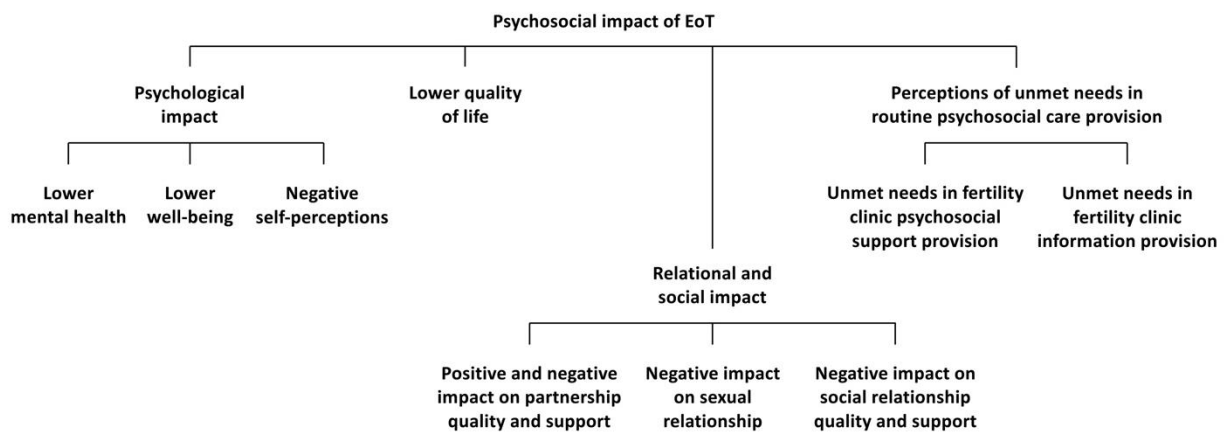
The self-guided format of both of these interventions overcomes some barriers that patients currently face in accessing in-person psychosocial care (e.g., time constraints, costs, stigma; Rüsç et al., 2005). However, these interventions do not address other patient needs, such as the desire to be offered face-to-face psychosocial care from their fertility team when treatment comes to an end, the need to understand how to move on with life after such a significant loss, or the need for reassurance their partnership (when there is one) can survive without children (Daniluk, 2001b; Pasch et al., 2016; Volgsten et al., 2010). Psychosocial care for EoT differs from support tailored to any other stage of the treatment pathway (Verhaak et al., 2005) because patients transition from actively coping with infertility and treatment procedures to integrating the loss of not achieving their (biological) parenthood goals (Daniluk, 2001b; Verhaak et al., 2005).

Given the considerable number of people undergoing fertility treatment, the high likelihood of facing EoT, and the loss it represents, it seems crucial to prioritise developing and evaluating psychosocial care interventions to promote patients' adjustment to EoT. To build an understanding of the extent of the demand for psychosocial care and of what patient needs this should address, the following section explored the existing reproductive literature on this topic. The section consisted of a description of the negative impact of being confronted with EoT on patients' psychosocial mental health and well-being and how patients' psychosocial adjustment to this event unfolds over time.

Psychosocial Adjustment to EoT

Psychosocial adjustment is a cognitive, emotional, and relational process that unfolds over time as people adapt to (un)desired life circumstances (Larsen, 2014). It is measured by people’s ability to daily function in their environment, respond adequately to its demands and establish social relationships in a fulfilling and gratifying way (Larsen, 2014). Systematic reviews investigating patients’ psychosocial adjustment to EoT consistently showed its profound and enduring negative impact (Gameiro & Finnigan, 2017; Verhaak, Smeenk, Evers, et al., 2007). Figure 1.1 summarised the outcomes identified in the present chapter as most commonly used in fertility research to measure this psychosocial impact. The outcomes were organised according to psychosocial and patient-centred models of care (Engel, 1977; Gameiro et al., 2015; van Empel et al., 2008) into the following health measures: psychological (i.e., perception of one’s personal existence), quality of life (i.e., overall evaluation of multiple dimensions of one’s life), relational and social (i.e., perception of one’s relationships with others) and fertility psychosocial care (i.e., perceptions of unmet healthcare needs in psychosocial care provision).

Figure 1.1 *Psychosocial impact of EoT on patients*



Note. EoT=end of unsuccessful fertility treatment.

Psychological Impact

Lower Mental Health. Mental health was mainly reported in fertility research as the presence of psychopathological symptoms (Gameiro & Finnigan, 2017; Verhaak, Smeenk, Evers, et al., 2007). High-quality meta-synthesis of all quantitative research focusing on patients' long-term psychosocial adjustment to EoT showed patients who faced EoT reported mild to moderately lower mental health than patients who achieved parenthood (with treatment, spontaneously or through adoption; Gameiro & Finnigan, 2017).

Mental Health Diagnosis. To the author's knowledge, only one prospective cohort study investigated the presence of an actual mental health diagnosis (Yli-Kuha et al., 2010). Results showed that among women who pursued treatment, those who did not give birth after treatment reported more hospitalisations over a 10-year period for all psychiatric diagnoses (derived from the Finland Hospital Discharge Register) than those who gave birth after treatment (0.1-1.4% vs 0-0.8%, respectively; Yli-Kuha et al., 2010). These results are consistent with systematic research showing that a considerable proportion of patients do not adjust well to EoT, developing clinical relevant emotional problems (Verhaak, Smeenk, Evers, et al., 2007). However, results should be carefully interpreted, as research also shows that those who have children are less likely to be inpatient at psychiatric services than childless people (Maybery & Reupert, 2018).

Psychopathological Symptoms. The two high-quality rated studies identified by the meta-analysis reported above on patients' long-term psychosocial adjustment to EoT showed clinically significant impairments in patients' mental health in the short- and long-term (Gameiro & Finnigan, 2017). These studies used a prospective cohort or cross-sectional representative design in the Netherlands. Results showed that around 12-13% of women reported clinically relevant symptoms of anxiety and depression before starting their first

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treatment cycle, 20-23% after the end of the last treatment cycle, 20-25% six months, 15-16% three to five years after this last cycle and a considerable proportion (38%) scored for a mental health disorder 11 to 17 years after having initiated treatment, with a significantly higher proportion of clinically relevant symptoms in those who did not give birth compared to those who gave birth (with treatment, spontaneously or through adoption; Gameiro et al., 2014; Verhaak, Smeenk, Nahuis, et al., 2007). Additional studies corroborated these results, although some heterogeneity was observed. For example, longitudinal cohort and cross-sectional studies showed patients (particularly women when compared with men) who experienced EoT compared with those who had a successful treatment (i.e., achieved a live birth) or achieved parenthood (e.g., through adoption) tended to report higher levels of psychopathological symptoms, in particular, anxiety and depression, 15 months to 23 years after treatment (Bryson et al., 2000; Gameiro et al., 2016; Johansson et al., 2010; Leiblum et al., 1998; Vikström et al., 2015; Weaver et al., 1997). Studies (mainly conducted with women) also showed psychopathological levels tend to decrease over time, with some suggesting it returns to baseline 2.5 to five years after the EoT (Baram et al., 1988; Gameiro et al., 2016; Verhaak, Smeenk, Nahuis, et al., 2007). However, a considerable proportion of women, in particular those who remained childless, still exhibit transient or chronic maladjustment trajectories up to 11 to 17 years after EoT (Gameiro et al., 2016; Verhaak, Smeenk, Evers, et al., 2007). A more recent study on a 24-year longitudinal analysis with Finnish register data from 1995 to 2018 (Goisis et al., 2023) showed that those women who remained childless after EoT purchased more psychotropics than those who had children (with treatment or spontaneous conception) and this difference did not attenuate over 12 years. An Australian retrospective cohort study (Hammarberg et al., 2001) showed no significant differences in the proportion of women with non-psychotic mental problems

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among those who experienced an unsuccessful vs successful treatment (irrespective of their parenthood status) 2.5 to 3.5 years later, with a minority (6%) scoring for non-psychiatric disorders.

To the author's knowledge, only one retrospective cohort study specifically focused on men (Sydsjo et al., 2015). Results showed Swedish men reported good mental health 20 to 23 years after EoT, with those who did not achieve parenthood with or after EoT reporting slightly more symptoms of anxiety and depression compared with those who achieved parenthood (with treatment, spontaneously or through adoption).

Qualitative research supported quantitative data. This former research indicated EoT involve grieving over: (a) being infertile (as an individual and as a couple, when applicable), (b) the inability to build a family and carry it forward and/or (c) what was left behind in other life domains over the years (Daniluk, 2001b; Johansson & Berg, 2005; Volgsten et al., 2010; Wirtberg et al., 2007). Studies reported on retrospective and prospective designs aiming to describe patients' lived experiences from two months to three years after EoT. Results showed that over this period, patients experienced feelings of intense grief, sadness, loss, desperation, lack of control, pain, emptiness, frustration, anger, blame, pessimism towards the future and suicidal thoughts (Daniluk, 2001b; Johansson & Berg, 2005; Lee et al., 2010; Volgsten et al., 2010). Symptomatology tended to decrease over time, and most patients seemed to healthy adjust over a two-year period after the EoT (Daniluk, 2001b). However, the psychopathological symptoms seem to be (re)experienced, particularly when reaching the 'grandparenthood stage' (Wirtberg et al., 2007).

Lower Well-being. Well-being tended to be conceptualised in research as a holistic concept of how people feel about, appraise and function (individually and socially) in their lives (Ryan & Deci, 2001). This outcome variable assumed a hedonic (perception of life as

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happy and pleasant) or an eudaimonic (having a sense of purpose, fulfilment, flourishing, vitality, personal growth and self-realisation) position of well-being (Kahneman et al., 1999; Ryan & Deci, 2001). The same high-quality meta-synthesis of all quantitative research reported above focusing on patients' long-term psychosocial adjustment to EoT showed patients who faced EoT reported mild to moderately lower well-being than patients who achieved parenthood (with treatment, spontaneously or through adoption; Gameiro & Finnigan, 2017).

Hedonic Well-being. Results from longitudinal and retrospective cross-sectional studies were consensual on patient's perception of the negative impact of fertility treatment on their lifestyle, job and finances (Daniluk, 2001b; Hammarberg et al., 2001; Leiblum et al., 1998; Wischmann et al., 2012). Female patients who remained childless after EoT reported lower levels of satisfaction with their lives one to 13 years later compared with those who had a successful treatment or achieved parenthood (Bryson et al., 2000; Hammarberg et al., 2001; Kuivasaari-Pirinen et al., 2014; Leiblum et al., 1998). Life satisfaction tended to improve after EoT, with some suggesting no significant differences with controls six to 10 years after treatment (i.e., had a successful treatment or achieved parenthood; Kuivasaari-Pirinen et al., 2014; Wischmann et al., 2012).

Eudaimonic Well-being. Johansson et al. (2010) conducted a cross-sectional study aimed to describe the general psychological well-being (often conceptualised as a measure of eudaimonia; Ryan & Deci, 2001) of Swedish women and men after treatment. Results showed that four to 5.5 years after treatment ended, those who experienced EoT had a lower sense of subjective well-being than those who had a successful treatment or conceived spontaneously. Despite the negative impact of EoT, evidence showed that patients could find meaning in this adverse event. Results from two retrospective cohort

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studies covering one month to 3.5 years after EoT (Baram et al., 1988; Hammarberg et al., 2001) showed that many patients feel a sense of freedom when treatment ends. Patients feel they have done everything possible to have a child and feel ready to 'close the book' and start pursuing alternative lifepaths beyond (biological) parenthood. Qualitative data supported these results. Vast high-quality rating retrospective cohort and longitudinal studies covering two months to four years after EoT showed that when this adverse event happened, women and couples (with and without children) felt 'released' from the emotional roller coaster and protracted unsuccessful cycles, perceiving their 'consciences are clear' for having done 'everything reasonably' to achieve their parenthood goals (Daniluk, 2001b; McCarthy, 2008; Su & Chen, 2006; Throsby, 2001). A retrospective cohort study aimed to describe patients' perceived gains from this experience six months to three years after EoT (Lee et al., 2009). Results showed that both women and men felt they grew as a person (inner strength: 'resilience', 'persistence', and a 'sense of humility') due to having 'never given up' from treatment and having survived this experience (Lee et al., 2009). Some patients also felt a sense of 'personal normalcy', 'restored equilibrium', and spiritual growth (Lee et al., 2009; McCarthy, 2008).

Negative Self-Perceptions. Self-perception was conceptualised as the way individuals perceive and evaluate their personality, attitudes, qualities, and roles (Bem, 1972). Most studies reported on evaluations of self-perception of self-esteem (i.e., self-perception of own ability and value), sense of coherence (i.e., a dispositional orientation that adversity is comprehensible, meaningful, and manageable), and identity (re)definition (i.e., owns distinguished characteristics, such as qualities, personal traits, beliefs, or expressions).

Self-Esteem. Cross-sectional studies showed that patients (mainly women) reported lower levels of self-esteem two to 13 years after EoT compared to those who had a

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successful treatment or achieved parenthood (with treatment, spontaneously or through adoption; Bryson et al., 2000; Filetto & Makuch, 2005; Leiblum et al., 1998). Qualitative cross-sectional research supported these results, showing childless women lack self-esteem three to 20 years after EoT, expressed by a sense of 'worthlessness' and 'feelings of inferiority' (Volgsten et al., 2010; Wirtberg et al., 2007). Longitudinal and prospective studies suggested that self-esteem increases over time for both women and men (two and 10 years after treatment), but results showed a lower improvement for those who remained childless (Daniluk & Tench, 2007; Wischmann et al., 2012).

Sense of Coherence. Johansson et al. (2010) used a cross-sectional design to investigate how Swedish women and men perceive themselves as capable of coping with adverse experiences. Four to 5.5 years after ending treatment, those who experienced EoT reported a lower sense of coherence than those who had a successful treatment or conceived spontaneously.

Identity (Re)Definition. Qualitative cross-sectional and longitudinal studies (Daniluk, 2001b; Johansson & Berg, 2005; McCarthy, 2008; Throsby, 2001; Volgsten et al., 2010) conducted with women (mostly) and men two months to four years after EoT showed that parenthood was considered central to their identity. When patients faced EoT, in particular women, they experienced an 'existential paradox', struggling to incorporate their inability to have (biological) children into their identity. Women perceive themselves as a function of reproducing - being a mother and carrying forward a family - so they experienced a 'sense of being incomplete' after EoT (Johansson & Berg, 2005; McCarthy, 2008; Throsby, 2001).

Lower Quality of Life.

(Health-related) quality of life is a multidimensional construct, often conceptualised in the literature under the umbrella of well-being. It is defined as patients' perception of multiple dimensions of their life (e.g., physical, psychological, level of independence, social, environmental and spiritual, religious and personal beliefs) under the context of patients' culture and value systems and about their goals, expectations, standards, and concerns (The WHO quality of life [WHOQOL] group, 1995).

Systematic research clearly showed the negative impact of EoT on patients' quality of life (Chachamovich et al., 2010). Cross-sectional studies reporting on couples' quality of life 15 months to 5.5 years after the treatment ended showed that those who faced EoT (in particular women) reported lower quality of life when compared to those who faced a successful treatment or achieved parenthood (spontaneously or through adoption; Johansson et al., 2009; Johansson et al., 2010; Weaver et al., 1997). Prospective cohort research showed that patients' quality of life tended to improve over time, with overall good ratings ten years after treatment (Wischmann et al., 2012). Qualitative studies supported these results. Results from longitudinal and cross-sectional cohort studies investigating patients' lived experiences after EoT showed patients sensed a negative impact of EoT on most life domains: personal, social, and financial (Daniluk, 2001b; McCarthy, 2008; Throsby, 2001). This tended to ease over two to four years after EoT, as patients found alternative and fulfilling meanings in these domains (Daniluk, 2001b; McCarthy, 2008; Throsby, 2001).

Relational and Social Impact

Positive and Negative Impact on Partnership Quality and Support. Vast fertility research showed that most couples remained in the same relationship after EoT (up to 20 years later;

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Baram et al., 1988; Daniluk & Tench, 2007; Hammarberg et al., 2001; Leiblum et al., 1998; Martins et al., 2014; Martins et al., 2018; Sydsjo et al., 2011; Wischmann et al., 2012).

However, some evidence suggested that those who remained childless were at higher risk of partnership dissolution four to 5.5 and 16 years after (initiating) treatment than those who achieved parenthood spontaneously or through adoption (Johansson et al., 2009; Martins et al., 2018). The vast majority of the studies (covering up to 20 years after treatment) showed that most women and men do not perceive that the fertility journey and EoT negatively impacted their partnership (Baram et al., 1988; Hammarberg et al., 2001; Sydsjo et al., 2005; Sydsjo et al., 2011). A considerable proportion (25-48%) reported a perceived positive impact on their partnership quality and support: increased their communication, strengthened their partnership and improved emotional closeness (Baram et al., 1988; Hammarberg et al., 2001; Peterson et al., 2011; Sydsjo et al., 2005). Retrospective cross-sectional research showed that partners were the main sources of support, with patients reporting they mostly tended to open up about their fertility problems with their partner (Baram et al., 1988; Weaver et al., 1997). A minority (17-33%) reported a negative impact, with a higher proportion among those who faced EoT and/or remained childless compared to those who had a successful treatment or had children (spontaneously or through adoption; Baram et al., 1988; Hammarberg et al., 2001; Leiblum et al., 1998).

Qualitative research supported these results. Patients reported that this undesired treatment experience of EoT strengthened their partnership relationship by giving them more opportunities to appreciate their partners' qualities and showing them how they were resilient enough and strong as a couple to be able to go through treatment and cope with such a burdensome experience as EoT (Daniluk, 2001b; Lee et al., 2009; Volgsten et al., 2010). However, some patients reported difficulties, particularly in effectively managing

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communication with their partners. Men felt that they were expected to take a supportive role towards their female partner's grief and that they needed to be resilient without space to express their own emotions of grief or sadness. Some struggled to cope with their female partner's unexpected emotional reactions due to their lack of knowledge and awareness about the grief that EoT can entail (Volgsten et al., 2010).

Negative Impact on Sexual Relationship. Vast prospective and retrospective studies showed patients' sexual desire and satisfaction tended to decrease during treatment and after its unsuccessful end (Daniluk & Tench, 2007; Hammarberg et al., 2001; Leiblum et al., 1998). Some studies did not report a negative change in sexual function following EoT for most patients (Baram et al., 1988; Sydsjo et al., 2005). Longitudinal and cross-sectional qualitative research aligned with the former results. Because sexual intercourse was structured and planned, patients felt it detracted from the spontaneity and enjoyment they once experienced up to 20 years after treatment (Daniluk, 2001b; Volgsten et al., 2010; Wirtberg et al., 2007).

Negative Impact on Social Relationship Quality and Support. Cross-sectional and longitudinal research consistently considered social isolation and perceived lack of support a significant issue among fertility patients (Baram et al., 1988; Daniluk & Tench, 2007). Results from previously cross-sectional and longitudinal qualitative studies, covering a period from immediately to 20 years after EoT, showed that patients feel 'abnormal' among their peers, marginalised, isolated, and misunderstood (Daniluk, 2001b; Johansson & Berg, 2005; McCarthy, 2008; Throsby, 2001; Volgsten et al., 2010; Wirtberg et al., 2007). Many patients avoided social interactions or events, particularly those involving children, as they felt they did not meet the social norms and others' expectations and felt an overall lack of empathy and understanding from others about fertility problems and the inability to have children

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(Johansson & Berg, 2005; McCarthy, 2008; Volgsten et al., 2010). These feelings of isolation tended to decrease over time but were likely to be (re)experienced when people (in particular women) reached the 'grandparenthood stage' (Wirtberg et al., 2007). Although women were more likely to seek social support, they tended to be selective when disclosing (Baram et al., 1988; Weaver et al., 1997). Patients (in particular women) tended to share only with people who could provide adequate emotional and instrumental support, such as close friends, work colleagues or other fertility patients (Johansson & Berg, 2005; Lee et al., 2009; Volgsten et al., 2010). Some benefits were identified, such as feeling less pressured, more understood, and less isolated (Lee et al., 2009).

Perceptions of Unmet Healthcare Needs

Unmet Needs in Psychosocial Care. Retrospective cohort studies showed that patients were overall dissatisfied with the clinic psychosocial care provided after EoT (Baram et al., 1988; Hammarberg et al., 2001; Weaver et al., 1997). Many patients were not offered support, and many reported that they wished they had been offered during and after treatment (Baram et al., 1988; Hammarberg et al., 2001). Patients reported they would like to have attended short-term counselling after EoT, in particular with other couples (Hammarberg et al., 2001). Qualitative prospective studies covering the period from immediately to an average of four years after EoT supported these results. Patients perceived a lack of support from their clinic, felt 'abandoned' and 'left on their own' to cope with this undesired outcome (Daniluk, 2001b; Koert & Daniluk, 2017; McCarthy, 2008; Volgsten et al., 2010). Some expressed feelings of anger towards the fertility staff, and others perceived some level of impersonal and insensitive care (Daniluk, 2001b; McCarthy, 2008; Volgsten et al., 2010).

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Unmet Needs in Information Provision. Mixed-methods research showed patients perceived they were not adequately informed about what treatment and its unsuccessful end entails when they decided to embark on it: many would like to have had the opportunity to plan the treatment in advance, be counselled about the possibility of stopping treatment and discuss alternative pathways to or beyond parenthood (Hammarberg et al., 2001; Harrison et al., 2022; Harrison et al., 2021; Peddie et al., 2004, 2005). Qualitative research showed that patients perceived the clinic gave them ‘false hope’ during treatment, mismanaged their expectations and left them with unanswered questions when treatment ended (Daniluk, 2001b; Wirtberg et al., 2007).

Critical Appraisal

Overall, studies focused on EoT and covered a period from immediately to up to 23 years after treatment ending. Participants were mainly recruited via medical records at fertility clinics and contacted by e-mail or post-mail. Most studies reported moderate to high response and attrition rates (>60%). Most quantitative research used reliable and validated online self-reported measures, and most qualitative research used semi-structured in-depth interviews and phenomenological analysis. It is important to note that most research reported on retrospective and prospective cohort designs and focused mainly on women (and some on couples). Although the studies available showed that EoT negatively impacts the mental health and well-being of the male partners, it appears that this impact is smaller. More research is needed to understand male partners’ perceptions, views, and preferences towards EoT and their unmet needs and willingness to receive support at this stage. This research will guide the development and evaluation of acceptable and feasible support.

Most studies focused on the first three years after EoT. Although exploring patients’ lived experiences in the long term is needed, the available longitudinal research used

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representative samples from large national cohorts and reported enough power to detect significant differences, with results corroborating the differences found between those who face EoT and controls in the short-term (e.g., Gameiro et al., 2016). Yet, the results on the severity of this impact were mixed, particularly on the length of time needed for psychosocial symptomatology to subside. This may be partly explained by methodological decisions. The operationalisation of the controls across studies stemmed from different assumptions: outcome of treatment (faced EoT vs faced a successful treatment; e.g., Hammarberg et al., 2001) or parenthood status (being childless vs having children; e.g., Johansson et al., 2010). Cross-sectional research showed that more than the outcome of treatment or parenthood status, patients' mental health is primarily impacted by sustaining an unfulfilled desire for (more) children (Gameiro et al., 2014). In addition, studies included heterogeneous samples. Some prospective cohort studies did not consider whether patients did additional treatment cycles over the study period (e.g., undergoing additional cycles in the private sector; Gameiro et al., 2016). This decision most likely influenced patients' adjustment to EoT, as patients might not be grieving the definitive inability to have biological children. This suggests that the severity of psychosocial maladjustment might be somehow underestimated, as well as the time needed to adjust to this event. Many retrospective and prospective cohort studies also included large study time intervals since EoT (Sydsjo et al., 2011) and did not adjust the analyses for important variables that likely play a role in patients' reported mental health and well-being (e.g., adverse life events that may have occurred within this time frame). These methodological decisions may contribute to the small-size effects captured on some adjustment outcomes when comparing those who faced EoT and their controls.

Conclusions

Overall, findings clearly indicate that EoT is a severe and complex life event with short- and long-term psychosocial implications for patients' mental health and well-being. Mixed-methods systematic and meta-analysis research shows the negative impact of EoT on patients' mental health and psychological, relational, and social well-being immediately up to 23 years after treatment. This adverse event triggers an intense and prolonged grief process, characterised by profound and unexpected feelings of sadness, loss, desperation, lack of control, emptiness, frustration, and anger. Although symptomatology tends to ease over time, a considerable proportion of patients do not adjust well, exhibiting (sub)clinical distress at emotional, cognitive, relational, sexual, and social levels that can protract over several years. The perceived low-quality psychosocial support and limited information provision patients receive from their fertility clinic throughout and after treatment about the emotional, relational and social, sexual, and medical aspects of treatment and, in particular, EoT, appear to have a negative impact on their overall satisfaction with the clinic and their perceived ability to healthy adjust to EoT. Data indicate that supporting patients in adjusting to this adverse event is imperative. Work should progress to developing and evaluating psychosocial care to promote patients' adjustment to EoT.

Developing Psychosocial Care to Promote Patients' Adjustment to EoT

The following section focused on identifying the psychosocial processes that promote patients' adjustment to EoT (i.e., mechanisms of change through which a psychosocial intervention operates to affect the desired implementation outcomes) and how to model these processes to develop effective psychosocial care. To do this, the relevant theories that attempt to explain how psychosocial adjustment to undesired life circumstances unfolds over time are discussed.

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EoT as a Stressful Life Event. Lazarus and Folkman (1984) developed the Transaction Model of Stress and Coping, one of the most comprehensive and influential theories explaining how people appraise and cope with stressful life events. This model proposes that people experience stress when the internal and/or external demands of an event exceed their personal resources and endanger their well-being. To healthy adjust to this experience, it is important to use cognitive and behavioural coping strategies that effectively address the threat posed by the stressful situation. Generally, these strategies are categorised into problem-focused strategies (i.e., attempting to change the situation) and emotion-focused strategies (i.e., changing the situation's effects on people). How each of these strategies proves effective varies according to the characteristics of the situation (Folkman, 2001; Lazarus & Folkman, 1984). When individuals face unchangeable situations (such as EoT), emotion-focused coping strategies are more adaptable (Lazarus & Folkman, 1984). In particular, results from fertility research indicated that using active and passive avoidance strategies (e.g., hoping for a miracle; seeking additional medical advice) was associated with worse psychological (higher levels of emotional distress), relational (marital, sexual) and social adjustment for up to five years after EoT (Daniluk & Tench, 2007; Peterson et al., 2009). On the contrary, meaning-based coping (e.g., re-evaluating the situation to find (inter)personal growth, learning, or development; finding alternative life goals) appeared to be associated with better psychosocial and relational adjustment to this end (Peterson et al., 2009).

EoT as a Process of Bereavement. Drawing upon the stress and coping theory, Stroebe and Schut (1999) proposed the Dual Process Model of Grief (DPM). Similar to coping theory, the DPM posits that when people are confronted with stressful life situations that imply loss, they have to deal with the emotions associated with the loss per se: loss-orientation stressor

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(i.e., related to the loss). As previously noted, EoT triggers a loss of biological parenthood (or any type of parenthood), for many, a loss of being able to build a family and carry it forward and losses in other life domains that were left behind over the years (Daniluk, 2001b; Johansson & Berg, 2005; Volgsten et al., 2010; Wirtberg et al., 2007). In addition to coping theory, this model claims that people must also deal with the consequences of this loss: restoration-orientation (i.e., secondary to the loss). In the case of EoT, this could be the difficulty in attending social situations with others who are pregnant or social events with children or the negative impact it may have on the partnership (Johansson & Berg, 2005; Volgsten et al., 2010). The DPM claims that healthy psychosocial adjustment to both the loss and its consequences implies undergoing a dynamic process where people oscillate between loss-oriented and restoration-oriented coping. Women tend to be more loss-oriented, and men restoration-oriented (Stroebe & Schut, 1999). As previously mentioned, prospective research showed that women and men use different coping strategies to adjust to EoT (Peterson et al., 2011; Peterson et al., 2009). Women are more likely to share their feelings and emotions with others and seem to experience their loss in a more emotionally intense and reactive way (Baram et al., 1988; Volgsten et al., 2010; Weaver et al., 1997). On the contrary, men feel that it is expected of them to take a supportive role towards their partner, that they need to be resilient and more restrained when reacting EoT, and tend to focus on alternative goals (Volgsten et al., 2010; Weaver et al., 1997).

EoT as a Threat to Identity. The previous theories conceptualise EoT as an environmental stressor. Thoits (1991) proposed a link between identity and stress. According to this approach, stressful life situations threaten people's identity roles, i.e., their self-conceptions about their roles in the world (such as being a parent). This model claims that situations that pose more threat to valued identity roles are more psychologically demanding and have a

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higher impact on people's well-being. EoT can be conceptualised as a threat to one's identity. Results from fertility research showed that individuals who are highly committed to fertility treatment tend to have a stronger desire for children (Gameiro et al., 2014), so it would be expected that those for whom being parents is central to their identity will be at higher risk for maladjustment when confronted with EoT. Evidence suggests that an adaptive strategy to cope with EoT is accepting one's identity as infertile and re-constructing a more positive view of themselves and their life - linked with meaning-based coping (Daniluk, 2001b; Lee et al., 2009). Fertility research suggested that patients (re)construct a more positive self-identity by critically approaching the social conception of parenthood, identifying what they idealise to be as a parent (i.e., its attributes) and manifesting it in other domains of life (e.g., helping their friends acting in the interests of others or advocating for fertility patients; Daniluk, 2001b; Lee et al., 2009).

EoT as a Barrier to Achieve a Developmental Goal. Development regulation theories (Brandtstädter & Rothermund, 2002; Freund & Baltes, 2000; Heckhausen et al., 2001; Heckhausen et al., 2010) describe how people healthy adjust when confronted with blocked life developmental goals (e.g., parenthood). According to these theories, people are expected to disengage from attempting to achieve their blocked goal and re-engage in other significant and meaningful goals (in line with restoration-oriented coping). This allows people to protect themselves against self-deception and blame, thereby protecting their mental health and well-being (Heckhausen et al., 2001; Heckhausen et al., 2010). EoT is conceptualised as a barrier to achieving the developmental goal of (biological) parenthood. When confronted with this possibility, people are expected to progressively devalue the importance of (biological) parenthood, withdraw their efforts from achieving their parenthood goals and re-engage in other important and meaningful life goals (da Silva et al.,

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2016). Fertility research has supported these theories by demonstrating that those who do not sustain a strong desire for children (i.e., disengage from trying to have (more) biological children) and re-engaged in new significant and fulfilment goals (e.g., career advancement, establishing new social relationships) or pursue other ways to achieve parenthood (e.g., adoption) exhibit more healthy psychosocial adjustment after to 11 to 17 years following having initiated treatment and facing EoT afterwards (Daniluk, 2001b; Daniluk & Tench, 2007; Gameiro et al., 2014; Verhaak, Smeenk, Nahuis, et al., 2007).

EoT as a Loss for the Couple. The most recent dyadic regulation theory, the Transactive Goal Dynamics Theory (TGD; Fitzsimons et al., 2015), posits that couples share a regulation system characterised by transactive processes and density (i.e., the extent to which couples have several and strong links with their goals, pursuits, and outcomes). This means that the way each member of the couple invests in interpersonal goals, such as parenthood goals, affects the way the other member invests in those goals, with more transactive gains resulting from more coordinated efforts. One feature of trying to achieve parenthood is that, for most people, parenthood is a dyadic goal (i.e., a shared-system-oriented goal), and the inability to achieve it has an interdependent impact on each member of the couple (Peterson et al., 2011; Peterson et al., 2009; Volgsten et al., 2010). According to TGD, when couples face EoT, they can benefit more in terms of psychosocial adjustment if they coordinate their coping styles (Fitzsimons et al., 2015). Prospective cohort studies showed that the coping strategies one partner uses to cope with EoT affect the way the other partner copes with it up to five years after EoT. While higher use of active-avoidance coping was only associated with lower marital benefit for male partners (i.e., a sense of being closer and stronger as a couple and lower marital distress), higher use of meaning-based coping was related to greater marital benefit (Peterson et al., 2011; Peterson et al., 2009).

The Three Tasks Model (3TM) of Adjustment to Unmet Parenthood Goals. Gameiro and Finnigan (2017) developed the Three Tasks Model of Adjustment to Unmet Parenthood Goals. This model results from the systematic review and meta-analysis of how patients adjust to EoT mentioned in the previous section of this chapter. The 3TM is the first model offering comprehensive guidance on the psychosocial processes/mechanisms of change that underline a healthy adjustment to EoT. It conceptualises healthy psychosocial adjustment into improved mental health (psychopathological symptoms) and well-being (hedonic, eudaimonic, and quality of life) in the short- and long-term. This model identifies three interrelated psychosocial adjustment processes and predicts that patients' engagement with these mechanisms will facilitate their adjustment to EoT. The three interrelated psychosocial adjustment processes are: (a) acceptance: recognition, and active involvement with the situation and its negative effect without attempts to change its frequency or shape; (b) meaning-making: re-evaluation of the situation and past efforts to deal with it, life values and priorities; and (c) pursuit of new life goals: the definition and implementation of new important and fulfilment goals. The model also outlines protective factors for adjustment, particularly emphasising perceived social support, gender, and the importance of parenthood. The 3TM was evaluated in heterogeneous samples of people with unmet parenthood goals, including those who faced EoT, and showed good acceptability and promising efficacy results in improving well-being (Rowbottom et al., 2022; Rowbottom & Gameiro, 2020).

Critical Appraisal

Many of the presented theories of stress, coping and grief have been widely used in research to investigate how people adjust to undesired life situations and have been applied to different health contexts, such as blocked parenthood goals or the loss of a marital

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partner (da Silva et al., 2016; Heckhausen et al., 2001; Stroebe, 2001). These theories complement each other, and all contribute to explaining how patients adjust to EoT. The 3TM is consistent with the mechanisms proposed by these theories, with the added benefit of having been specifically developed from the meta-synthesis of quantitative and qualitative research on psychosocial adjustment to EoT. The only two evidence-based interventions that have been developed and described above align with the 3TM. One was specifically rooted in the 3TM (Rowbottom et al., 2022), and the other overlapped with two of the three 3TM mechanisms of change: meaning-making and pursuit of new life goals (Kraaij et al., 2015). As previously noted, both interventions have shown good acceptability and promising efficacy results so far (Kraaij et al., 2015; Rowbottom et al., 2022).

Considering this evidence, one way to support patients adjusting to EoT according to the 3TM would be by facilitating acceptance, meaning-making, and the pursuit of new life goals. These mechanisms encompass both loss- and restoration-oriented coping, involving both emotion- and problem focused coping strategies. Active acceptance implies the willingness to actively acknowledge, and experience difficult emotions, thoughts and sensations triggered by stressful life situations without attempts to change or suppress them (Gameiro & Finnigan, 2017). Active acceptance strategies have been demonstrated to be associated with better psychosocial adjustment (Davis et al., 2016; Nakamura & Orth, 2005). Promoting acceptance towards the loss of having (more) children can foster a sense of hope towards the future and personal growth, easing patients' psychosocial adjustment to the loss triggered by EoT (Daniluk, 2001b; McCarthy, 2008). Meaning-making is a common and critical adaptive response to stressful life events (Davis et al., 2000; Park, 2010). It aims to reduce the discrepancy between the appraised situational meaning of an event and its global meaning (related to beliefs of the world, self, and the self-in-world, goals, and subjective

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sense of purpose; Park, 2010). Meaning-based coping strategies imply adjusting one's perspective via cognitive reappraisal or re-evaluating values, social constructs, and priorities (Gameiro & Finnigan, 2017). Reappraising one's past efforts to achieve parenthood, identifying the personal and interpersonal gains of these efforts, and reconstructing the value of parenthood for one's identity to restore a sense of meaning in life can promote patients' adjustment to EoT (Daniluk, 2001b; Kraaij et al., 2009; Lee et al., 2009; Peterson et al., 2009). Both these mechanisms (i.e., acceptance and meaning-making) align with the view of EoT as a threat for one's identity and the importance of integrating infertility into their self-image in a more positive and meaningful way. The pursuit of new life goals (aligned with development regulation theories) aims to help patients disentangle from what they initially envisioned, pursued, and desired, and engage with alternative goals that, although can move patients away from the initially desired outcome (i.e., having (more) biological children), can still provide a sense of fulfilment (Gameiro & Finnigan, 2017). This process requires an active and demanding effort (da Silva et al., 2016; Heckhausen et al., 2010). However, benefits seem clear in easing patients' psychosocial adjustment to EoT (McCarthy, 2008; Wirtberg et al., 2007). These three psychological processes (acceptance, meaning-making, and pursuit of new life goals) are interdependent and engagement with one can facilitate engagement with the others (Gameiro & Finnigan, 2017).

It is important to note the social and relational components that underlie a healthy psychosocial adjustment to EoT. Isolation and lack of support are triggered by patients' inability to comply with the social norms, constructions, and expectations of parenthood (Johansson & Berg, 2005; McCarthy, 2008). Learning to effectively cope with challenging social interactions (e.g., insensitive questions and comments, social events with children) and increasing their frequency is crucial to ease patients' adjustment to EoT (Gameiro et al.,

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2016; Verhaak et al., 2010). According to the 3TM and bereavement theories, positive social experiences facilitate patients' engagement with acceptance, meaning-making, and pursuit of new life goals processes and vice versa (Gameiro & Finnigan, 2017; Stroebe & Schut, 1999). For many, the grieving process towards the inability to fulfil one's parenthood goals is a dyadic and interdependent process within the couple (Fitzsimons et al., 2015). In this case, EoT also encompasses a threat to patients' identity as couple (in addition to their identity as an individual person; Thoits, 1991). Therefore, it makes sense to argue that the loss of EoT should be approached within the couple (when applicable), and how to cope with it should be adapted to the couple.

The 3TM offers a holistic approach to healthy adjustment to EoT measured by mental health and well-being (Gameiro & Finnigan, 2017). It is widely recognised that mental health is more than the presence or absence of an actual mental health diagnosis or psychopathological symptoms: 'Mental health is a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community' (WHO, 2022). Indeed, a complete state model of mental health advocates that healthy psychosocial adjustment outcomes should focus not only on mental health but also on mental well-being: the presence of mental illness and levels of emotional, psychological, and social well-being (Iasiello et al., 2018; Keyes, 2005).

Conclusion

The psychosocial adjustment process to EoT is an individual, relational, and social process that unfolds over time. Evidence suggests that psychosocial care interventions for EoT could be rooted in 3TM. In this sense, such care could be designed to engage patients with acceptance, meaning-making, and pursuit of new life goals, and facilitate social

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connectedness, relational communication, and support within the couple (when applicable).

The 3TM was based on patients' experiences and is expected to have a holistic impact on patients' mental health and well-being.

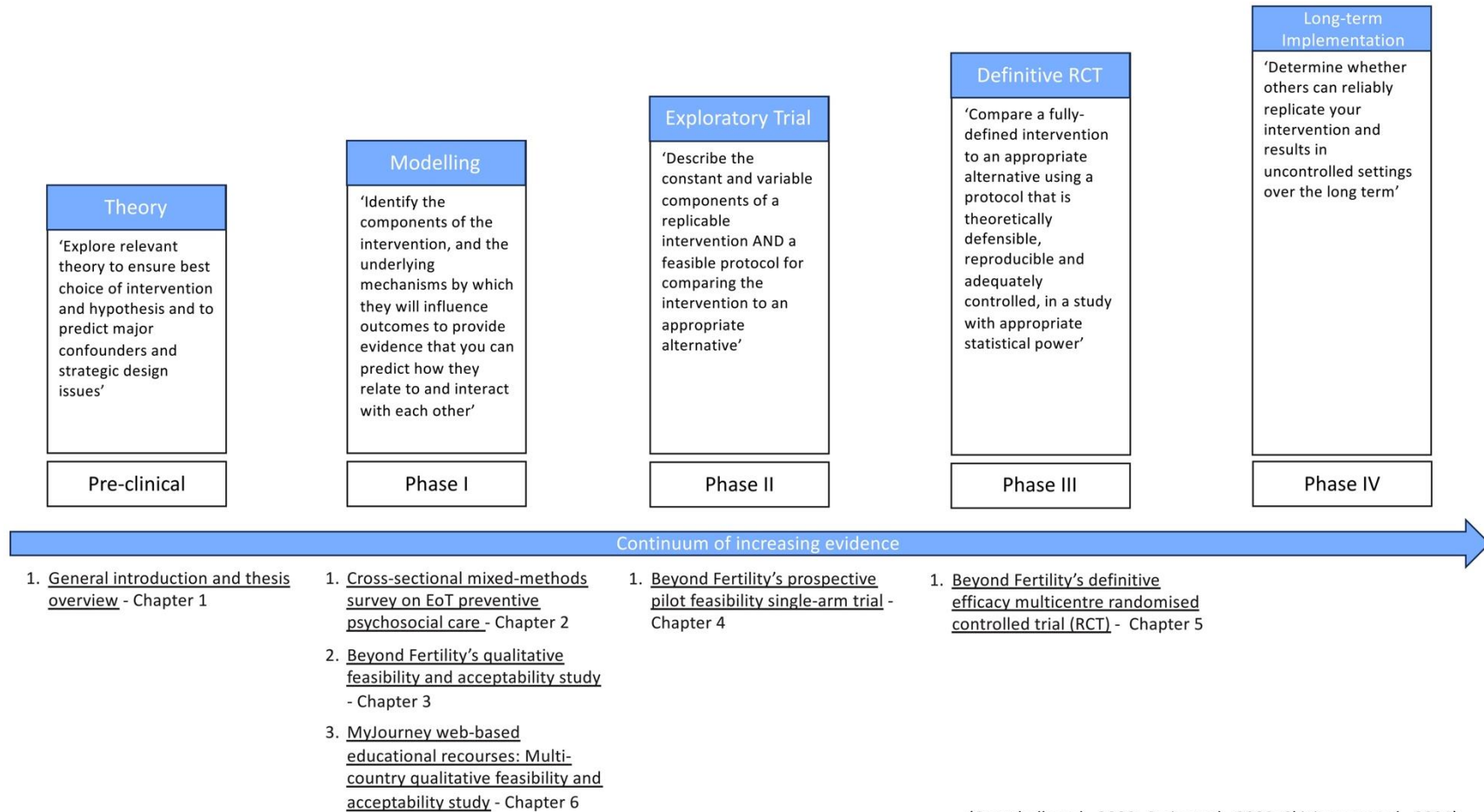
Thesis Outline and Research Aims

The present doctoral thesis aimed to develop and evaluate psychosocial care to promote patients' adjustment to EoT. This care can be provided through assistance and guidance from HCPs or specialised care intervention from a mental healthcare professional (Gameiro et al., 2015). The present doctoral work focused on developing both of these types of care.

This work followed the MRC framework on how to systematically develop complex interventions (Craig et al., 2008; Skivington et al., 2021). The MRC framework is the most widely adopted, up-to-date, multidisciplinary, and theoretically informed guidance on how to systematically develop and evaluate complex interventions (Craig et al., 2008; Skivington et al., 2021). Figure 1.2 offers a graphic depiction of the development and evaluation work of psychosocial care for EoT conducted over this doctoral thesis, systematised by chapters and according to the MRC framework. Complex interventions are commonly used in healthcare services and involve a range of flexible, adaptive, and interactive theory-based components, effects, and characteristics (Craig et al., 2008; Skivington et al., 2021). Complex intervention research involves a continuing and interactive phased process of development, feasibility, evaluation, and implementation (Craig et al., 2008; Skivington et al., 2021). This process requires a series of mixed-methods studies, whereas the intervention design is refined to ensure and maximise its efficiency, use, and impact. The MRC framework recommends that intervention development starts by identifying the best research evidence and theory of the problem to inform the causal logic underlying the intervention. This was done over the present Chapter 1.

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Figure 1.2 Graphic depiction of the work carried out under the present doctoral thesis, systematised by chapters and according to the MRC framework



(Campbell et al., 2000; Craig et al., 2008; Skivington et al., 2021)

Note. EoT=end of unsuccessful fertility treatment; MRC=Medical Research Council.

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Chapters 2 and 3 inserted in the MRC development phase of psychosocial care for EoT.

Chapter 2 consisted of a theoretically driven and patient-centred bilingual (English, Portuguese) mixed-methods online survey. This chapter described the analysis of patients' experiences, willingness, and preferences to be informed and prepared for EoT even during treatment as part of the routine psychosocial care offered in clinics. This care was referred to in the present doctoral thesis as EoT preventive care. Descriptive and inferential statistics were used on quantitative data, and thematic analysis (Braun & Clarke, 2006) was applied to textual data. **Chapter 3** investigated the feasibility and acceptability of Beyond Fertility, a brief face-to-face specialised psychosocial intervention to promote patients' adjustment to EoT. Beyond Fertility was developed using available high-quality evidence and appropriate theory. It encompasses EoT preventive care to inform and prepare patients for EoT and intervention psychosocial care to support patients in the aftermath of this event, when and if it happens. This latter was referred to in the present doctoral thesis as EoT early intervention care. Focus groups were conducted with patients and HCPs to explore their experiences and views about providing EoT preventive and early intervention care, and particularly Beyond Fertility. Focus groups were informed by Bowen et al.'s (2009) feasibility framework, and data were analysed with Framework Analysis (Gale et al., 2013). Findings from these two chapters informed whether Beyond Fertility is acceptable and feasible, whether it should proceed with further evaluation testing and the necessary refinements it should undergo to proceed with testing. These chapters also provided fundamental knowledge to inform future research focusing on developing and evaluating psychosocial support tools for EoT.

Chapter 4 consisted of a prospective pilot feasibility single-arm trial of Beyond Fertility. This study used Bowen et al.'s (2009) feasibility framework. It aimed to evaluate the

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feasibility of Beyond Fertility and its evaluation methods. Findings informed whether Beyond Fertility is acceptable and feasible to implement in clinical settings, the practicalities of a standardised implementation, and whether it should proceed for efficacy testing. **Chapter 5** consisted of a definitive multicentre two-arm parallel group open-label randomised controlled trial (RCT) to evaluate the efficacy of Beyond Fertility. Findings informed whether providing EoT preventive and early intervention care are effective in attenuating the negative impact of EoT, translated into better quality of life (primary outcome), mental health and well-being (secondary outcomes).

Chapter 6 focused on EoT preventive care and also formed a key activity in the MRC development phase of psychosocial care for EoT. This chapter aimed to investigate patients' and HCPs' experiences, views, and preferences towards EoT preventive care, and their perceived acceptability and feasibility of self-help web-based educational resources - named MyJourney web-based resources - to promote the provision of such care as part of the routine psychosocial care offered in fertility clinics. International focus groups with stakeholders' involvement were conducted. Findings informed whether self-help educational resources would be acceptable and likely to be used by patients and HCPs, the perceived benefits and adverse effects of such support and barriers and facilitators to its provision. Findings also provided fundamental knowledge about the direction intervention research should take to meet patients' preferences and needs in fertility care.

Research Aims

The aims of the present doctoral thesis were to investigate:

1. patients' experiences, willingness, and preferences to receive EoT preventive care as part of the routine psychosocial care offered in fertility clinics (Chapter 2);

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2. patients' and HCPs' acceptability and feasibility to receiving EoT preventive and early intervention care and, in particular, to an early prototype of Beyond Fertility (Chapter 3);
3. feasibility of Beyond Fertility and its evaluation design via a prospective pilot feasibility single-arm trial to move forward to a larger-scale implementation (Chapter 4);
4. efficacy of Beyond Fertility and understand how it contributes to change via a definitive multicentre RCT (Chapter 5);
5. patients' and HCPs' experiences, views, and preferences on EoT preventive care for and the perceived acceptability and feasibility of evolving prototypes of the MyJourney web-based resources to support its routine provision at fertility clinics (Chapter 6).

CHAPTER 2 CAN EoT PREVENTIVE CARE BE OFFERED AS PART OF ROUTINE PSYCHOSOCIAL CARE OFFERED AT FERTILITY CLINICS? PATIENTS' EXPERIENCES, WILLINGNESS, AND PREFERENCES

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Introduction

Across the world, people are increasingly resorting to ART to have children (Smeenk et al., 2023). For many people, IVF constitutes the only option to achieve one's biological parenthood goals (Chandra et al., 2005), but many patients end treatment without children (McLernon, Maheshwari, et al., 2016; Smith et al., 2015). In the UK, fertility patients undergo, on average, one cycle of treatment (McLernon, Maheshwari, et al., 2016; Smith et al., 2015). The number of attempted cycles varies according to restrictions on access to public treatment and whether patients are able to seek treatment in the private sector (Berg Brigham et al., 2013; Gameiro et al., 2012). However, even the most optimistic estimations show that, on average, at least four in every 10 patients who start fertility treatment and do up to three² cycles end treatment without achieving a live birth (McLernon, Steyerberg, et al., 2016). Undergoing fertility treatment is a psychologically, relationally, socially, and physically burdensome experience (Cousineau & Domar, 2007; Öztürk et al., 2021), and reaching its end without children triggers an intense and often enduring grief process associated with impaired mental health and well-being at short- and long-term (up to 23 years after EoT; Daniluk, 2001b; Gameiro & Finnigan, 2017; Sydsjo et al., 2015; Volgsten et al., 2010).

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Considering the high likelihood of facing EoT and its negative impact on patients' psychosocial adjustment, many argue that patients should be informed about this (and other) adverse outcomes as part of providing informed consent (Bernat, 2004; Michel & Moss, 2005). Others argue that patients should be informed and prepared in advance for this possibility, as well as supported through it in its immediate aftermath (Wischmann & Thorn, 2022). However, this is not common practice in fertility care (Carson et al., 2021; Harrison et al., 2022; Peddie et al., 2005). Studies suggest the EoT is only discussed with a minority of patients under very specific circumstances, particularly treatment futility, very poor prognosis, or after repeated unsuccessful cycles (Ethics Committee of the American Society for Reproductive Medicine, 2019; Peddie et al., 2005), and that around four in 10 patients feel they did not receive all the information they needed to make informed decisions (Peddie et al., 2004).

The present chapter focused on how psychosocial care can inform and prepare patients for the implications of EoT. This was referred to as EoT preventive care. Such care is aimed at helping patients to develop coping strategies known to facilitate emotional and social adjustment to this adverse life event (Gameiro et al., 2015). Depending on how this care is approached and structured, evidence suggests its provision can have several benefits for most patients. First, by informing patients about what are typical reactions to EoT, preventive care can validate such reactions and potentially reduce these by process of negative discounting, whereby people are already expecting adverse consequences from an event are less impacted by it (Thomas et al., 2000; Waller et al., 2014). Information about available support and adaptive coping strategies can also be provided, better equipping patients to cope (Boivin, 2003). Second, discussing the possibility of EoT can contribute to managing patients' expectations about the treatment outcome, which have been shown to

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be overoptimistic (Devroe et al., 2022; Miron-Shatz et al., 2021). EoT preventive care can also promote agency in adversity and a (more) hopeful outlook towards the (undesired) future (Snyder, 2002; Su & Chen, 2006) by reassuring patients that most people who faced EoT can reach personal balance and rebuild a fulfilling and meaningful life (Gameiro & Finnigan, 2017). Third, EoT preventive care can foster positive perceptions of and promote patients' willingness to uptake support in the aftermath of treatment (if needed; Daniluk, 2001b; Gameiro & Finnigan, 2017; Volgsten et al., 2010).

However, EoT preventive care can also be perceived to have risks. Discussing the possibility of EoT can trigger unnecessary anxious reactions in patients, 'crush' their optimism and, therefore, undermine their engagement with treatment (Devroe et al., 2022; Harrison et al., 2021). This may be particularly true for a proportion of patients who become more committed to achieving their desire for children as they progress through treatment (Carson et al., 2021; Rauprich et al., 2011). EoT preventive care can also be costly for HCPs, as discussions about health-related 'bad news' are known to be taxing (Boivin et al., 2017). Many HCPs fear that addressing this possibility may trigger negative performance evaluations from patients (Fedele et al., 2020). Addressing this topic may also trigger feelings of frustration and powerlessness in HCPs, who may feel responsible for the treatment outcome, as well as the weight of responsibility of potentially influencing such an important patient decision (Fedele et al., 2020; Meier et al., 2001).

The Health Belief Model (HBM) and Theory of Planned Behaviour (TPB) offer comprehensive frameworks to understand how patients form their intentions regarding the uptake of healthcare provisions (Ajzen, 1985; Rosenstock, 1974). Existing evidence supports the validity and reliability of HBM- and TPB-based surveys to explain this uptake (e.g., McEachan et al., 2011). According to the HBM (Rosenstock, 1974), patients will be willing to

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receive EoT preventive care if they think their chances of experiencing EoT and, therefore, not achieving their parenthood goals are high (susceptibility), if they think this outcome will negatively affect their life (severity), if they perceive EoT preventive care to be beneficial and do not see relevant barriers to its uptake, and if specific cues to action trigger them to consider it (e.g., starting last reimbursed IVF cycle). According to the TPB (Ajzen, 1985), patients will be more willing to receive EoT preventive care if they have positive attitudes about it (e.g., beneficial, useful), think significant others would want them to uptake it (social norms), and feel able to receive it (perceived behavioural control).

To better understand with whom, what, how and when EoT preventive care should be delivered at clinics, it is important to understand patients' views and preferences about it. This patient-centred approach is also recommended, given the increased demand and resulting commercialisation of fertility care (Ghinea et al., 2022). Research meta-synthesis shows patients desire information about all treatment-related aspects, including adverse events, and consider the current level of information provision insufficient (Dancet et al., 2010). Despite the potential threatening aspect of EoT preventive care, survey research shows patients are willing to discuss possible adverse outcomes of treatment (e.g., unsuccessful cycle attempts), especially if it helps them to prepare for such eventualities (Harrison et al., 2021; Peddie et al., 2005). As patients progress through repeated unsuccessful cycles and develop awareness that treatment may not work, they may become more receptive to EoT preventive care (Pedro et al., 2018). Many people revise down their parenthood goals (and desire) as these are seen to be less achievable (Liefbroer, 2009; Sousa-Leite et al., 2019). However, evidence from qualitative studies also suggests that some patients avoid such discussions (with partner, HCPs), as they think they need to remain committed to treatment to be able to conceive (da Silva et al., 2020). These data suggest

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that patients may have different preferences towards EoT preventive care and that individual preferences may also vary according to the stage of treatment and/or perceived likelihood of success.

Supporting patients in the aftermath of EoT, when and if it happens, is also critical, and meta-synthesis indicates a high patient demand for this type of support, as EoT is perceived as devastating and maybe the hardest phase of one's treatment pathway (Gameiro & Finnigan, 2017). Therefore, it is also important to explore patients' views about specialised psychosocial care (to reiterate, psychosocial care provided by a mental healthcare professional) in the aftermath of EoT.

The primary goal of the present chapter was to investigate patients' experiences, willingness, and preferences to receive EoT preventive care integrated into routine psychosocial care provision in fertility clinics. Specific goals were to investigate patients': (i) experiences of having received EoT preventive care, (ii) willingness to receive such care and (iii) preferences about with whom, what, how, and when it should be delivered. The secondary goal was to investigate patients' willingness and preferences about when and how to receive specialised psychosocial care in the aftermath of EoT. Findings can help HCPs and clinics reflect on whether they want to offer EoT psychosocial care to their patients and how it should be integrated into current models of care. Findings can also help inform the design of future EoT support interventions.

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Methods

Design

A cross-sectional, bilingual (English, Portuguese), mixed-methods (quantitative-qualitative), anonymous, web-based survey was designed. Reporting followed Sharma et al. (2021) recommendations.

Participants

Inclusion criteria were being an adult (aged 18 or older) and being on the waiting list to initiate an IVF/ICSI cycle, currently undergoing a cycle, or having completed one within the previous six months without achieving a pregnancy. Exclusion criteria were not being able to read and write English or Portuguese. A non-probability sample was used. *A priori* power calculations computed for logistic regression to investigate factors associated with willingness to receive EoT preventive care (not willing, willing) estimated that a minimum total sample size of 305 was required to detect small effect sizes ($\alpha=0.05$, power=0.9; Faul et al., 2007).

Materials

The survey was informed by the HBM and TPB (Ajzen, 1985, 2006; Rosenstock, 1974) and organised into four sections: sociodemographic characteristics and treatment history; experiences of having received EoT preventive psychosocial care; willingness and preferences to receive EoT preventive psychosocial care; factors associated with this willingness; and willingness and preferences to receive psychosocial care in the aftermath of EoT. The survey questions (English, Portuguese) are available in Appendix A.

Sociodemographic Characteristics and Treatment History. Questions on sociodemographic characteristics included age (in years), gender, country of residence,

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education and occupational status, relationship status, and duration (when there is one, in years). Questions on treatment history included current treatment situation (waiting to initiate an IVF/ICSI cycle, undergoing a cycle, having completed one within the previous six months without achieving a pregnancy), time undergoing treatment (in years), number of IVF/ICSI cycles performed in the past, whether participants had achieved a live birth from previous IVF/ICSI (no, yes), parenthood status (no children, biological, adopted, stepchildren), the strength of their desire to have (an)other child (from 1: no desire at all to 10: very strong desire), and whether participants considered other pathways to achieve parenthood (no, adoption, and other - please specify).

Experiences of Having Received EoT Preventive Care. The survey stated that EoT preventive psychosocial care aims to ‘support patients in developing coping strategies known to facilitate emotional and social adjustment in case of EoT and that it happens in advance of this eventuality, i.e., anytime since the first appointment at the fertility clinic until the end of all treatment cycles’. For simplicity, in the survey questions, the terminology used was ‘counselling’, ‘talk about’, or ‘discuss’ the possibility of treatment being unsuccessful when referring to EoT preventive care. The end of unsuccessful treatment was defined as ‘all cycles of treatment being unsuccessful’.

Participants were asked if they remember having received EoT preventive care (no, yes), with whom they talked about this possibility, and to describe what they were told (open-ended questions).

Willingness and Preferences to Receive EoT Preventive Care. Participants were asked whether they would be willing to receive EoT preventive care (no, yes). Four quantitative and three open-ended questions assessed their preferences about EoT preventive care, focusing on the HCP participants would feel more comfortable receiving it from (list of five

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professionals: e.g., counsellor/psychologist/psychiatrist, and other - please specify; with multiple responses allowed), what they would like to address in a EoT preventive care session, what could make receiving such care easier for them (open-ended questions), and to rate the usefulness of different formats to receive EoT preventive care (five formats presented: e.g., self-help resources, and other(s) - please specify; response scale ranging from 1: extremely useless to 7: extremely useful). Participants were additionally asked about valid reasons to receive EoT preventive care (list of five reasons: e.g., 'If the chances of treatment being successful are very low: bad prognosis', and other(s) - please specify; multiple responses allowed), what would be the best time to receive EoT preventive care (before initiating the first IVF/ICSI cycle, after it being unsuccessful, before initiating the last cycle, and other - please specify) and reasons to choose that time (open-ended question).

Factors Associated with Willingness to Receive EoT Preventive Care. Questions assessing HBM variables were specifically designed for this study but based on similar formulations previously used in reproductive research (Sousa-Leite et al., 2019; Ter Keurst et al., 2016). Susceptibility: participants were asked to rate the chance of their fertility treatment being successful and the likelihood of having (an)other child (considering other ways to have children) on a 0-100% scale. Severity: participants were asked to rate how painful it would be if they could not have (an)other child with fertility treatment and not have (an)other child (considering other ways to have children) on scales ranging from 1: not painful at all to 7: extremely painful. Benefits and barriers: participants were asked what the benefits of EoT preventive care (open-ended question) and, after, to rate 18 benefit statements (e.g., 'be informed about how most people react in the short- and long-term when their treatment is unsuccessful') and other(s) - please specify; on scales ranging from 1: strongly disagree to 7: strongly agree. The same procedure was applied to measure perceived barriers with 11

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barrier statements (e.g., 'patients may not be emotionally prepared to contemplate the possibility of treatment being unsuccessful'). The list of benefits and barriers was developed by the research team based on a systematic review of adjustment to EoT (Gameiro & Finnigan, 2017) and research on end-of-life counselling (Boulton et al., 2001; Brighton & Bristowe, 2016; Burns, 2004; Clayton et al., 2005). Cue to action: having completed the second unsuccessful cycle or starting/undergoing the third (recommended number of cycles; NICE, 2017) or higher cycles of treatment after previous attempts being unsuccessful, under the assumption the third cycle would cue patients to the possibility of EoT.

Questions assessing the TPB variables followed Ajzen (2006) guidelines. Attitudes: participants were asked to rate how beneficial and useful EoT preventive care is on scales ranging from 1: extremely harmful/useless to 7: extremely beneficial/useful. Social norms: participants were asked to rate seven statements (e.g., 'I think my partner would want us to be counselled in advance about the possibility of treatment being unsuccessful') on scales ranging from 1: strongly disagree to 7: strongly agree. Perceived behavioural control: participants were asked one question about the difficulty of receiving EoT preventive care on a scale ranging from 1: extremely difficult to 7: extremely easy, and another asking them to rate three statements (e.g., 'I am confident that I know how to access counselling about the possibility of treatment being unsuccessful') on scales ranging from 1: strongly disagree to 7: strongly agree.

Willingness and Preferences to Receive Specialised Psychosocial Care in the Aftermath of EoT. The survey stated that 'unsuccessful treatment' happens when 'none of the IVF/ICSI treatment cycles attempted result in pregnancy'. For simplicity, the terminology used in the survey was psychological support. Participants were asked whether they would be interested in receiving psychological support in the case their treatment was unsuccessful

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(no, yes), when they may feel prepared to start receiving it (open-ended question), how they would like to receive it (individual or couple sessions, group sessions with other people/couples in the same situation, both, and other(s) – please specify; multiple responses allowed) and in what format(s) (online, in-person in the fertility clinic, in-person outside the clinics, it is not important, and other(s) – please specify; multiple responses allowed).

Procedure

The survey was posted online using the Qualtrics software (Qualtrics, Provo, Utah, USA) and distributed via social media adverts (e.g., Facebook, Instagram, Twitter) between April 2021 and January 2022. A gatekeeper letter with a direct link to the survey was sent to fertility charities (e.g., Fertility Network in the UK [FNUK] and Associação Portuguesa de Fertilidade [APF] in Portugal) and social influencers in the field (asking whether they would distribute the survey via social media). Participants were presented with information and consent forms by clicking the survey link. No approach was used to prevent ‘multiple participation’, but interrupted surveys had to be completed within a week of the last input. At the end of the survey, participants had the opportunity to enter a raffle of five £30 vouchers (emails provided were not linked to survey responses) and were presented with a debrief, which included links to support resources.

Ethical Approval and Considerations

The Ethics Committees of the School of Psychology, Cardiff University, Cardiff, United Kingdom (EC.20.11.10.6111RA), and the Instituto de Saúde Pública da Universidade do Porto, Porto, Portugal (ISPUP; CE21177) provided approval. Participants were informed in advance that some of the survey questions could be unpleasant as these focused on the possibility of treatment ending without children. To minimise distress patients were

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informed they could skip questions or quit the survey at any point. They were also informed they could access information on how to access support at the end of the survey (debrief). Finally, all the research team members were accredited psychologists, and their contacts were made available to participants.

Data Management and Analysis

Descriptive statistics were used to describe the sample's sociodemographic characteristics and treatment history. To investigate participants' experiences of having received and willingness and preferences to receive EoT psychosocial care (preventive or in the aftermath of EoT), descriptive statistics on quantitative data were reported, and thematic analysis on data from open-ended questions was conducted.

To identify common factors from the pre-defined list of benefits and barriers statements of receiving EoT preventive psychosocial care, two principal axis factor analyses with direct oblimin rotation were conducted.

To identify factors associated with patients' willingness to receive EoT preventive care, two multivariate logistic regression analyses were performed with the willingness to receive EoT preventive care (no, yes) as the dependent variable. Model 1 included the variables of the HBM (susceptibility, severity, common factors identified for benefits and barriers, cues to action), and Model 2 included the variables of the TPB (attitudes, norms, perceived behaviour control) as independent variables. These theories were tested separately because that is a common practice that allows meta-synthesis of effect sizes across studies and determines the explanatory power of each theory. The models were adjusted for those sociodemographic characteristics and treatment history variables associated with

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participants' willingness to receive EoT preventive care. Statistics were standardised beta coefficients (β), SE, and odds ratios (OR) with 95% confidence intervals (95% CI).

Thematic analysis followed Braun and Clarke (2006) recommendations. This approach assumes a flexible epistemological position but offers a systematic and comprehensive framework that allows a detailed account of the data. The author adopted a critical realist epistemological and ontology position by limiting the extent of the research interpretation of the participants' experiences (Braun & Clarke, 2006). M.S.-L. and S.G. familiarised themselves with the data. Using an inductive approach, M.S.-L. systematically set initial codes (i.e., descriptive meaning labels) for each codable text segment across the entire data set. After, M.S.-L. organised these codes into sub-themes and main themes (i.e., more abstract representations of similar ideas). The team met several times during this inductive process to discuss the process (at the level of the coded data extracts), and disagreements on interpretation were discussed until consensus was achieved. When deemed necessary, themes were reviewed and refined to better integrate consensus in the team.

The prevalence of each main theme was determined by the number of different participants who endorsed the theme across each question. The main themes were presented with a detailed description and illustrative verbatim quotes and referenced by participant number (P). Portuguese quotes were translated into English, '(...)' indicates part of the quote was omitted as it did not add relevant information, and '[text]' indicates additional text was added to ease understanding.

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Results

Participants

Out of 651 people accessing the survey, 451 (69.3% acceptance rate) consented to participate. From these, 100 did not complete half of the survey questions, and nine did not report on the primary outcome variable (willingness to receive EoT preventive care). The final sample consisted of 342 participants (75.8% completion rate). Those who did not complete the survey did not differ from those who did in any sociodemographic and treatment variables, apart from parenthood status, whereby the latter were more likely to not have children.

Table 2.1 describes participants' sociodemographic characteristics and treatment history.

Participants were, on average, 36 years old, women, and most resided in Portugal and the UK. On average, they were undergoing treatment for two years. Most had performed at least one IVF/ICSI cycle, with a minority (6.5%) having achieved a live birth. Participants reported a very strong desire for parenthood, and more than half were willing to contemplate non-treatment options to achieve it, mainly adoption ($n=168$; 88.4%).

Table 2.1 Descriptive statistics of sociodemographic characteristics and treatment history for the total sample, and according to willingness to receive EoT preventive care

	Total (N=342)	Not willing to receive EoT preventive care (n=23)	Willing to receive EoT preventive care (n=319)	(χ^{2b} /t)
Sociodemographic characteristics				
Age (in years) <i>M(SD)</i> [interval range]	35.65(4.13) [25-51]	36.00(4.46) [25-42]	35.63(4.11) [26-51]	0.42
Women^a <i>n</i> (%)	338(99.12)	22(100.00)	316(99.06)	0.21
Country of residence <i>n</i> (%)				
Portugal	205(59.94)	8(34.78)	197(61.76)	9.25*
United Kingdom	130(38.01)	13(56.52)	117(36.68)	
Other (Angola, Germany, Greece, Ireland, Luxemburg, Sweden, Thailand)	7(2.05)	2(8.70)	5(1.57)	
University education^a <i>n</i> (%)	274(80.59)	20(86.96)	254(80.13)	0.64
Employed <i>n</i> (%)	326(95.32)	21(91.30)	305(95.61)	0.89
In a relationship <i>n</i> (%)	332(97.08)	22(95.65)	310(97.18)	0.18
Duration (in years) <i>M(SD)</i> [interval range]	9.94(4.76) [0-23]	9.85(5.01) [0-18.50]	9.94(4.75) [0-23]	-0.09
Treatment history				
Treatment stage^a <i>n</i> (%)				
Waiting list to initiate an IVF/ICSI cycle	94(27.57)	7(30.43)	87(27.36)	2.43
Undergoing an IVF/ICSI cycle	68(19.94)	7(30.43)	61(19.18)	

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Completed an IVF/ICSI cycle within the previous six months without achieving a pregnancy	179(52.49)	9(39.13)	170(53.46)	
Time undergoing treatment^a (in years)	2.12(2.11)	2.55(2.34)	2.09(2.10)	1.00
<i>M(SD)</i> [interval range]	[0-12]	[0-8.25]	[0-12]	
Number of IVF/ICSI cycles performed^a				
<i>n</i> (%)				
0	96(28.15)	5(21.74)	91(28.62)	3.36
1-3	200(58.65)	12(52.17)	188(59.12)	
+3	45(13.20)	6(26.09)	39(12.26)	
Achieved a live birth with treatment	16(6.53)	3(16.67)	13(5.73)	3.27
<i>n</i> (%)				
Childless <i>n</i> (%)	295(86.26)	19(82.61)	276(86.52)	0.28
Parenthood desire <i>M(SD)</i> [1-10]	9.61(0.93)	9.78(0.42)	9.60(0.96)	1.79
	[2-10]	[9-10]	[2-10]	
Contemplate other pathways for parenthood (e.g., adoption; gametes donation) <i>n</i> (%)	190(55.56)	13(56.52)	177(55.49)	0.01

Note. *M*=mean; *EoT*=end of unsuccessful fertility treatment.

^aValid percentages were reported (1-2 participants did not report on these variables).

^bFisher(-Freeman-Haton)'s Exact test was used when cells expected count less than five.

**p*<.05

Experiences of Having Received EoT Preventive Care

A total of 119 (34.9%) participants reported having received EoT preventive care. From those who provided textual data ($n=115$), qualitative analysis showed most referred having received it from their fertility consultant ($n=95$, 82.6%), 11 (9.6%) from their psychologist, seven from their counsellor (6.1%), and nine (7.8%) from their nurse. Thirteen (11.3%) referred they discussed the possibility of EoT with their partner, family, or friends. Thematic analysis extracted three main themes about topics addressed. See Appendix B for themes' detailed descriptions and illustrative quotes. Briefly, most participants who provided textual responses ($n=112$) received general and bespoke information about treatment low success rates ($n=68$, 60.7%). Some participants endorsed a brief acknowledgement of the possibility of EoT, though the focus of the discussion was on achieving a live birth ($n=44$, 39.3%). A minority referred to having the opportunity to discuss the implications of EoT (e.g., alternative paths for parenthood, adverse complications during treatment) ($n=29$, 25.9%).

Willingness and Preferences to Receive EoT Preventive Care

Willingness to Receive EoT Preventive Care. The vast majority ($n=319$, 93.3%) of participants were willing to receive EoT preventive care. Participants who were willing and not willing to receive it did not differ in any sociodemographic and treatment history variables, apart from the country. The proportion of participants willing to receive EoT preventive care was higher in Portugal than in the UK.

Appendix C presents participants' preferences towards EoT preventive care.

Who Should Provide EoT Preventive Care. The HCP with whom most participants would feel more comfortable receiving EoT preventive care was their

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counsellor/psychologist/psychiatrist/ ($n=268$, 78.6%) or consultant (gynaecologist/obstetrician (GYN/OBS); $n=182$, 53.4%).

What Should EoT Preventive Care Address and How. Thematic analysis of aggregated data about what topics participants would like to address in EoT preventive care and its valued features revealed six main themes, described in detail with illustrative quotes in Table 2.2. The first extracted theme reflected a high need to discuss how to process loss and sustain a hopeful outlook towards the future, specifically the need to be informed about *'coping strategies'* (P40) to *'manage my [patients'] feelings around this'* (P13). The second theme reflected participants valued receiving an overview of treatment that acknowledges adverse outcomes. Such overview should provide information about individual prognosis (based on sociodemographic and medical circumstances), treatment procedures, and their possible adverse outcomes, such as *'low numbers of eggs collected, low numbers fertilised or the potential for having no embryo to transfer. I would have felt much more prepared emotionally if we had been given this information'* (P156). The third theme showed that EoT preventive care should also offer and inform patients about available support (*'what to do, where to drive, which professionals to contact'*, P23) and help them to contemplate *'other ways/possibilities of being able to fulfil the desire to be a mother'* (P49). The fourth theme reflected a need for EoT preventive care to be easily accessible as a part of routine care *'without us [patients] having to do all the research and maybe struggle to get the counselling'* (P131) and offered in an empathic, open, and realistic way. The final two themes were less prevalent and reflected an overall dissatisfaction with the EoT preventive care received, particularly about *'the mental and emotional side of treatment and treatment failure (...) extremely poor over our [patients'] journey'* (P105), and an ambivalence or unwillingness towards what EoT preventive care should address.

Table 2.2 Themes relating to topics to address in EoT preventive care and its valued features (n=271)

Theme, description (n, %)	Illustrative quotes
<p>Process loss and sustain a hopeful outlook towards the future (n=163, 60%): discussing coping strategies to use if treatment does not work, managing expectations about the treatment pathway, and fostering a hopeful outlook towards the future. To a lesser extent, acknowledging the emotional/relational burden of treatment and managing communication with others.</p>	<p><i>'How to cope with the loss' (P62); 'How to manage own expectations (...)' (P98); 'I'd like to be given some hope that you will survive unsuccessful treatment and more on what feelings to expect during and after treatment' (P211); 'Definitely coping strategies with failure, my first embryo transfer was unsuccessful, and I was absolutely broken when it failed' (P40); 'Coping with the couple's guilt and expectations, how to manage the family members' expectations, how to deal with society and its questions (...)' (P140).</i></p>
<p>Overview of treatment that acknowledges adverse outcomes (n=104, 38%): discussing the patient's treatment plan in detail: individual prognosis, treatment procedures and all possible adverse outcomes. Endorsed to a lesser extent, discussing why previous cycle attempts were unsuccessful and factors known to impact its outcome (e.g., lifestyle behaviours).</p>	<p><i>'Facts and figures that could relate to your specific situation' (P169); '(...)' Instead of talking about what it will be like if everything goes well, it should also be addressed what can actually go wrong' (P14); 'What we felt we weren't given enough detail on is poor outcomes before we even got to transfer, such as low numbers of eggs collected, low numbers fertilised or the potential for having no embryo to transfer. I would have felt much more prepared emotionally if we had been given this information' (P156).</i></p>
<p>Support sources and alternative life goals (n=101, 37%): offering available support, particularly psychosocial support and, over the whole treatment journey and, discussing other routes for parenthood and alternative life goals (donation, surrogacy, adoption, childfree lifestyle).</p>	<p><i>'What to do, where to drive, which professionals to contact' (P23); '(...) I think it would be beneficial if this process were always followed by a psychologist (...)' (P42); 'Other ways/possibilities of being able to fulfil the desire to be a mother' (P49); '(...) how can I live my happy life without children' (P79).</i></p>

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Integrated in routine care (n=89, 33%): easily accessible as part of routine care. Delivered in a private and safe place by an expert in fertility in an empathic, open, and realistic way. Preferences to be delivered individually (with the partner, when there is one), but also valued the opportunity to listen and share their experiences with other fertility patients.

Dissatisfaction with EoT preventive care received (n=35, 13%): some participants made comments about the EoT preventive care received. Overall, they felt they were not prepared for the adverse outcomes of treatment, that clinics tended to foster unrealistic optimistic expectations and provide a lack of support throughout their fertility journey.

Ambivalence and unwillingness towards EoT preventive care (n=22, 8%): Some participants perceived they were already aware of the possibility of treatment not working or that it would be too painful to approach it and, therefore, were not willing to do so.

'Being given the option before the start of the treatment without us having to do all the research and maybe struggle to get the counselling (...) it would be easier to go through it' (P131); 'Approachable staff, who have empathy to how hard the process is (...)' (P105); 'to talk to (...) someone who became a parent through adoption, or someone who is child-free after infertility and can speak from personal experience' (P203).

'(...) we are not prepared by a professional to overcome these situations (...)' (P64); '(...) clinics supporting so much more with the mental and emotional side of treatment and treatment failure. I feel this has been extremely poor over our journey' (P105); '(...) IVF is sold as a near magic solution (...)' (P205).

'I don't know how anyone could make that prospect better but more information on other options such as egg donors etc' (P241). 'It is tricky, to be honest, the pregnancy losses (clomid pregnancies) have been so hard to deal with (...) front loading discussion about failure too much would just stop you from starting' (P103).

Note. Thematic analysis was done in aggregated data from what participants would like to address in a EoT preventive care session and what could make receiving EoT preventive care easier for them.

EoT=end of unsuccessful fertility treatment; P=participant number.

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Offering EoT preventive care in an individual ($Mean=6.37$, $SD=1.17$, range: 1-7) or couple session ($Mean=6.34$, $SD=1.24$, range: 1-7) was considered extremely useful and significantly more so ($F=215.69$, $p<0.001$, $\eta_p^2=0.437$) than other types of delivery formats (self-help resources, moderated, or peer group sessions).

When should EoT Preventive Care be provided. The three most prevalent reasons to receive EoT preventive care were bad prognosis ($n=270$, 79.4%), being distressed ($n=250$, 73.5%), and having difficulties accepting the possibility of EoT ($n=242$, 71.2%). The preferred time for EoT preventive care was before initiating the first IVF/ICSI cycle ($n=250$, 73.3%). Most participants ($n=211$) provided reasons for their choice. Thematic analysis of the textual data provided revealed four main themes about why this was the preferred moment. Themes reflected a high need for an initial comprehensive picture of treatment that can support patients in making more informed decisions from the start of treatment (*'the earlier you have all the information, the better in order to make educated decisions'*, P153, $n=106$; 50.2%), to be better prepared to cope with unsuccessful cycle attempts and treatment ($n=90$; 42.7%), to foster realistic expectations about the outcome of treatment (*'not to have such a big shock, as we, couples, go in with many expectations and dreams and in the end, we literally take it with a bucket of ice water'*, P120, $n=75$; 35.5%), and to understand how to access psychosocial support over the process ($n=21$; 10.0%). Around two in every 10 participants ($n=59$; 17.3%) only wanted to receive EoT preventive care after their first unsuccessful IVF/ICSI cycle or before initiating their last cycle. Thematic analysis revealed they considered EoT preventive care should be timed with the experience of adverse outcomes as the need for support is higher at these moments of distress and doubt. These participants also feared discussing EoT earlier could negatively impact their optimism and engagement with treatment.

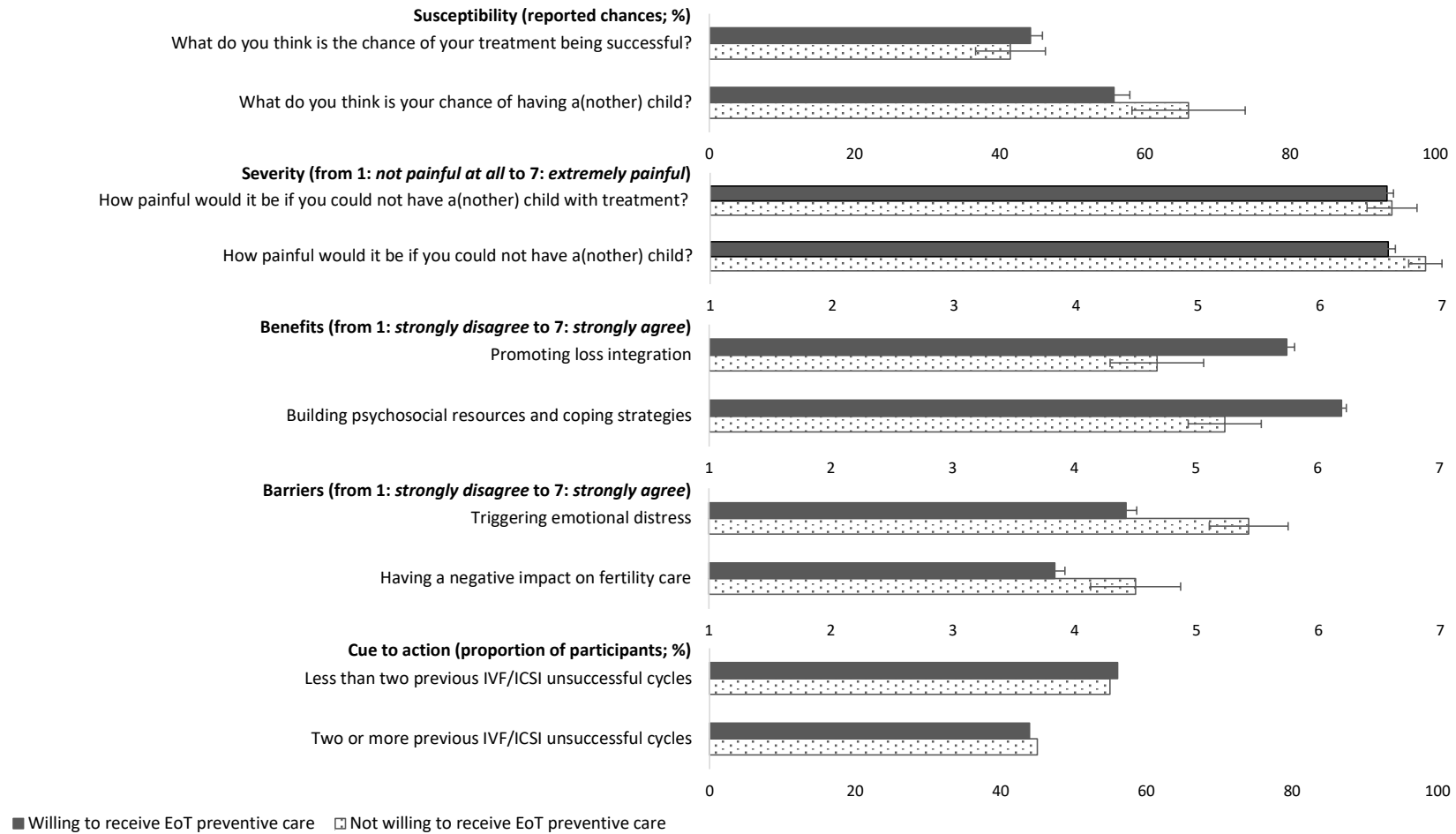
Factors Associated with Willingness to Receive EoT Preventive Care

According to the Health Belief Model. Figure 2.1 presents descriptive statistics for the HBM factors for participants willing and not willing to receive EoT preventive care. Appendix D and E present results of the factor analyses performed on benefits and barriers towards EoT preventive care. The factor analysis performed on the list of 18 benefits extracted two factors that explained 50% of the total variance. These were: promoting loss integration (nine items, Cronbach's $\alpha=0.89$, $Mean=5.68$, $SD=1.09$, range: 1.33-7; e.g., 're-examine my hopes and motivations to become a parent') and building psychosocial resources and coping strategies (nine items, Cronbach's $\alpha=0.87$, $Mean=6.14$, $SD=0.74$, range: 2.11-7; e.g., 'discuss how to cope with difficult thoughts and emotions in the case of treatment being unsuccessful'). The factor analysis performed on the list of 11 barriers extracted two factors that explained 55% of the total variance. These were: triggering emotional distress (six items, Cronbach's $\alpha=0.89$, $Mean=4.48$, $SD=1.41$, range: 1-7; e.g., 'patients may feel more anxious or sad during treatment') and having a negative impact on fertility care (five items, Cronbach's $\alpha=0.83$, $Mean=3.87$, $SD=1.38$, range: 1-7; e.g., 'patients may think that expressing concerns or negative emotions about treatment may prevent them from doing treatment').

Table 2.3 presents the multivariate logistic regression analysis. Results testing associations between factors of the HBM and willingness to receive EoT preventive psychosocial care explained 27.54% (Nagelkerke R^2) of the variance in willingness and showed that two factors predicted willingness: higher perceived benefit of building psychosocial resources and coping strategies (OR 3.40, 95% CI 1.23-9.38) and lower perceived barrier of triggering negative emotions (OR 0.49, 95% CI 0.24-0.98).

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Figure 2.1 Descriptive statistics for the HBM factors for participants willing and not willing to receive EoT preventive care. Higher scores indicate lower susceptibility, higher severity, and more perceived benefits and barriers. Error bars indicate 95% confidence interval around the mean



Note. HBM=Health Belief Model; EoT=end of unsuccessful fertility treatment.

Table 2.3 Multivariate logistic regression analysis testing associations between factors of the HBM and TPB variables, respectively, and willingness to receive EoT preventive care

	β	SE	OR	95% CI	
				Lower	Upper
Model 1. Health Belief Model $\chi^2(9)=22.31, p=0.008, \text{Nagelkerke } R^2=0.275$					
Susceptibility	0.01	0.02	1.01	0.98	1.04
Severity	-0.21	0.49	0.81	0.31	2.10
Benefits - promoting loss integration	0.27	0.37	1.31	0.64	2.70
Benefits - building psychosocial resources and coping strategies	1.22	0.52	3.40*	1.23	9.38
Barriers - triggering emotional distress	-0.72	0.36	0.49*	0.24	0.98
Barriers - having a negative impact on fertility care	0.06	0.29	1.06	0.60	1.88
Cue to action - number of unsuccessful cycles in the past ^{a,b}	-0.26	0.69	0.77	0.20	2.97
Model 2. Theory of Planned Behaviour $\chi^2(5)=63.97, p<0.001, \text{Nagelkerke } R^2=0.446$					
Attitudes	1.20	.23	3.32***	2.12	5.20
Subjective norms	0.53	0.34	1.71	0.87	3.34
Perceived Behaviour Control	-0.24	0.26	0.79	0.47	1.32

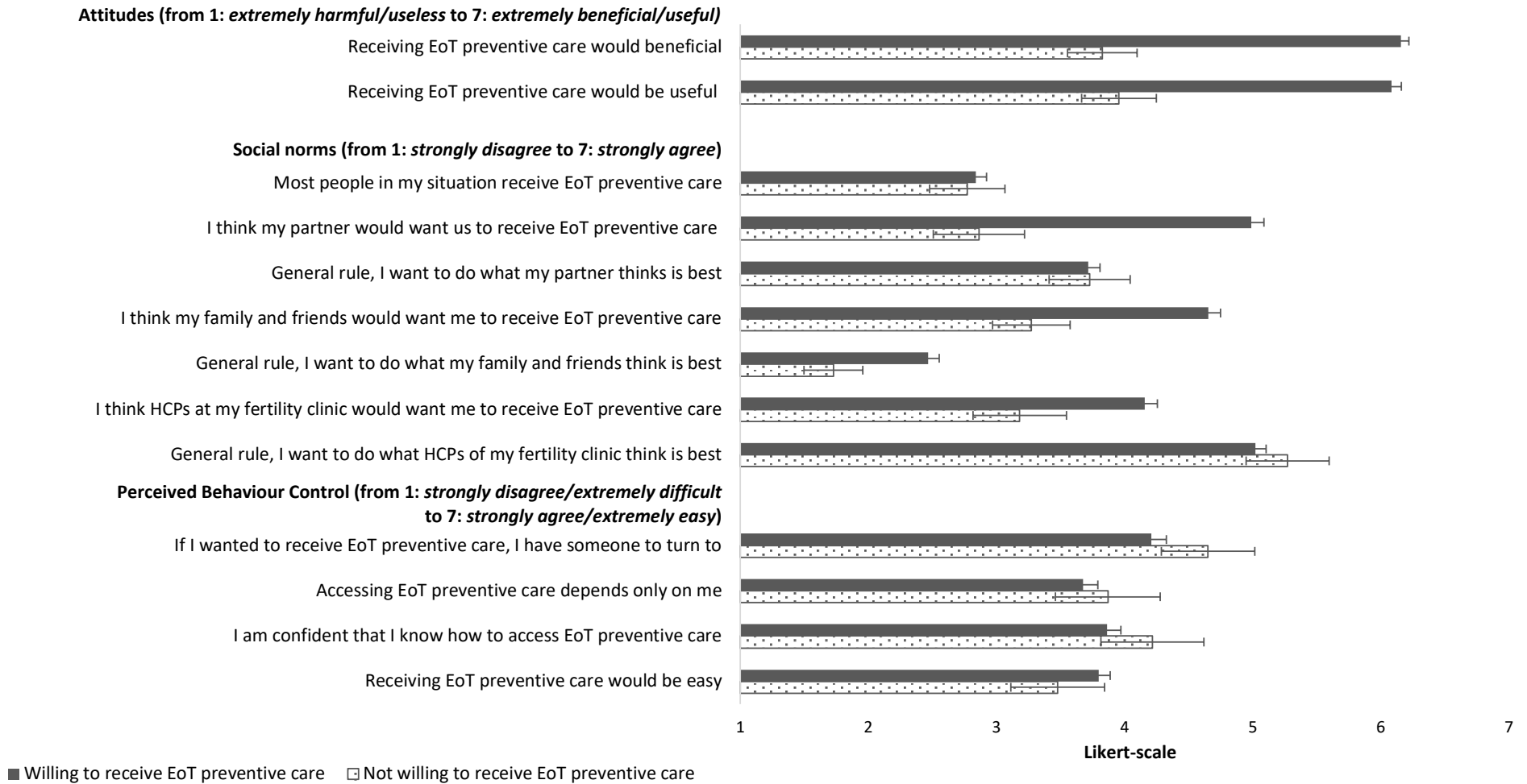
Note. Both models were adjusted for country of residence; HBM=Health Belief Model; TPB=Theory of Planned Behaviour; EoT=end of unsuccessful fertility treatment; β =beta coefficients; OR=odd ratios. ^a0: less than two IVF/ICSI unsuccessful cycles in the past. 1: two or more unsuccessful IVF/ICSI cycles in the past. ^bParticipants who did achieve a live birth with treatment in the past were excluded from this analysis. * $p<.05$, *** $p<.001$

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According to the Theory of Planned Behaviour. Figure 2.2 presents descriptive statistics for the TPB factors for participants willing and not willing to receive EoT preventive care. Results from the logistic regression testing associations between factors of the TPB and willingness to receive EoT preventive care (Table 2.3) explained 44.64% (Nagelkerke R^2) of the variance in willingness and showed that one factor predicted willingness: stronger positive attitudes about EoT preventive care being beneficial and useful (OR 3.32, 95% CI 2.12-5.20).

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Figure 2.2 Descriptive statistics for the TPB factors for participants willing and not willing to receive EoT preventive care. Higher scores indicate more of the construct. Error bars indicate 95% confidence interval around the mean.



Note. TPB= Theory of Planned Behaviour; EoT=end of unsuccessful fertility treatment; HCPs=healthcare professionals.

Open-ended responses about perceived benefits and barriers. Thematic analysis of responses about perceived benefits and barriers of EoT preventive care revealed five and three main themes, respectively, presented in Table 2.4. Overall, the prevalence of benefits-related themes was higher than barriers-related themes. Regarding benefits, the most prevalent theme reflected a perception that EoT preventive care could help patients to better cope with EoT (*'Having information and tools that would allow me to accept this possibility in a constructive and healthy way'*, P150), with some participants endorsing that *'it would be beneficial not to suffer so much in the end (...) in case it doesn't work'* (P252). Two other themes reflected EoT preventive care could help patients make more informed and timelier decisions about their treatment plan and process, including available future options (*'If I would have been braced for the reality, I would have done things differently'*, P175) and manage realistic expectations about their treatment journey and its outcome. A minority of participants endorsed two other themes reflecting EoT preventive care could also help them to better cope with the emotional burden of treatment (in particular, *'being able to cope with stress and anxiety'*, P117) and provide a safe space to discuss concerns (*'Patients feeling they can approach and talk to the clinic when it fails rather than feeling alone'*, P105). Regarding EoT preventive care barriers, the most prevalent theme reflected there were no perceived barriers, or these were not relevant, as most participants *'don't see a downside (...) it's putting everything on the table'* (P59). Two other themes reflected EoT preventive care could hinder patients' engagement with treatment, as it *'can push people too far out of the 'hopeful' feeling'* (P111) and *'discourage the process'* (P83), and it could trigger emotional distress and impact patients' well-being during treatment.

Table 2.4 Themes relating to perceived benefits (n=213) and barriers (n=163) of receiving EoT preventive care

Theme, description (n, %)	Illustrative quotes
Perceived Benefits	
<p>Better cope with EoT (n=136, 64%): help patients feel more equipped to cope with EoT (in particular with difficult loss-related emotions: frustration, sadness, guilt, helplessness), with many adding it would reduce the emotional impact (n=41).</p>	<p><i>'(...) being able to prepare ourselves in the best way for its occurrence, physically and psychologically' (P27); 'Having information and tools that would allow me to accept this possibility in a constructive and healthy way' (P150); '(...) I think we should have faith and hope that everything will be fine but at the same time be prepared in case it doesn't work and doesn't look like the world has fallen on top of us (...)' (P252).</i></p>
<p>Make more informed and timely decisions (n=55, 26%): help patients be aware of the possibility of EoT and make more informed decisions about their treatment plan, including all available options and future alternatives.</p>	<p><i>'(...) would be in a better position to give informed consent (...)' (P246); 'To seek other options earlier (...)' (P132); 'If I would have been braced for the reality, I would have done things differently (...) I would have elected to prioritise other things and would have made IVF for round my life if I know the facts' (P175).</i></p>
<p>Help managing expectations (n=43, 20%): help patients better manage expectations about the treatment journey and its outcome in a realistic way.</p>	<p><i>'Do not set expectations that are too high or even unrealistic' (P130); 'It would help build resilience and keep a reality check on how challenging treatment is and how low the success rates can be' (P160); 'Not having much hope not to suffer so much' (P221).</i></p>
<p>Better cope with the emotional burden of treatment (n=33, 15%): patients would feel more prepared to face their treatment journey, reducing the emotional burden it triggers.</p>	<p><i>'Not having to spend 15 days with uncertainty and fears' (P63); '(...) being able to cope with the stress and anxiety' (P117); 'A better mindset to going into something that will change your life' (P141).</i></p>

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Have a safe place to discuss concerns (n=19, 9%): freely discuss and express their emotions and concerns in a safe and empathic environment, with someone and somewhere where to turn to when and if needed.

'(...) feeling supported during the process' (P56); '(...) having someone to talk to' (P96); '(...) Patients feeling they can approach and talk to the clinic when it fails rather than feeling alone' (P105); '(...) Knowing where to turn to if unsuccessful or a loss and already have a relationship with that person (...)' (P171).

Perceived Barriers

No relevant disadvantages (n=66, 40%): perception there are no disadvantages from EoT preventive care (n=53), or if any, does not outweigh the benefits (n=13).

'I don't see a downside. I don't even consider it pessimism. I think it's putting everything on the table (...)' (P59); 'I understand it could be scary for some, but from personal experience I don't feel we were prepared properly or even at all, so don't feel there would be any disadvantages' (P105).

Hinder engagement with treatment (n=59, 36%): 'crushing' patients' hope about a successful treatment outcome and preventing them from continuing treatment. Endorsed to a much lesser extent, EoT preventive care could be unnecessary, as, for some, treatment would succeed.

'Preparing for a negative outcome can discourage the process' (P83); 'May decide it's not worth the risk/cost but regret it later' (P97); 'Can push people too far out of the 'hopeful' feeling' (P111); 'May put people off treatment, which could otherwise may prove to be successful (...)' (P98).

Triggering emotional distress (n=48, 29%): cause (unnecessary) distress or trigger difficult emotions (fears, helplessness), negatively impacting their overall well-being.

'Only the presence of the 'shadow' that you won't make it' (P84); 'Might cause panic and negative feelings, but they're part and parcel of fertility treatment anyway' (P109); 'anxiety, insecurity, fear' (P118).

Note EoT=end of unsuccessful fertility treatment; P=participant number.

Willingness and Preferences About Specialised Psychosocial Care in the Aftermath of EoT

Almost all participants ($n=267$; 93.36%) reported they would be interested in receiving specialised psychosocial care in the aftermath of EoT. Thematic analysis showed most participants would feel prepared to start receiving it immediately, in the first two weeks after EoT ($n=176$, 69.84%), with some stressing the importance of receiving it before and during the whole treatment journey. A minority ($n=37$, 14.68%) reported they would only feel prepared to receive this care *'after a few weeks'*, in particular one month after EoT. More than half of the participants would like to receive specialised psychosocial care in individual/couple sessions ($n=186$; 65.72%) or in combination with group sessions (with other people/couples in the same situation; $n=119$; 42.05%), with only a minority reporting they would like such support exclusively in group sessions ($n=21$; 7.42%). Most would like this care to be delivered face-to-face, regardless of being in ($n=149$; 52.65%) or outside ($n=139$; 49.12%) the clinic and around one-third ($n=97$; 34.28%) would like to receive it online. For more than a quarter of the participants ($n=80$; 28.27%), the delivery mode was not important.

Discussion

Nine in 10 patients want to discuss the possibility of treatment ending unsuccessfully early on in their treatment pathway and want to be supported immediately, if indeed this possibility comes to happen. Patients consider receiving EoT preventive care as extremely beneficial and useful and consider current approaches to do so as insufficient. Patients expect EoT preventive care to empower them to discuss the 'bigger picture' of what treatment entails and how it fits with their overall goal of achieving parenthood, which implies considering the psychosocial implications of all possible treatment outcomes. Patients report barriers to receiving this care, such as it negatively impacting their

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engagement with treatment or triggering negative emotions but consider these do not outweigh expected benefits and may be minimised if it is offered according to their preferences. Most patients would like to be offered specialised psychosocial care in the first two weeks after EoT in a face-to-face individual/couple format or in combination with a group format. Results suggest that a normative change towards routine provision of EoT preventive care may be desirable and support the provision of psychosocial care after EoT.

Results show nine in every 10 patients want to receive EoT preventive care early in their treatment pathway. This high willingness contrasts with current provision, as only 35% of patients recalled having received it. Patients' high willingness to receive this care is not dependent on their personal and treatment circumstances, nor on perceptions that treatment is unlikely to work for them. Instead, willingness reflects a positive evaluation of the value of EoT preventive care and careful consideration of its pros and cons, with perceived benefits outweighing anticipated adverse effects. These findings were consistently observed across patients' responses to theory-informed (HBM, TPB) quantitative and open-ended (qualitative) questions. Participants listed and endorsed multiple perceived benefits of engaging in EoT preventive care, from enabling them to better cope with EoT, if it happens, make more informed decisions during treatment, better manage expectations, and have a safe place to discuss concerns. A smaller proportion of participants named disadvantages in engaging with EoT preventive care, namely lessening their optimism towards treatment and triggering anxiety, with many stressing they did not consider these outweighed the benefits. These results align with existing evidence showing patients value all types of information, including about adverse outcomes, and are willing to discuss these from the start of treatment (Dancet et al., 2010; Harrison et al., 2021; Peddie et al., 2005). The fact that many patients are willing to receive EoT preventive care from different fertility

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staff, and not uniquely from a mental healthcare professional, supports the conceptualisation of EoT preventive care within holistic biopsychosocial and patient-centred models of care and indicates it should be delivered as part of routine psychosocial care by all clinic staff who have direct contact with patients (Gameiro et al., 2015).

Patients also expressed a clear agenda about what EoT preventive care should address to achieve its perceived benefits. Such an agenda shows patients want to discuss the ‘bigger picture’ of treatment and how it fits with their overall goal of achieving parenthood. Responses suggest that a purely medical discussion of treatment is insufficient and that patients need to consider the psychological and existential implications of all possible treatment outcomes, so they can consider and attribute personal meaning to the different pathways they choose in the pursuit of parenthood, which is not limited to treatment (Leone et al., 2017). Such an approach has been reported as conducive to better adjustment in the case of EoT (Gameiro & Finnigan, 2017).

EoT preventive care was perceived as an opportunity to discuss this ‘bigger picture’ of treatment, seen as essential to manage expectations, make decisions, and cope with treatment and its potential unsuccessful end in a hopeful way. This is consistent with motivational theories highlighting that hopeful outlooks are not only achievable by focusing on ‘desired’ outcomes but also by fostering perceived agency to cope with ‘undesired’ outcomes (Snyder, 2002). This alternative view of being (or remaining) optimistic in the face of negative outcomes is also visible in research showing many patients arrive at clinics already planning to do multiple cycles (da Silva et al., 2020). Participants want to discuss such plans prior to starting treatment (Harrison et al., 2022; Harrison et al., 2021), and alternative options different from doing more cycles, such as ending treatment or pursuing alternative parenthood paths (in the study’s sample, 49% considered adoption), which can at

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times be the most congruent choice with patients' personal values (Peddie et al., 2004). Indeed, qualitative research suggests that fostering optimism only by focusing on achieving pregnancy (i.e., 'desired' outcome) or withholding information to protect patients can hinder their ability to sustain or reframe hope when pregnancy is not achieved (Peddie et al., 2005). It can even intensify decisional conflict around ending treatment in patients who saw themselves as open to a childfree lifestyle prior to engaging with it (Carson et al., 2021). Considering these findings and the significant proportion of patients who do not achieve pregnancy, even with multiple treatment cycles, it is crucial to gain a better balance between attention paid to 'desired' and 'undesired' outcomes to better ease patients' adjustment towards both possibilities.

Most patients favoured receiving EoT preventive care even though they agreed it might reduce their engagement with treatment or trigger negative emotions. Difficult discussions are common in healthcare settings, but patients seem resilient to have these, for instance, even about challenging topics such as end-of-life care. Even in this extreme context, acknowledging the likelihood and planning for adverse outcomes contributes to positive perceptions of care and better well-being (Brighton & Bristowe, 2016; Leung et al., 2012). While these data should reassure HCPs that they are meeting patients' preferences when approaching 'undesired' outcomes, it is important to consider how to make these discussions easier for everyone involved. From the patients' perspective, such discussion should happen in a private and safe setting and be approached in a sensitive manner that considers their individual circumstances. Patients prefer to have face-to-face discussions that include their partners (when there is one) but are open to use self-help educational resources. Progressive approaches that empower patients to engage with the possibility of treatment not working at their own readiness and pace are seen as helpful (Rowbottom et

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al., 2022). The present results show that of crucial importance is that such discussions empower patients to sustain a hopeful outlook towards their future by building confidence that, as most patients who go through fertility treatment do (Gameiro & Finnigan, 2017), they can cope with any (desired or undesired) outcome. In what concerns a possible negative outcome, this can be achieved by providing information about normative grief reactions and long-term (healthy) adjustment, addressing concerns and misconceptions, and providing coping resources and support contacts, all of which should empower patients to be flexible about alternative plans ('Plan B').

Delivering EoT preventive care according to patients' preferences can be challenging for HCPs. Therefore, it is relevant to know that there are evidence-based recommendations for approaching difficult discussions with patients, many of which provide step-by-step guidance to ensure interactions are positive and patient-centred. Examples are the SPIKES framework (i.e., a six-step protocol) for sharing bad news in fertility care (Leone et al., 2017; Mosconi et al., 2021) and fertility-specific empathic skills training (Garcia et al., 2013). It is also relevant to be aware that patients refer to specific circumstances when EoT preventive care is particularly needed, namely when facing bad prognosis, emotional distress, and when patients anticipate acceptance will be harder. Patients who start treatment exhibiting higher levels of anxiety and depression, inflexibility or lack of acceptance of a childfree lifestyle, and poor social support are at higher risk for maladjustment and may therefore benefit more from EoT preventive care (Verhaak et al., 2010).

Another issue for professional discretion is when to offer EoT preventive care. Based on the present results, it can be proposed that, prior to treatment engagement, all patients should be offered the opportunity to discuss the possibility of treatment not working at that time or when they feel prepared. For those patients who decide on a multiple-cycle

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treatment plan before starting treatment (Harrison et al., 2022), emphasis on EoT preventive care should increase as they approach the end of that plan without a pregnancy. Some have suggested elsewhere that integrating multiple-cycle panning with EoT preventive care could help prevent decisional conflict about ending treatment (Harrison et al., 2022). Furthermore, HCPs should be aware that around two in 10 patients only feel prepared to receive EoT preventive care after one unsuccessful cycle or at later stages of treatment, as these patients might have more serious concerns about EoT preventive care impacting their engagement with treatment. Finally, around one in 10 patients do not want to engage in EoT preventive care, which should be respected. The most supportive way to do this is to make oneself available to engage in this discussion if patients change their minds and offer resources they can choose to engage (or not) at their own time and pace (Leone et al., 2017; Mosconi et al., 2021).

Almost all patients would like to receive specialised face-to-face psychosocial care in the early aftermath of EoT. This is congruent with current recommendations from fertility guidelines and regulators (Gameiro et al., 2015; HFEA, 2023a; NICE, 2017) and align with patients' feelings of abandonment from their clinic after EoT and perceptions of lack of support sources to this end (Daniluk, 2001b; Gameiro & Finnigan, 2017; Volgsten et al., 2010). Most patients want to receive to receive this care in individual or couple sessions or in combination with group sessions. Based on previous research conducted with patients confronted with EoT, higher acceptability to receive psychosocial care in a group format might be expected when patients reach this stage (Hammarberg et al., 2001) as isolation after EoT tends to be a major experience among patients (Daniluk, 2001b; Volgsten et al., 2010) and acts as a buffer in patients' emotional response to EoT (Verhaak et al., 2005). Meta-synthesis research suggests that group-based psychosocial interventions can be more

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effective in promoting fertility patients' well-being than individual or couple interventions, although results are unclear about the size of this effect (Dube et al., 2023; Frederiksen et al., 2015). Further acceptability evaluation with EoT patients (only) is needed.

Future work should aim to better understand what would make EoT preventive care acceptable and feasible to be implemented at clinics and focus on developing resources to support fertility patients and all staff in this endeavour. While psychologists and counsellors are better equipped to deliver EoT preventive care, 53% of patients in the study sample would feel comfortable doing it with their consultant (with 15% stating they would only do it with them). Some resources are already offered by charities (e.g., FNUK developed a package for UK clinics). Future work should progress to evaluate the feasibility and efficacy of these tools in promoting adjustment during and after treatment.

Strengths and Limitations

This study is novel and targets an unaddressed need. It is theory-driven and patient-centred. The convenience sample of self-selected patients limits the generalisation of findings to the whole patient population. In particular, the sample is more representative of well-educated women interested in treatment-related issues (Benedict et al., 2019; Harrison et al., 2021; Sousa-Leite et al., 2019). Although research indicates men tend to follow their female partner's preferences, the overrepresentation of women participants limits conclusions about men's willingness to receive EoT preventive care (da Silva et al., 2020). The group of participants not willing to receive EoT preventive care was also small, which reduced the power to detect weak correlations. Future replication should use more robust designs, for instance, discrete choice experiments. This study investigated willingness to receive EoT preventive care, which does not necessarily equate to behaviour (meta-synthesis indicates moderate associations (0.44-0.47; Armitage & Conner, 2001).

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Participants' preferences about when and how to receive specialised psychosocial care in the aftermath of EoT can change as patients go through this process and reported preferences should therefore be carefully considered and only as indicative.

Conclusion

Findings reveal that patients want to have discussions with HCPs about the possibility of treatment not working for them, even when they think such discussions are challenging and want to be immediately supported if treatment ends unsuccessfully. Findings suggest a normative change is needed so that EoT preventive care and care in the aftermath of this event are offered as part of routine psychosocial care provided at fertility clinics. Future work should focus on supporting staff in this endeavour by further investigating what would make EoT care acceptable and feasible and developing and evaluating support tools for staff and patients.

CHAPTER 3 FEASIBILITY AND ACCEPTABILITY OF EoT PSYCHOSOCIAL CARE

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Introduction

Preventive psychosocial care for EoT can be helpful in providing information about common emotional reactions to validate and normalise experiences and minimise the impact of expected adverse effects (Thomas et al., 2000; Waller et al., 2014), to foster hope by promoting self-efficacy and agency in adversity (Snyder, 2002; Su & Chen, 2006) and to foster the therapeutic relationship, empowering patients to engage with timely support from their clinics after treatment ends (Gameiro et al., 2013). It can also promote patients' insight into the need for support, as many are overwhelmed by their grief reactions or, paradoxically, do not realise that they are grieving (Gameiro et al., 2013; Gameiro & Finnigan, 2017). Offering this type of care is a recommended practice across several life-threatening health contexts when the futility of treatment is acknowledged, and a shift towards discussing the implications of a negative treatment outcome happens (e.g., end-of-life discussions; Larson & Tobin, 2000). Such care was proved to be feasible, valued by patients and effective in sustaining their hope and quality of life during follow-up periods (Leung et al., 2012; Lyon et al., 2014). However, evidence suggests this is not common practice in fertility care (Carson et al., 2021; Peddie et al., 2005). Results reported in the previous chapter showed that almost all fertility patients want to receive EoT preventive care, but only a minority actually receive it (Chapter 2: Sousa-Leite et al., 2023). One barrier to this lack of provision may be that discussing possible adverse fertility outcomes is challenging for patients and HCPs because this triggers anxiety (Devroe et al., 2022; Harrison et al., 2021) and reduces motivation to undergo (more) treatment cycles (da Silva et al.,

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2016; Harrison et al., 2021). Results from the previous chapter showed that patients acknowledge that discussing EoT in advance may hinder their engagement with treatment and trigger (unnecessary) anxiety (Chapter 2: Sousa-Leite et al., 2023). However, they also considered that these barriers do not outweigh the expected benefits of such discussions and may be minimised if offered according to their preferences (Chapter 2: Sousa-Leite et al., 2023). Despite the evidence supporting the provision of EoT preventive care, little is still known about patients' and in particular HCPs' views and preferences towards such provision.

There is solid and robust evidence on the importance of supporting patients in the immediate aftermath of EoT, when and if this adverse event actually happens. To reiterate, this was referred to in the present thesis as EoT early intervention care. Such care should target psychosocial therapeutic goals known to promote patients' healthy adjustment in this context. According to the evidence provided in Chapter 1, the 3TM can be a suitable model to inform how EoT early intervention care should be provided (Gameiro & Finnigan, 2017). The 3TM identified three therapeutic goals to be targeted: (a) promoting acceptance of one's unmet parenthood goals, that is, willingness to experience the loss and the emotions and thoughts that it triggers without struggle, (b) facilitating meaning-making, that is, construction of positive meanings related to one's UPGs and re-evaluation of life values and priorities, and (c) promoting the pursuit of new life goals, that is, defining and implementing valued and fulfilment goals (Gameiro & Finnigan, 2017). According to this model, promoting a favourable social connectedness that supports patients in engaging with these therapeutic goals is also important to facilitate patients' psychosocial adjustment (Gameiro & Finnigan, 2017). Recent evidence supports the 3TM by showing positive associations between these

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three therapeutic mechanisms and mental health and well-being (Gameiro, 2019; Rowbottom et al., 2022).

Considering this evidence and following the MRC guidance (Craig et al., 2008; Skivington et al., 2021), a psychosocial intervention named Beyond Fertility was developed. Beyond Fertility is a brief face-to-face, in-person psychosocial intervention, integrating both preventive and early intervention care, aiming to support patients healthy adjusting to EoT. This intervention falls into specialised psychosocial care designed to be delivered by a mental healthcare professional. It is informed by the 3TM (Gameiro & Finnigan, 2017) and applies contextual cognitive behavioural therapeutic (CCBT) principles (Hayes et al., 2013), in particular from Acceptance and Commitment Therapy (ACT) and self-compassion (Gloster et al., 2020; Neff & Tirsch, 2013) as the underlying therapeutic framework. These principles currently gather the most convincing high-quality evidence of leading to effective psychosocial interventions and constitute an adequate framework to target the 3TM mechanisms of change (Hayes et al., 2013). Beyond Fertility encompasses one individual/couple therapeutic session while patients prepare to initiate their last fertility treatment cycle (EoT preventive care) and one individual/couple and five weekly group sessions starting one to two weeks after EoT (EoT early intervention care).

To the author's knowledge, Beyond Fertility is the first face-to-face psychosocial intervention being developed to support patients adjusting to EoT. Considering the evidence presented, combining a preventive and intervention component seems to be a solid aspect of Beyond Fertility. However, it is a novel feature, as most interventions in fertility care (primarily delivered during treatment) are solely interventive (Dube et al., 2023; Frederiksen et al., 2015), so feasibility and efficacy testing is warranted. A face-to-face format was chosen in response to patients' preferences and needs at this stage (Daniluk, 2001b; Pasch

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et al., 2016; Volgsten et al., 2010). This interactive therapist-patient component allows responsiveness to each patient's specific and transitory needs (Boivin et al., 2001). A brief format was also considered adequate in order to ensure minimum additional disruption to patients' personal and work routines, which are well known to be highly disrupted by fertility treatment (Gameiro et al., 2015). This format was also considered to facilitate its integration into routine psychosocial care provision at fertility clinics (Boivin et al., 2017). Indeed, over the past decades, brief therapies have emerged in response to several barriers faced by patients (e.g., lack of motivation), HCPs (e.g., lack of expertise, lack of time) and organisations (e.g., lack of resources) in accessing and providing conventional therapies (Gálvez-Lara et al., 2018). Brief therapies are time-limited (around six to eight sessions), highly structured and goal-directed (Cape, 2010; Parry, 2019) and have proven to be effective with fertility patients (Dube et al., 2023).

However, there is scarce evidence on how patients and HCPs experience the provision of psychosocial care for EoT. Although offering preventive with early intervention psychosocial care seems supported by research, it is unclear whether patients and HCPs perceive it as helpful and appropriate (i.e., acceptable) and possible to be implemented at fertility clinics (i.e., feasible). Research shows patients are willing to receive EoT preventive care, but actual discussion may be far more challenging. However, research also shows that patients lower their expectations when they progress through unsuccessful cycles and revise down their parenthood goals (and desire) as these become less achievable (Devroe et al., 2022; Liefbroer, 2009; Sousa-Leite et al., 2019). Therefore, it would be expected that patients become more willing to prepare for EoT at later stages of treatment as they perceive that they are more susceptible to it. In turn, HCPs report that discussing adverse outcomes and managing patients' emotions in this context are major challenges in their clinical practice

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(Boivin et al., 2017). Overall, evidence suggests low (HCPs) to moderate (patients) acceptability and provides no indication regarding the feasibility of implementing preventive and early intervention care for EoT.

The present focus group-based study aimed to investigate patients' and HCPs' acceptability and feasibility of psychosocial care for EoT, and in particular of the Beyond Fertility intervention. The MRC guidance draws particular attention to the importance of considering the acceptability and feasibility of interventions during their development process to ensure they are acceptable for those involved (i.e., those receiving, delivering, or sponsoring interventions) and that it is practical to implement these. Indeed, high-quality interventions are tailored to meet the needs of those involved, acceptable to them and effective in achieving beneficial outcomes (Sidani, 2015). Bowen et al.'s (2009) acceptability and feasibility framework was followed. This research-informed framework presents the components that should be evaluated in an intervention (depending on its development stage) to determine whether it is appropriate to proceed with further testing. These components are leading indicators of implementation success (Bowen et al., 2009). Based on this framework, the present chapter focused on an early evaluation of the demand (i.e., the need to develop it and the extent to which it is likely to be used), acceptability (i.e., the extent to which it is suitable and intended to be used), and practicality (i.e., factors impacting its implementation) of EoT psychosocial care and, in particular, Beyond Fertility. Results will inform which aspects of Beyond Fertility should be modified or improved to enhance the adherence and commitment of those involved (Bowen et al., 2009; Sekhon et al., 2017). Several authors suggested that acceptability may be assessed through semi-structured focus groups with representatives of those involved with the intervention, to understand their first reactions towards it (Bowen et al., 2009; Sekhon et al., 2017; Sidani &

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Braden, 2011). Framework Analysis can be an optimal and recommended methodology for analysing focus group data. It is a step-by-step approach that allows the development of an in-depth, comprehensive, and holistic data frame without losing the participants' individual views and allows the comparison of groups of participants (Gale et al., 2013). In the present chapter, it was considered that it is essential to differentiate between patients', clinical psychologists' and fertility specialists' (GYN/OBS, embryologists, and nurses) views towards EoT psychosocial care, as patients receive it, psychologists deliver and sponsor it, and fertility specialists sponsor it.

Specific objectives were to investigate: (i) what are patients and HCPs' experiences and views of EoT preventive and early psychosocial care (i.e., acceptability), (ii) whether it is feasible to implement EoT psychosocial care at fertility clinics (i.e., feasibility), and (iii) whether Beyond Fertility is acceptable to patients and HCPs and feasible to be implemented at clinics.

Methods

Participants

Participants were adult (aged 18 years or older) patients waiting to initiate or undergoing their last IVF/ICSI treatment cycle reimbursed by the NHS (with own, fresh or cryopreserved, or donated gametes/embryos and with or without preimplantation genetic testing - PGT) or having completed their last cycle within the previous two months without achieving a pregnancy, or HCPs: clinical psychologists, OBS/GYN, embryologists or nurses, working at public Portuguese fertility clinics. Exclusion criteria were not being able to read or speak Portuguese.

Materials

Demographic, Professional and Fertility Treatment Characteristics. Patients and HCPs were asked to state their age, gender, nationality, education and occupational status. Patients were additionally asked about their area of residence, marital and parental status (no children, biological, adopted, stepchildren), current situation regarding fertility treatment (waiting list to initiate the last IVF/ICSI cycle, undergoing the last IVF/ICSI cycle, having completed the last IVF/ICSI cycle within the previous six months without achieving a pregnancy). HCPs were also asked to state their occupation, workplace and years of experience in fertility care.

Focus Group Scripts. One semi-structured script was developed following existing guidelines (Hennink, 2014; Krueger & Casey, 2000), available in Appendix F. The script first introduced the topic of psychosocial care for EoT and described the Beyond Fertility intervention. Open questions were informed by Bowen et al.'s (2009) framework and covered demand for implementation, practicalities: perceived needs that patients experience before initiating their last IVF/ICSI treatment cycle and after EoT and HCPs' perceived challenges in the provision of care to these patients, acceptability: perceptions and preferences towards EoT psychosocial care and the Beyond Fertility (presented to participants by means of its logic model), and implementation: perceived barriers and facilitators towards its execution. A final set of questions based on Mentimeter (interactive audience engagement platform; Mentimeter, 2020) asked participants to describe, in one small sentence, the focus group and Beyond Fertility, to rate the extent to which they would recommend Beyond Fertility to a friend (patients only) or their patients (HCPs only; from 1: I would not recommend it at all to 7: I would totally recommend it), how valuable it would be to implement it at clinics (not at all, yes maybe, yes totally) and the extent to which patients

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would engage/HCPs believed patients would engage with it over the seven sessions (from 1: not at all to 7: will totally engage).

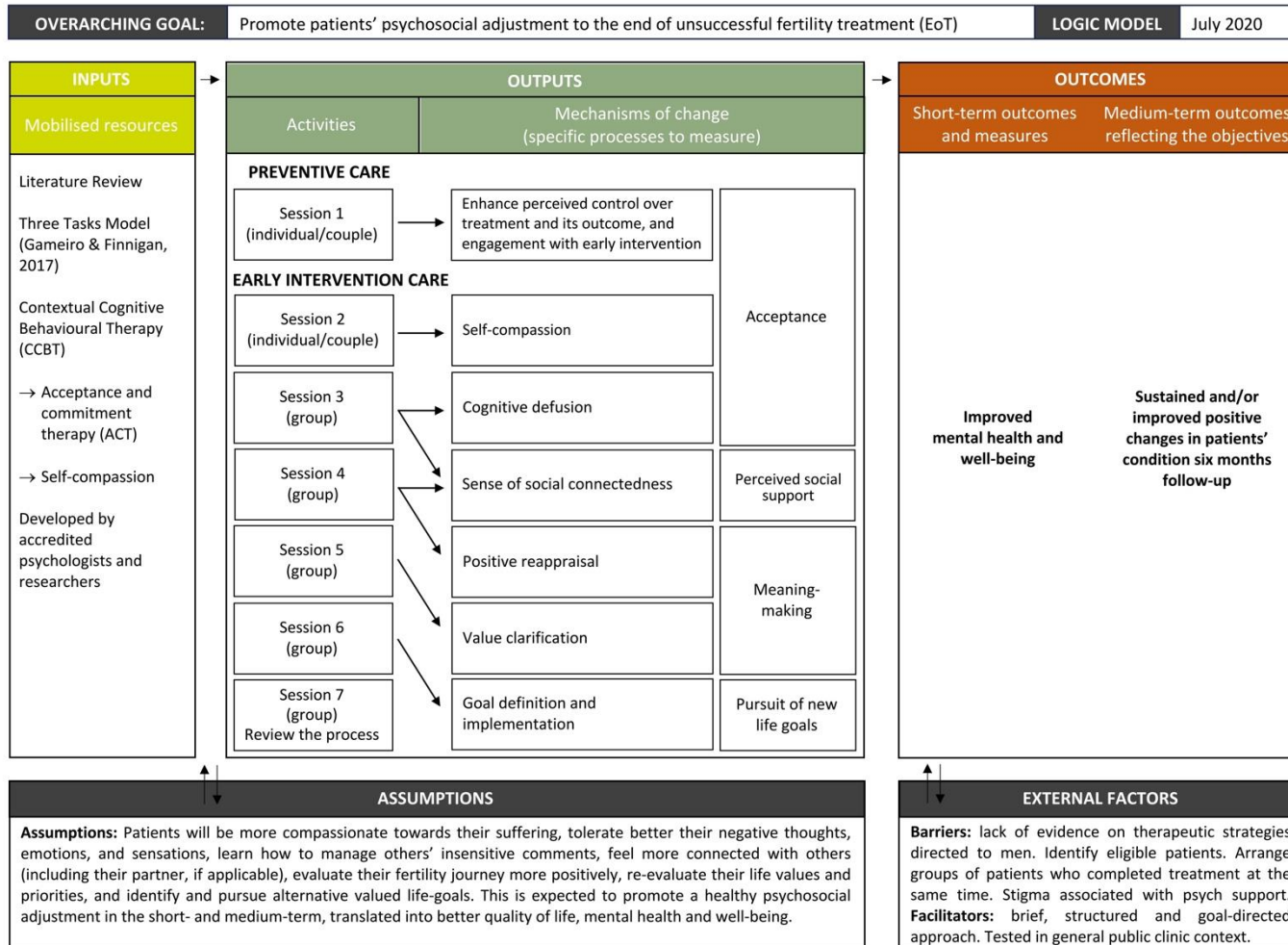
Intervention: Beyond Fertility. Figure 3.1 depicts the first version of the Beyond Fertility logic model. A logic model is a systematic and visual approach to describe how complex interventions work (Kellogg, 2004; University of Wisconsin-Madison, 2023). It ensures that the intervention design is consistent with its theoretical definition (enhancing its construct validity; Strauss & Smith, 2009), facilitates the commitment to the intervention scheme, promotes conscious decisions about modifications and facilitates communication with audiences with different levels of expertise (Kellogg, 2004; Sidani, 2015). The Beyond Fertility logic model depicts the theoretically informed causal logic of how Beyond Fertility is expected to promote patients' psychosocial adjustment to EoT, translated into improved mental health and well-being. Applying the CCBT principles to the specifics of adjustment to EoT, the 3TM mechanisms of change were translated into several therapeutic activities implemented into seven therapeutic face-to-face in-person sessions. These sessions were distributed into EoT preventive care via one individual/couple therapeutic session while patients prepare to initiate their last fertility treatment cycle, and EoT early intervention care via one individual/couple and five weekly group sessions starting one to two weeks after EoT. Considering the psychosocial burden that treatment entails (Cousineau & Domar, 2007; Öztürk et al., 2021), the preventive care session was designed to be offered before patients initiate their last treatment cycle, not to add extra emotional burden. The early intervention care was designed to be delivered immediately after EoT, as previous research showed patients want to receive psychosocial care as early as possible after facing their unmet parenthood goals (Rowbottom & Gameiro, 2021; Chapter 2: Sousa-Leite et al., 2023). Combining individual/couple and group sessions is novel and aimed at responding to

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patients' preferences and needs (Hammarberg et al., 2001; Chapter 2: Sousa-Leite et al., 2023). Therefore, the intervention was designed to be delivered to the couple (when applicable) under the assumption that the psychosocial adjustment process to EoT is dyadic and interdependent and that undergoing this process together as a couple could ease adjustment (Fitzsimons et al., 2015; Peterson & Eifert, 2011; Peterson et al., 2009).

Regarding the therapeutic mechanisms of each session, three sessions were directed at facilitating acceptance towards patients' unfulfilled wish for children by preparing patients for the possibility of EoT (Chapter 2: Sousa-Leite et al., 2023), promoting self-compassion (Neff & Tirsch, 2013) and cognitive defusion (Harris, 2019; Hayes & Smith, 2005). Two sessions aimed to facilitate perceived social support by promoting a sense of social connectedness (Wickramaratne et al., 2022; Wilkinson et al., 2019). Two were directed at facilitating meaning-making (i.e., finding meaning in the fertility journey), including cognitive restructuring via positive reappraisal (Ockhuijsen et al., 2013) and value clarification (Harris, 2019; Hayes & Smith, 2005), and one was directed at supporting patients to develop and commit to (new) valued life goals (Harris, 2019; Hayes & Smith, 2005). Positive reappraisal coping does not sit within the CCBT theoretical framework, but research has suggested it is associated with self-acceptance of negative emotions (Kivity et al., 2016) and that it is beneficial to combine cognitive strategies with ACT (Hallis et al., 2016). The final session was directed at reviewing the therapeutic process and learning skills and encouraging the maintenance of positive change. The definitions and rationales for each therapeutic target and mediator (psychosocial mechanisms of change) of Beyond Fertility are described in Appendix G.

Figure 3.1 Logic model of the Beyond Fertility psychosocial intervention - Version 1. Inputs represent the resources used to inform the development of the intervention. Outputs display the planned activities designed to target specific mechanisms of change (psychological processes). Outcomes represent the changes that are expected to be seen in real life after the planned activities are reached.



Adapted from University of Wisconsin Extension Program Development and Evaluation resources

Procedure

Consecutive female patients were contacted by phone, informed about the study and invited to participate with their partners. A convenience sample of HCPs was also invited via email. An information sheet and consent form, and the invitation link for the focus group session were sent to those willing to participate.

Five focus groups were carried out, separately with patients (September 2020 and January 2021) and HCPs (September 2020) to promote a safe and comfortable environment for participants to share their views (Hennink, 2014). The focus groups were carried out via the Zoom platform (Zoom Video Communications, 2012), audio-recorded and transcribed verbatim. All groups were moderated by a clinical psychologist and researcher (M.S.-L.), and some were assisted by another (S.G.). At the beginning of the focus group, its purposes and procedures were explained, and participants were alerted to the recording (as per consent) and informed about ground rules (e.g., confidentiality, absence of right or wrong questions, welcoming of all thoughts, even if in opposite directions, freedom to ask additional questions). At the end, participants were provided with a link to access the short Mentimeter questions and submit their answers.

Ethical Approval and Considerations

The Ethics Committees of the School of Psychology, Cardiff University, Cardiff, United Kingdom (EC.21.05.18.6351) and the Centro Hospitalar Universitário de São João, Porto, Portugal (CHUSJ; 127/2020) approved the study. The main ethical issue was that participation implied discussing challenging topics that could trigger negative emotions. Participants were informed that they could withdraw at any point without providing explanations and encouraged to contact the research team (accredited Psy) if they had

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questions or concerns. Researchers were attentive to participants' reactions during the focus group (e.g., distress, discomfort) and available to contact them after the focus group if needed.

Data Management and Analysis

Descriptive statistics were used to characterise participants' background. Framework Analysis was used on the qualitative data to differentiate the views held by our different participant groups (Gale et al., 2013): patient (Pa), clinical psychologist (Psy) and fertility specialist (Fs). The verbatim transcripts were imported into NVivo software version 12 (QSR International Pty Ltd, 2018). M.S.-L. and S.G. familiarised themselves with the audio recordings and transcripts, and M.S.-L. kept her data reflections and impressions in a diary. Using an inductive approach, M.S.-L. set codes (i.e., descriptive meaning labels) for each text segment of the first two transcripts. The research team (S.G., B.F., R.C. & M.S.-L.) met several times to review the coding, and disagreements on interpretation were discussed until consensus was achieved. M.S.-L. coded the following three transcripts, applying the previous coding but allowing new codes to emerge (also reviewed by the team). Connections and differences across the codes were analysed and systematically organised into categories representing similar ideas. A data matrix was created, with the categories in different rows, participant groups in columns and a summary of the codes with representative verbatim quotes in the cells (translated into English). '(...)' indicates that part of the quote was omitted as it did not add relevant information, and '[text]' represents clarifications added by the authors. The main categories were then organised into subthemes and main themes (i.e., interpretative descriptions of several categories describing interrelated ideas). A framework thematic map was created to illustrate the final matrix.

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Results

Participants

Each focus group comprised three to five participants and lasted from 87 to 111 minutes (*Mean*=99.00, *SD*=9.08).

The final sample consisted of 10 women (27.03% participation rate), of whom three participated with their partner, and nine HCPs (42.86% participation rate). A total of 37 women were invited to participate, of whom 15 (six with their partners) consented to participate, 10 refused to participate, mainly due to the emotional burden of treatment, work-related activities and lack of time, and 12 stopped responding to the research team contacts. Of those women who consented to participate ($n=15$), one woman (with their partner) withdrew from the study at the beginning of the focus group (due to the emotional burden of the topic under discussion), and four (two of them with the partners) did not show up (due to unforeseen events, technological issues, unknown reasons). Of the twenty-one HCPs invited, seven did not reply, one refused due to lack of interest, three withdrew from the study due to lack of time and unforeseen events, and one did not attend due to unknown reasons.

Focus group composition and the characteristics of each participant's code (Pa, Psy, Fs) are presented in Table 1.

Table 3.1 Focus group composition and participants' characteristics and code

	FG 1	FG 2	FG 3	FG 4	FG 5
FG composition	5 patients (2 couples)	3 women (0 couples)	5 patients (1 couple)	2 Psy, 1 GYN/OBS, 1 nurse	1 Psy, 2 GYN/OBS, 1 embryologist, 1 nurse
FG duration (min.)	95.12	87.10	98.13	111.43	103.23
Age <i>M(SD)</i>	39.20(4.87)	37.67(3.22)	38.80(0.45)	48.33(10.26) ^a	43.00(4.90)
Gender	3 women; 2 men	3 women	4 women; 1 man	4 women	4 women; 1 man
Education	2 secondary school 3 BSc/BA/MSc	1 secondary school 2 BSc/BA/MSc	4 BSc/BA/MSc 1 PhD	3 BSc/BA/MSc, 1 PhD	5 BSc/BA/MSc
Occupational status	5 employed	1 unemployed 2 employed	5 employed	4 employed	5 employed
Workplace				3 public clinic 1 public & private clinic	3 public clinic 2 public & private clinic
Work years in fertility care <i>M(SD)</i>				15.00(2.83)	12.40(6.27)
Area of residence	5 city	3 city	4 city; 1 village		

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Marital status	4 married or cohabiting 1 in a relationship without cohabiting	3 married or cohabiting	5 married or cohabiting		
Parental status	3 childless, 2 with children	3 childless	4 childless, 1 with children		
Treatment point	4 undergoing 1 completed	1 waiting to initiate 2 undergoing	2 waiting to initiate 3 undergoing		
Nº past IVF/ICSI cycles	3 with two cycles, 2 with three cycles	1 with no cycles, 1 with one cycle, 1 with more than three cycles	3 with two cycles 2 with three cycles		
Participant code	Pa2 (woman, childless, completed cycle), Pa3 (woman, childless, undergoing cycle), Pa6 (man, childless, undergoing), Pa9 (men, with children, undergoing), Pa13 (woman, with children, undergoing)	Pa4 and Pa12 (women, childless, undergoing), Pa8 (woman, childless, waiting to initiate cycle)	Pa1 and Pa10 (women, childless, undergoing), Pa5 (woman, with children, undergoing), Pa7 (woman, childless, waiting to initiate), Pa11 (man, childless, waiting to initiate)	Psy1 and Psy3 (Psy), Fs1 (OB/GYN), Fs2 (nurse)	Psy2 (Psy), Fs3 (nurse), Fs4 and Fs6 (OB/GYN), Fs5 (embryologist)

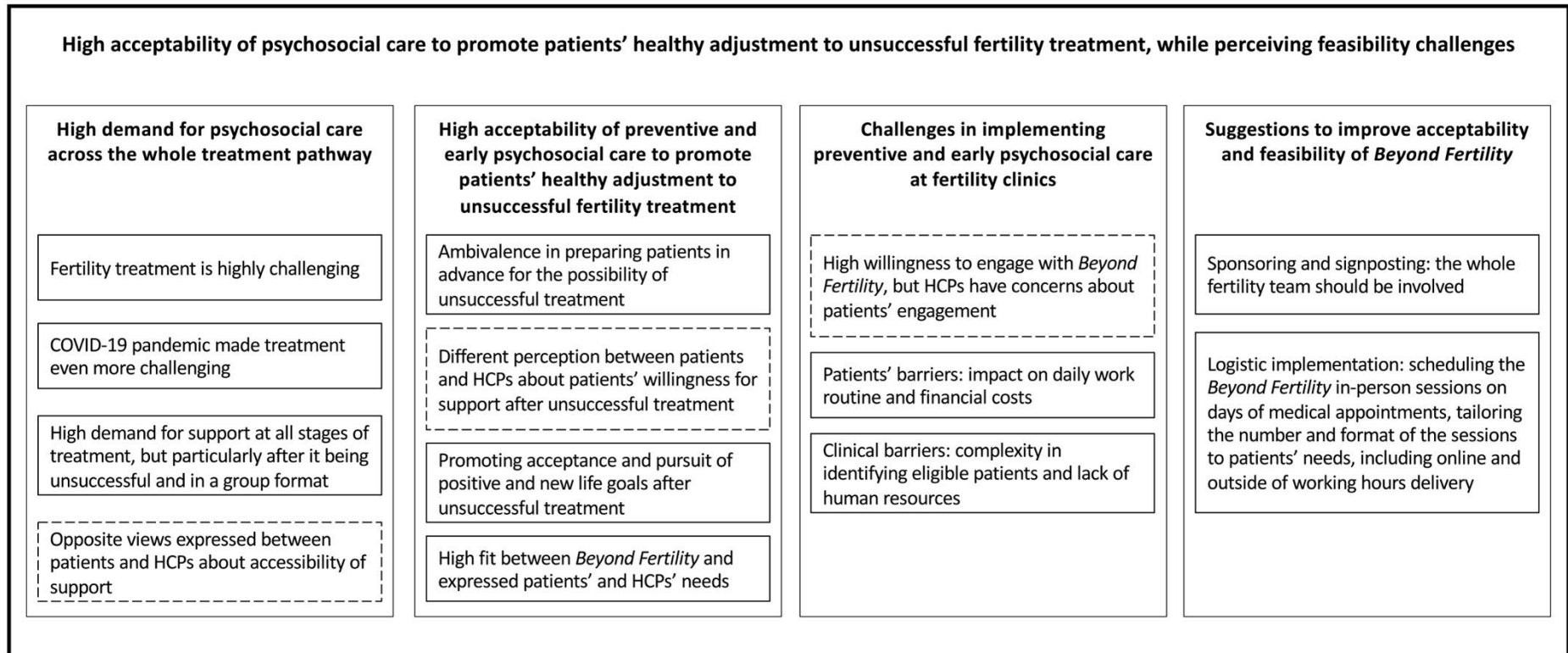
Note. M=mean; SD=standard deviation; FG=focus group; Pa=patient; Psy=clinical psychologist; Fs=fertility specialist; GYN/OBS=gynaecologist/obstetrician; BSc/BA/MSc=Bachelor/master; PhD=philosophiæ doctor. ^a1 participant did not report on their age.

Thematic Themes

Framework Analysis yielded 1293 different codes, which were systematically organised into 13 categories, grouped into four themes and one meta-theme. Figure 3.2 shows the framework thematic map. Appendix H presents the final framework matrix.

Meta-Theme: High Acceptability of EoT Psychosocial Care while Perceiving Feasibility Challenges. This meta-theme reflected a high demand for psychosocial care at all stages of treatment, but in particular in the aftermath of EoT. Overall, participants reported positive views and perceived benefits in the provision of preventive and early psychosocial care for EoT but had concerns about whether and how to forewarn patients for this possibility. Beyond Fertility was perceived to meet patients' needs. Challenges and suggestions for its successful implementation were highlighted.

Figure 3.2 Focus group framework thematic map. Thirteen categories of codes grouped into four themes and one meta-theme. Continuous lines represent consensus between patients and HCPs and dashed lines represent some level of disagreement



Note. EoT=End of unsuccessful fertility treatment; HCPs=healthcare professionals.

Theme: High Demand for Psychosocial Care Across the Whole Treatment Pathway. All participants reported that fertility treatment is extremely challenging at all treatment stages, particularly during the last cycle. It has a negative impact on individual and relational well-being and leads to significant mental health problems for a minority of patients.

'(...) it has not been an easy process at all, quite the contrary, each treatment is increasingly difficult, psychologically it has been a drastic shock (...) but I think in these situations [unsuccessful cycle attempts] we [patients] are all in it together, aren't we!?' (Pa1)

Over time, patients seemed to find positive coping strategies to tackle the treatment burden, but EoT triggered a *'grieving process'* (Psy2), with patients feeling that they were *'in a riot'* (Pa2). The COVID-19 pandemic was perceived as *'one more thing to make me anxious'* (Pa8), mainly due to increased waiting periods and uncertainty about access and time of future treatment cycles.

Participants' perceptions of treatment as being highly challenging seemed to drive a consensual demand for psychosocial care at all stages of the process, particularly after EoT and for those with fewer emotional and relational resources. All participants thought that support should be offered to both members of the couple, and two highlighted that it should be provided by a mental healthcare professional with expertise in fertility care.

'most importantly, when we finish this process [fertility treatment] and things do not go well, and we no longer have a connection [with patients], I think psychological care is essential.' (Fs5)

While patients and HCPs agreed on the need for psychosocial care, both expressed different views about its accessibility. HCPs reported that patients could ask for support at

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any time but that specialists only refer those with *'significant emotional distress, which is somehow interfering with the treatments being carried out by the medical team'* (Psy1).

Only one couple reported being offered psychosocial care and was dissatisfied with its provision. All other patients stated that *'as Pa4 said a while ago: "no one has ever signposted me, neither in private [clinics] nor here", no one asked me anything, no one asked me: do you need it?'* (Pa8), stating unawareness regarding available psychosocial care. Patients and HCPs expressed a preference for group-based psychosocial care, in which patients have the opportunity to share experiences with people living in similar circumstances, learn from others' experiences and feel less isolated. Such interventions were not available at clinics, although one psychologist reported that it was something that they *'have been thinking about for many years'* (Psy2).

'Yes, I think sharing is important as well, and realising we are not alone, we are not the only ones going through the same situation. Yes, I fully agree.' (Pa13)

Theme: High Acceptability of EoT Preventive and Early Psychosocial Care. Both patients and HCPs stated that supporting patients adjusting to EoT is highly needed, and they were willing to engage with it before and after treatment. However, HCPs perceived that most patients are not willing to receive it immediately after EoT as they are too overwhelmed with grief: *'very frustrated, very angry, very discouraged'* (Psy1), and that, in general, the male partner is less willing to engage, as *'the tendency is for women to come alone'* (Psy2). Most HCPs suggested that psychosocial care should only be provided one to two months after EoT, once intense grief reactions have subsided, but agreed that if provided much later, patients could feel *'helpless'* (Psy1) or *'no longer need it'* (Fs1), as they would have already *'moved on'* (Fs1). In contrast, all patients claimed they were willing to receive such support at any stage of treatment, in any format and preferably immediately to two weeks after EoT.

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Psychosocial preventive care to prepare patients for the possibility of EoT was considered important and beneficial by both patients and HCPs, but different views on how to approach it were reported. All HCPs stated that it is important to manage patients' expectations in a balanced and realistic way but reported using different approaches to do it (e.g., fostering hope vs. contemplating EoT). Patients agreed that preventive care was needed but reported that the clinic setting and communication from HCPs, in particular from medical doctors, were sometimes insensitive (*'the way they told me: look, your treatment was negative, now you go home, wait, and in a year, we call you again. And that's it'* Pa1) and did not provide strategies to help them manage expectations and prepare for EoT. The provided care was mainly focused on positive outcomes, inflation of the probability of success, lack of explanations for the treatment plan and unsuccessful cycles or EoT.

'The doctor when, when she came to me at the end, saying: "yeah, it was very good, we got 16 oocytes, wonderful". We were left with an expectation, huh, huge, huge (...), and sometimes it doesn't mean that.' (Pa1)

'I agree with Pa5 and P10, we really need a lot of support to manage our expectations.' (Pa1)

Overall, most patients and HCPs agreed that preparation for EoT is imperative, particularly at the later stages of treatment. It should be based on an empathic approach, focused on positives and tailored to each patient's individual willingness and preferences, always reassuring them that psychosocial care is available at any point. Suggested topics to be addressed included coping strategies to manage distressful emotions and thoughts, common adjustment experiences, how couples can rethink their future together and alternative life paths beyond (biological) parenthood.

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'A very big fear (...) what if, if we never make it, huh!? What's going to happen to us [as a couple], you know!? (...) maybe it is important for you and your partner to talk about it, you have this fear, but he has it as well, isn't he?' (Pa3)

'Of course.' (Pa2)

On the other hand, three patients and one psychologist disagreed, claiming there is no point in preparing patients for something that may not happen, highlighting that it could interfere with patients' engagement with treatment.

'I don't know if it would not be stressful, at that stage, before treatment, to be contemplating this possibility when the door is not yet closed.' (Pa6).

'No, I don't think so either. I don't think so, it's not time, it's time for us to have all our strength up, with our good mood, our optimism, our hope.' (Pa2)

According to patients and HCPs, psychosocial care in the aftermath of EoT should help patients to accept and normalise negative emotions, feelings and thoughts, manage difficult social interactions, accept their inability to have biological children, increase focus on the positive aspects of life and explore other goals beyond biological parenthood.

'(...) we need to know how to deal with each other as a couple after this, because it's been a lifetime thinking that this will happen sooner or later, and suddenly there's that, no, it's just the two of us.' (Pa2)

'I think this intervention has to show that in life people have to have several interests, because unfortunately people do not always succeed in all areas, but they [patients] have to focus on family, friends, activities that people like to do, don't they!? At work, and so there's actually other things besides that.' (Fs1)

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Beyond Fertility was perceived by patients and HCPs as covering a currently unmet need in reproductive mental healthcare. Patients and HCPs agreed that its logic model is holistic and tailored to meet patients' mental health needs and that, overall, its therapeutic objectives (i.e., mechanisms of change) address the needs experienced after EoT. All were highly willing to engage with it.

'Indeed, the balance is achieved precisely with these four [Beyond Fertility mechanisms of change] [laughs]. If all are achieved, we get there.' (Fs5)

Participants appreciated and considered helpful that Beyond Fertility included both individual/couple and group sessions, albeit reported a particular preference towards the latter. They considered *'both are important, because they have different goals, I think, for sure, don't they!?' (Pa3).*

Theme: Challenges in Implementation at Fertility Clinics. HCPs considered that it can be challenging to identify patients starting their last cycle, as many may undergo additional cycles in the private sector or with gametes/embryos donation. In addition, long waiting lists make it difficult to anticipate when patients will start the cycle and schedule the first session.

'(...) But then [after EoT] we can offer alternative options, and therefore the alternatives can go through, as already mentioned here, gametes or embryos donation.' (Fs1)

HCPs also mentioned that it may be difficult to have both members of the couple, especially the male partner, engaged over time, and that some patients may not participate in group sessions, a view supported by patients. Patients and HCPs agreed that in-person sessions are difficult to manage due to travelling costs, time and work absences, including the need to disclose infertility at work and the associated stigma. HCPs also noted the lack of human resources, in particular, mental healthcare professionals, with a tendency to worsen

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over time. Patients echoed this perception, as they feel that the public sector is overloaded, even more during the COVID-19 pandemic, and the private sector is costly.

'It's just that I should not feel shame, should I!? But that's what I feel sometimes, honestly. Apart from feeling very exposed. One thing is to say: look, I will be absent [from work], I have a medical appointment. And they don't even ask me [why] (...) but the documentation goes through several hands, and the fact that it says reproductive medicine there...' (Pa4)

'Even more if it says psychology of reproductive medicine.' (Pa8)

Theme: Suggestions to Improve Acceptability and Feasibility of Beyond Fertility.

Patients wanted to be informed about Beyond Fertility by a member of staff they feel comfortable with, specifically the nurses, as patients feel *'there is a link, a stronger connection (...)'* (Pa7; *'I agree with, with Pa7. I think the nurses end up giving us more psychological support'* Pa1) but also found it acceptable to receive a phone call from a psychologist. HCPs referred to Beyond Fertility should be introduced by the medical doctors in one of their appointments, followed by a telephone contact from the psychologist. Both patients and HCPs thought it important to tailor the number of individual sessions after EoT to patients' needs, as some patients might need more than two sessions before moving on to the group sessions. All agreed that patients should be able to choose between in-person and online sessions to avoid circumstantial barriers (e.g., travelling costs and time). If patients preferred in-person sessions, an agreement was that these should be scheduled on medical appointment days. Although all participants agreed that sessions should be conducted outside of working hours to circumvent work-related constraints, four HCPs claimed it would not be feasible as *'the people delivering the intervention end up working outside of working hours'* (Fs1).

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'The fact that there are many sessions, if they are in-person, I don't know if couples will easily accept them. I think doing the group sessions outside of working hours, via Zoom, will increase acceptance.' (Fs1)

'Yes, yes (...) I think the use of technologies here can be an asset.' (Psy1)

'Because in that way [online and outside of working hours] nobody knows where I am, I don't have to miss work, I don't have to travel, I don't have work piled up... All this weighs, doesn't it!?' (Pa4)

Mentimeter Results

All participants answered the online questions. Patients and HCPs considered the focus group discussion *'very interesting'* ($n=6$) and/or *'productive'* ($n=6$) and an opportunity to *'share experiences'* ($n=5$). Two patients added that sharing their experiences with other patients going through the same experience was *'good'* and *'made a difference'* to them. Patients considered Beyond Fertility *'very useful'* and/or *'an essential help to support many couples'* ($n=7$), and HCPs considered it *'novel'* ($n=3$), *'highly relevant'* or *'needed'* ($n=4$) and an *'added value for couples'* ($n=2$). Patients were highly willing to recommend Beyond Fertility to a friend ($Mean=6.50$, $SD=0.87$) and HCPs to their patients ($Mean=6.65$, $SD=0.21$). All participants agreed that implementing Beyond Fertility in clinics would be an asset (patients: Yes totally: $n=10$, 100%; HCPs: Yes totally: $n=7$, 77.78%, Yes maybe: $n=2$, 22.22%). Finally, patients were highly willing to engage with Beyond Fertility over the seven sessions ($Mean=6.10$, $SD=0.53$), but HCPs were not so sure about patients' engagement ($Mean=3.60$, $SD=0.28$).

Discussion

Fertility patients and HCPs require and accept the provision of psychosocial care across the whole treatment pathway and, in particular, for EoT. Implementing EoT psychosocial care at fertility clinics is desirable and seems possible. Interventions that integrate EoT preventive care, offered in an empathic and hopeful way towards the end of the treatment pathway to promote validation and normalisation of emotional reactions and coping skills, and EoT early intervention care guided by the 3TM are likely to be accepted by patients and HCPs. How EoT psychosocial care is implemented in clinics is critical for acceptability and feasibility. Sponsorship from the whole fertility team, signposting from familiar nurses and medical doctors before contact with a mental healthcare professional, online delivery options, and some level of tailoring to patient profiles seem to be important requirements.

Results highlight the contrast between patients' high demand but perceived low accessibility of psychosocial care for EoT. This gap in care provision has been previously identified (Pasch et al., 2016) and is associated with patients' frustration and dissatisfaction towards their clinics (Daniluk, 2001b; Volgsten et al., 2010). The present results suggest that clinics' inability to meet patients' needs may result from a lack of human resources, HCPs' perceptions that patients are not willing to engage with support and concerns that it may interfere with patients' ability to continue treatment. Participants were proactive in suggesting approaches to the provision of psychosocial care for EoT. These highlighted that care provision should be an endeavour of the clinic with involvement from all staff and that it requires skills in empathic communication, expectations management, validation and normalisation of reactions to treatment events and fostering hope in adversity.

If EoT preventive care is to be implemented at clinics, it needs to be tailored to the patient profile (e.g., poor prognosis) or offered towards the end of the treatment pathway

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(e.g., after two unsuccessful cycles), at a time patients are more willing to disengage from treatment and contemplate alternative life paths and goals (da Silva et al., 2016; Heckhausen et al., 2010). Addressing HCPs' concerns about the negative impacts of EoT preventive care and misconceptions that it is not desired by patients will also be crucial to implementation. Similar cultural shifts have enabled the provision of preventive care in other life-threatening health contexts (e.g., end-of-life conversations) with positive outcomes for patients (Brighton & Bristowe, 2016; Leung et al., 2012). Crucial to this shift was mapping patients' preferences in this regard, much like in the current study. Furthermore, HCPs may also need to be supported in developing the skillset needed to discuss the possibility of EoT. Fertility bespoke training on how to share bad news (Leone et al., 2017; Mosconi et al., 2021) and empathic communication (Garcia et al., 2013) can provide HCPs with opportunities to develop some of these skills.

Early psychosocial care grounded on the 3TM (Gameiro & Finnigan, 2017) is considered useful and adequate to address most of the needs that patients experience in the aftermath of EoT. An additional therapeutic goal to consider when working with couples is the promotion of intercouple communication and exploration of alternative joint futures, which requires a dyadic approach to care provision. Early psychosocial care after EoT should be offered online, brief, structured, and group-based. The group format is aligned with the preferences of a majority (61%) of patients who face EoT (Hammarberg et al., 2001), enabling them to share experiences in an empathic environment, learn from others' experiences and decrease feelings of loneliness. Clear signposting should be done by a trusted staff member in combination with a phone call from the mental healthcare professional delivering such support. The online format is valued by HCPs because it requires fewer resources from clinics (e.g., time and human resources) and patients because it

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overcomes circumstantial barriers (e.g., travel costs) to access care. Indeed, the use of online video counselling seems to be the way forward to support patients after EoT. Individual and group online video counselling is growing, especially since the COVID-19 pandemic (Pericleous-Smith et al., 2021), and evaluative studies on its acceptability and effectiveness report promising results (Campo et al., 2017; Lleras de Frutos et al., 2020; Smith et al., 2021). However, results suggest that for a minority of patients, in-person individual or group-based formats may not be adequate. For these patients, online individual or self-help interventions, for instance, the self-help online app intervention mentioned in Chapter 1 that aims to support psychosocial adjustment to unmet parenthood goals: www.myjourney.pt (Rowbottom et al., 2022) may be preferable, as they ensure privacy, bypass possible stigma and offer more flexibility in access.

Strengths and Limitations

This qualitative study used Bowen et al.'s (2009) theoretical framework to assess the acceptability and feasibility of psychosocial care for EoT. The use of Framework Analysis enabled the preservation of participants' individual views and analysis of consensual and disparate views across different stakeholders, allowing for consideration of their specific needs. The qualitative process indicated that saturation was achieved, as the codes emerging in the final focus groups were anticipated by researchers and appeared to have no additional interpretive value (Hennink, 2014). There were few psychologists, which limits conclusions about their acceptability of psychosocial care for EoT. Patients were mainly women, but men's participation in the present study was higher than usually observed in reproductive research (Boivin et al., 2020; Harrison et al., 2022), and men's views were overall similar to women's views. Patients were recruited at a single clinic, and their views may not be representative of patients' experience at public fertility clinics.

Conclusion

Patients and HCPs perceive that clinics should improve their psychosocial care provision for patients facing EoT, but HCPs' misconceptions and concerns will need to be addressed to ensure signposting for EoT preventive care while patients are still undergoing treatment. If interventions are to fit patients' and HCPs' needs and preferences, they should be brief and use online video counselling offered in a group format. The Beyond Fertility logic model was validated, which suggests that support at this stage should incorporate specific mechanisms of change: meaning-making, acceptance and pursuit of new life goals, with additional emphasis on promoting social connectedness and couples' communication and support. Future research should focus on developing and evaluating psychosocial care interventions tailored to this treatment stage.

CHAPTER 4 PROSPECTIVE PILOT FEASIBILITY SINGLE-ARM TRIAL OF BEYOND FERTILITY: A BRIEF RESEARCH-INFORMED PSYCHOSOCIAL INTERVENTION TO PROMOTE PATIENTS' ADJUSTMENT TO EoT

Introduction

Beyond Fertility is a brief research-informed specialised face-to-face psychosocial intervention aiming to support patients adjusting to EoT. To reiterate from previous chapters, EoT was defined as the point when patients complete the last fertility treatment cycle without achieving a live birth and decide not to attempt more treatment cycles. Beyond Fertility was informed by the 3TM (Gameiro & Finnigan, 2017), applies CCBT principles (Hayes et al., 2013), and encompasses EoT preventive care, via one individual/couple therapeutic session before the treatment ends to inform and prepare patients for the possibility of EoT, and EoT early intervention care, via one individual/couple and five group sessions starting in the aftermath of EoT to promote patients' psychosocial adjustment to this adverse event. It is expected that receiving the Beyond Fertility intervention will attenuate the negative impact of EoT, translated into better mental health and well-being in the short- and medium-term. Given the novelty of integrating preventive and early intervention care into an EoT intervention and the uncertainties that come with it, in this chapter, the author proceeded to a feasibility evaluation of Beyond Fertility. Patients' quality of life was considered the primary outcome of Beyond Fertility, as it is often conceptualised in the literature under the umbrella of well-being and considered by some as the ultimate measure of healthcare quality (Apers et al., 2013).

The development and evaluation process of Beyond Fertility followed the methodology recommended by the MRC (Craig et al., 2008; Skivington et al., 2021). The MRC framework suggests several phases, each one informing the subsequent. Following this framework, the

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previous chapters reported on the development phase of Beyond Fertility, which included (a) identifying and developing a theoretical understanding of the need for a psychosocial intervention and how the intervention change is expected to be achieved and (b) modelling the intervention to refine its design.

The current chapter reports on a prospective pilot feasibility single-arm trial aimed at evaluating the feasibility of implementing Beyond Fertility in the clinical setting (MRC feasibility phase). Small-scaled feasibility evaluations are recommended practice prior to efficacy and effectiveness testing (Bowen et al., 2009; Craig et al., 2008; Skivington et al., 2021). Pilot feasibility trials enable researchers to evaluate the feasibility of the intervention itself (e.g., content and mode of delivery, uptake, usage, sustained adherence) and its evaluation design (e.g., recruitment process, data collection methods, outcomes, analysis) in order to target uncertainties and investigate associated barriers (Bowen et al., 2009; Craig et al., 2008; Skivington et al., 2021). In the present trial, the feasibility outcomes were operationalised following Bowen et al.'s (2009) framework, which, as mentioned in the previous chapter, provides a comprehensive, research-informed and widely adopted measure of feasibility within the field of intervention research.

Considering the previous modelling activities (reported in the previous chapters), it is expected that Beyond Fertility will be well received and positively evaluated by patients (Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022). Beyond Fertility is aligned with patients' preferences regarding the aims, format and timing of psychosocial care, and evidence-based therapeutic principles were used to inform its activities (Gameiro & Finnigan, 2017). The evidence-based mechanisms of change and therapeutic activities of Beyond Fertility overlap with the ones of the two previously mentioned developed interventions targeting EoT that had positive acceptability and feasibility evaluation (via

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RCTs), showing positive patient feedback and improved mental health or well-being (Kraaij et al., 2015; Rowbottom et al., 2022). Results from the previous modelling activities reflected overall positive evaluations on Beyond Fertility integrating individual/couple and group support (Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022). However, a thorough evaluation of Beyond Fertility feasibility is warranted, as most psychosocial interventions in fertility care are exclusively in an individual/couple or a group format (Dube et al., 2023; Frederiksen et al., 2015). Additional barriers to acceptability also need consideration. EoT patients lack a road map and appreciate guidance to move through the loss of not having fulfilled their wish for children (Daniluk, 2001b; Peddie et al., 2004, 2005; Chapter 2: Sousa-Leite et al., 2023; Volgsten et al., 2010). However, engaging with Beyond Fertility can be emotionally triggering, and patients' readiness to do it may vary as it equates to accepting that their wish for children will not be fulfilled (Peddie et al., 2005; Rowbottom & Gameiro, 2020). Prospective research also suggests that patients' engagement with EoT psychosocial care might require awareness of how their unfulfilled wish for children affects their mental health in the short- to long-term (Gameiro et al., 2016). Uptake of early intervention care after EoT may be hindered by patients' reluctance to go 'back' to their clinic at this stage (Krafft et al., 2019), but also due to stigma, work, social and financial costs (Payne et al., 2019; Rüscher et al., 2005). Offering preventive care may raise awareness of the intense and protracted grief associated with EoT and encourage patients' engagement with support when and if confronted with it (Chapter 2: Sousa-Leite et al., 2023; Thomas et al., 2000; Waller et al., 2014). Providing such support in an in-person/online and flexible schedule may also overcome constraints in accessing support (Rüscher et al., 2005; Chapter 3: Sousa-Leite et al., 2022). However, an in-depth evaluation of whether this would be feasible and effective is needed.

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Although there is a high demand for psychosocial care for EoT (Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022), moderate acceptance and sustained adherence rates should be expected. Results from the previous chapters indicated that almost all EoT patients were willing to engage with Beyond Fertility. However, these data are likely to reflect participation bias, whereas the perspectives of those less willing to engage (particularly men) might be underrepresented (Sheridan et al., 2020). Indeed, recent research showed that overall, less than half (44%) of fertility patients seek mental health support during their fertility journey despite most (60%) acknowledging its need (Boivin et al., 2022). Patients are more likely to accept support if offered by the clinic rather than having to actively seek it (Boivin et al., 2022; Pasch et al., 2016). Indeed, most of the face-to-face fertility interventions rooted in ACT or CBT principles identified in a recent systematic and meta-analysis review (Dube et al., 2023) showed acceptance rates ranging from 75 to 88% and sustained adherence rates ranging from 69 to 100% (e.g., Domar et al., 2000; Faramarzi et al., 2008; Gorayeb et al., 2012; Hosseinpanahi et al., 2020). However, all these interventions focused on supporting patients while they were undergoing fertility treatment. The two abovementioned interventions targeting EoT showed acceptance rates of 58.3%, but sustained adherence rates varied from 6 to 67% (Kraaij et al., 2015; Rowbottom et al., 2022), with the lowest rate of 6% being related to the difficulties on managing the need for self-guided support during daily-life (e.g., lack of time; Rowbottom et al., 2022). This is in line with literature showing low adherence to self-guided online mental health support over time (Robertson et al., 2022; van Dongen et al., 2016). Overall, the presented evidence seems promising, but due to the specific characteristics of the EoT patient population and Beyond Fertility's unique mode of delivery, population, and time, an exploratory evaluation is needed.

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There are still uncertainties regarding Beyond Fertility's implementation. First, considering the numerous work stressors HCPs encounter in their daily routine, mainly related to their high workload and lack of time, uncertainties about the possibility of identifying EoT patients and implementing an effective recruitment method may be expected. Second, concerns raised in the preceding modelling activity of Beyond Fertility about the idiosyncrasies of fertility treatment (e.g., long waiting lists, additional cycles in the private sector, gametes/embryo donation; Chapter 3: Sousa-Leite et al., 2022) endorse these uncertainties and raise additional ones about whether it would be possible to arrange groups of patients who reach EoT at the same time. Finally, the additional concerns raised by HCPs about whether it would be adequate to refer patients to EoT preventive care while they were undergoing treatment, as it could interfere with their engagement with treatment, or to offer intervention support immediately after EoT, as patients might be too overwhelmed with grief, suggest implementation of Beyond Fertility at clinics may prove difficult.

Using Bowen et al.'s (2009) feasibility framework, the present trial investigated the feasibility of implementing Beyond Fertility in a clinical setting and implementing its evaluation design in advance of efficacy testing. Specific hypotheses were: (1) Beyond Fertility would have moderate acceptance and sustained adherence rates (i.e., demand), (2) those patients who would engage with Beyond Fertility would evaluate it as useful and attractive (i.e., acceptability), (3) Beyond Fertility and its evaluation design could be implemented as planned (i.e., implementation), (4) barriers to patient engagement with Beyond Fertility may be encountered, in particular after EoT (i.e., practicalities). Quantitative feasibility outcomes were considered separately for the intervention itself (i.e., Beyond Fertility) and its evaluation design and a final focus group was included to gather an in-depth

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view of patients' experiences with the overall study process (Moore et al., 2015; Sekhon et al., 2017). Results can inform further modifications to Beyond Fertility and its evaluation design to maximise their feasibility and the internal validity of future efficacy testing.

Considering the lack of evidence-based interventions towards EoT and patients' high dissatisfaction with current support provision (Gameiro et al., 2015; Gameiro & Finnigan, 2017; Peddie et al., 2005), findings can constitute foundational knowledge for the development of innovative tools to support patients adjusting to EoT.

Methods

Design

A prospective non-randomised single-arm pilot study was conducted at the public hospital that performs the highest number of fertility treatment cycles per year in Portugal. The evaluation design included three assessment moments, which were planned to allow the evaluation of Beyond Fertility's format (individual/couple therapeutic sessions vs group sessions). The assessments were the following: T1 (baseline) - within one day before the first individual/couple therapeutic session (pre-exposure to intervention); T2 - within one week after the second (and last) individual/couple session (post-exposure to the individual/couple sessions); and T3 - within one week after the last group session (post-exposure to the group sessions). These assessments were followed by a 1-hour semi-structured focus group.

Participants

Inclusion criteria were being an adult (aged 18 years or older) scheduled to initiate, within one month, the last IVF/ICSI treatment cycle reimbursed by the NHS, including the last transfer, with own (fresh or cryopreserved) or donated gametes/embryos and with or without PGT. The last IVF/ICSI treatment cycle reimbursed by the NHS were chosen, as it was

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assumed this cycle would be the patient's last treatment cycle. Exclusion criteria were self-reporting having been diagnosed with a mental health problem in the last two years (e.g., bipolar disorder, schizophrenia, and other psychoses or dementia), currently receiving therapy (psychotherapy or medication) for a clinically diagnosed mental health problem, currently under psychological treatment (either in individual or group format) by an accredited psychologist or therapist due to fertility issues and/or fertility treatment and being unable to read and speak Portuguese (due to researcher/interventionist being Portuguese).

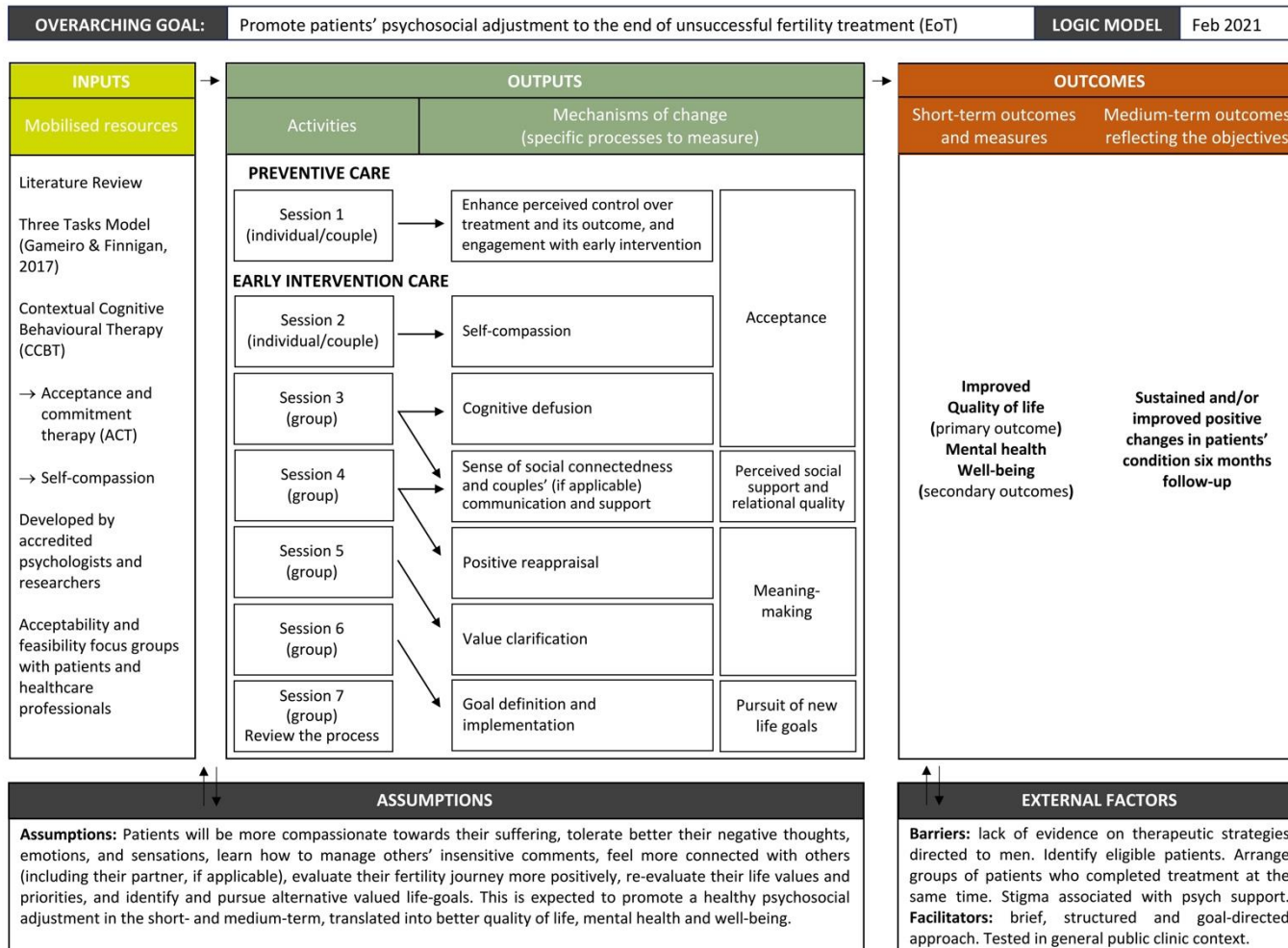
Materials

Intervention: Beyond Fertility. Figure 4.1 depicts the second version of Beyond Fertility logic model. Table 4.1 describes Beyond Fertility using the Template for Intervention Description and Replication (TIDieR) checklist (Hoffmann et al., 2014). A detailed description of the rationale for Beyond Fertility's design, each therapeutic target and mechanisms of change is presented in Chapter 3 (Materials section: pp. 78-79). Only the modifications made to Beyond Fertility as a result of the acceptability and feasibility results reported in this last chapter are presented here. The modifications were the following:

- facilitating couples' (if applicable) communication and support - session 4 (Harris, 2009),
- offering Beyond Fertility both in-person or online, according to patients' preferences,
- including outside of working hours delivery.

Considering Beyond Fertility's brief, structured, and goal-directed approach, the number and format of the therapeutic sessions were not tailored to the patient.

Figure 4.1 Logic model of the Beyond Fertility psychosocial intervention - Version 2. Inputs represent the resources used to inform the development of the intervention. Outputs display the planned activities designed to target specific mechanisms of change (psychosocial processes). Outcomes represent the changes that are expected to be seen in real life after the planned activities are reached



Adapted from University of Wisconsin Extension Program Development and Evaluation resources

Table 4.1 Beyond Fertility description using the TIDieR checklist (Hoffmann et al., 2014)

BRIEF NAME: Beyond Fertility: a brief psychosocial intervention to promote patients' adjustment to EoT.

WHY: Beyond Fertility was developed in response to a current unaddressed need in fertility care, recognised by several international fertility guidelines and regulatory bodies (Gameiro et al., 2015; HFEA, 2023a; NICE, 2017). It was designed by accredited psychologists and researchers, following the Medical Research Council (MRC) framework for developing and evaluating complex interventions (Craig et al., 2008; Skivington et al., 2021). Its mechanisms of change (i.e., acceptance, perceived social support and relational quality, meaning-making, and pursuit of new life goals) were informed by 3TM, which hypothesises that targeting these mechanisms promotes patients' psychosocial adjustment to EoT, translated into better mental health and well-being (Gameiro & Finnigan, 2017). The 3TM was evaluated in heterogeneous samples of people with unmet parenthood goals, including those who faced EoT and showed good acceptability and promising efficacy results in improving well-being (Rowbottom et al., 2022; Rowbottom & Gameiro, 2020). Beyond Fertility used CCBT principles (Hayes et al., 2013), in particular from ACT and self-compassion, as these gather high-quality evidence of effective psychosocial interventions and are adequate to target the mechanisms of change proposed by 3TM (Gloster et al., 2020; Neff & Tirsch, 2013). Based on these principles, the 3TM mechanisms of change were translated into several therapeutic activities implemented into seven therapeutic sessions (e.g., Harris, 2009; Harris, 2019). Figure 4.1 presents a graphical depiction of the Beyond Fertility logic model Version 2, including activities, mechanisms of change and outcomes.

WHAT: Materials: The interventionist is provided with a comprehensive manual describing each therapeutic session: specific goals, a step-by-step explanation of each therapeutic activity, and the required materials. **Procedures:** At the end of each session, patients are provided with a copy of the materials used during the session and additional materials (with other therapeutic tasks) to practice on their own. At the end of the intervention, patients are provided with a compound of all the materials.

WHO PROVIDED: The interventionist is a mental healthcare professional (accredited psychologist, psychiatric, or counsellor trained in psychology).

HOW: Seven face-to-face therapeutic sessions (in-person or online, depending on patients' preferences): two individual/couple and five group sessions.

WHERE: In-person sessions in the fertility outpatient clinic and online sessions via the Zoom platform (Zoom Video Communications, 2012).

WHEN and HOW MUCH: The first individual/couple session occurs within one month before the patient's schedule date to initiate their last IVF/ICSI treatment cycle (i.e., Beyond Fertility EoT preventive care). Beyond Fertility EoT early-intervention care starts within one to two weeks after EoT: the second in an individual/couple format plus five in a group occurring weekly. Each individual/couple session has a planned duration of 1h/1:15h, and the group sessions 2h. There is no recommended time to engage with the additional therapeutic tasks that patients are given after the session to practice on their own, with which patients can engage in repeated times.

TAILORING: Considering the face-to-face format of Beyond Fertility, there is some level of tailoring from the mental healthcare professional according to the reactions and queries from the individuals/groups during the sessions.

MODIFICATIONS: Group sessions were scheduled every two weeks (instead of every week as initially proposed) in response to participants' availability and preferences. Group sessions started two weeks to four months after EoT.

HOW WELL: Planned: Intervention adherence and fidelity outcomes were assessed according to Bowen et al.'s (2009) framework (i.e., acceptability, demand, implementation and practicality). Table 4.3 presents a complete description of the assessment criteria. **Actual:** N/A.

Note. TIDieR=Template for Intervention Description and Replication; EoT=end of unsuccessful fertility treatment. Early intervention care is only directed to those patients who face EoT.

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Self-Reported Questionnaires. Each assessment included a set of self-reported questionnaires assessing participants' personal context (i.e., sociodemographic characteristics, fertility history and previous specialised psychosocial care received, and representations about the importance of parenthood), Beyond Fertility's mechanisms of change (i.e., psychosocial processes: acceptance, perceived social support and relational quality, meaning-making and pursuit of new life goals) and participants' quality of life (primary outcome), mental health and well-being (secondary outcomes). Table 4.2 presents a complete description of each questionnaire. The questionnaires are presented in Appendix I.

Quantitative Feasibility Outcomes. The quantitative feasibility outcomes and assessment criteria followed Bowen et al.'s (2009) framework and are outlined in Table 4.3. These outcomes were developed to separately evaluate the Beyond Fertility intervention and its evaluation design.

Table 4.2 *Self-report questionnaires used in each assessment moment*

Variables	Questionnaires	Description	T1	T2	T3
Personal context					
Socio-demographic characteristics	Researcher developed questions	Age (in years), gender, nationality, place of residence (city, village), education, occupational status, and financial difficulties, which were assessed by two questions ('during the past 12 months, how often have you had difficulties paying your bills?', 'how often have you not had enough money to buy food, clothing, or other things that your family needed?', from 1: never to 4: very often) and where a single variable was computed based on the mean of the participants' answers to these two questions. Relationship status, partner's gender, and relationship duration (if applicable). Parenthood status: number of biological, adopted, or stepchildren.			✓
Fertility history and previous specialised psychosocial care received	Researcher developed questions	Age at which participants started trying to conceive spontaneously (if applicable) and at which they first sought medical help. How long they were undergoing fertility treatment, previous types of treatment (medication, surgery, artificial insemination (AI), IVF/ICSI), the number of AI or IVF/ICSI cycles performed (if applicable), and whether they had children from treatment (no, yes). Previous history of having received specialised psychosocial care ('throughout your life, have you sought/received psychological support?') and, if applicable, the duration of the support, whether it was sought due to fertility problems ('have you sought/received psychological support in the past for fertility-related issues?') and, if applicable, whether this support was perceived as helpful ('do you consider this support helped you?' no, yes).			✓

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Representations about the importance of parenthood	Need for parenthood (NP) and Rejection of child-free lifestyle (RJL) subscales of the Fertility Problem Inventory (FPI) (Newton et al., 1999) Portuguese validation: Moura-Ramos et al. (2012)	NP subscale assesses participants' close identification with the role of parent and their perception of parenthood as an essential life goal (e.g., 'I will do just about anything to have a child'). RJL assesses participants' negative view of a child-free lifestyle or status quo and their perception that satisfaction or happiness depends on having a(nother) child (e.g., 'couples without a child are just as happy as those with children'). 10- (NP) and 8- (RJL) item self-reported subscales scored on a six-Likert-type response scale (from 1: strongly disagree to 6: strongly agree). Positively phrased items were reversed, and all items for each subscale were summed to produce a total score ranging from 10 to 60 (NP) and 8 to 48 (RJL). Higher scores indicate a higher need for parenthood and rejection of a child-free lifestyle (original version: NP, $\alpha=0.84$; RJL, $\alpha=0.80$; Portuguese population: factor structure confirmed by $\chi^2=147.89$, $p<0.001$; CFI=0.95; RMSEA=0.06 [90%CI=0.04-0.08]; SRMR=0.06).	✓ ✓ ✓
Psychosocial processes (mechanisms of change)			
Acceptance	Acceptance cognitions subscale of the SCREEN-IVF Verhaak et al. (2010) Portuguese validation: Lopes et al. (2014)	Assesses acceptance cognitions about infertility and a childless lifestyle (e.g., 'I have learned to live with my fertility problems'). A 6-item self-reported subscale scored on a four-Likert-type response scale (from 1: do not agree to 4: strongly agree), with the total sum of scores on each item ranging from 6 to 24. Higher scores indicate higher acceptance of fertility problems (original version: $\alpha=0.92$; Portuguese version: $0.87<\alpha<0.94$).	✓ ✓ ✓
Perceived social support	Social Support subscale of the SCREENIVF Verhaak et al. (2010)	Assesses participants' feelings about their social relationships (e.g., 'When I feel sad, there is always someone I can talk to'). A 5-item self-reported subscale scored on a four-Likert-type response scale (from 1: nearly never to 4: often), with the total sum	✓ ✓ ✓

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	Portuguese validation: Lopes et al. (2014)	of scores on each item ranging from 5 to 20. Higher scores indicate higher perceived social support (original version: $\alpha=0.89$; Portuguese version: $0.90 < \alpha < 0.93$).			
Perceived relational quality	Relational domain of the core module of the Fertility Quality of Life (FertiQoL) (Boivin et al., 2011) Boivin et al. (2011) Portuguese validation: (Melo et al., 2011)	FertiQoL was described below in the quality-of-life variable. The relational domain assesses the impact of the fertility problems on partnership, such as sexuality, communication, and commitment (e.g., 'Have fertility problems strengthened your commitment to your partner?'). A 6-item self-reported subscale scored on a five-Likert-type response scale (0: completely/very dissatisfied/always/an extreme amount to 4: not at all/very satisfied/never/not at all). Negatively scored items were reversed. Raw scores range from 0 to 24. Scores were linearly transformed to produce a total score ranging from 0 to 100. Higher values indicate a better quality of life (original version: $\alpha=0.80$; Portuguese version: $\alpha=0.71$).			
Meaning-making	Posttraumatic Growth Inventory (PTGI-SF) Cann et al. (2010), Portuguese validation: (Lamela et al., 2014)	Assesses the stress-related personal growth, namely the perception of positive changes as a result of having undergone fertility treatment (in oneself, interpersonal relationships, and philosophy of life) (e.g., 'I discovered that I'm stronger than I thought I was'). A 10-item self-reported scale scored on a six-Likert-type response scale (from 0: I did not experience this change as a result of the fertility treatments to 5: I experienced this change to a very great degree as a result of the fertility treatments'), with the total sum of scores ranging from 0 to 50. Higher scores indicate a higher level of posttraumatic growth (original version: $0.85 < \alpha < 0.90$; Portuguese population: $\alpha=0.88$).	✓	✓	✓
Pursuit of new life goals	Goal Reengagement (GR) Scale of the Goal	Assesses the ability to identify new goals, commit to them, and start actively pursuing them (e.g., 'I put effort toward other meaningful goals'). A 6-item self-	✓	✓	✓

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Adjustment Scale (GAS) (Wrosch et al., 2003) reported subscale scored on a five-Likert-type response scale (from 1: strongly disagree to 5: strongly agree), with the total average of scores ranging from 1-5. Higher scores indicate more engagement in other meaningful life goals (original version: $\alpha=0.86$).

Outcomes - Psychosocial adjustment

Quality of life	Core module of the Fertility Quality of Life (FertiQoL) Boivin et al. (2011) Portuguese validation: (Melo et al., 2011)	Assesses a person's QoL in the context of a fertility problem and covers four domains: Emotional (e.g., 'do your fertility problems make you angry?'), Mind-Body (e.g., 'are you bothered by fatigue because of fertility problems?'), Relational (e.g., 'are you and your partner affectionate with each other even though you have fertility problems?'), and Social (e.g., 'do you feel your family understand what you are going through?'). A 24-item self-reported scale scored on a five-Likert-type response scale (0: completely/very dissatisfied/always/an extreme amount to 4: not at all/very satisfied/never/not at all). Negatively scored items were reversed. Raw scores range for the total scale of quality of life ranged from 0 to 96 and four each domain from 0 to 24. All scores were linearly transformed to produce a total score ranging from 0 to 100. Higher values indicate a better quality of life (original version: $\alpha=0.92$; Portuguese version: $0.70 < \alpha < 0.90$).	✓	✓	✓
Mental health	The Mental Health Inventory (MHI-5) (Berwick et al., 1991) Portuguese validation: Pais-Ribeiro (2001)	Assesses how participants have been feeling during the previous four weeks ('How much of the time, during the past month, have you felt calm and peaceful?'), on a six-Likert-type response scale (1: none of the time to 6: all of the time), covering four dimensions of mental well-being: anxiety (one item), depression (one item), emotional-behavioural control (one item), and general positive affect (two items). A	✓	✓	✓

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technical error occurred while collecting the item covering the emotional-behavioural control dimension (not assessed). Therefore, the total score is based on the raw data from four items. Negatively scored items were reversed. Scores range from 4 to 24. Higher values indicate better mental health (original version: areas under the ROC curve (AUC) ranging from 0.74 ($SE=0.04$) and 0.89 ($SE=0.03$); Portuguese version: $\alpha_{\text{long-version}}=0.96$, $r_{\text{MHI-5}}=0.95$).

Well-being	Satisfaction With Life Scale (SWLS) Diener et al. (1985) Portuguese validation: (Neto, 1993)	Assesses global cognitive judgments of life satisfaction (e.g., ‘So far I have gotten the important things I want in life’). A 5-item self-reported scale scored on a seven-Likert-type response scale (1: strongly disagree to 7: strongly agree), with the total sum of scores on each item ranging from 5 to 35. Higher scores indicate higher satisfaction with life (original version: $\alpha=0.87$; Portuguese version: $\alpha=0.78$).	✓	✓	✓
	Flourishing Scale (FS) Diener et al. (2009) Portuguese validation: Silva and Caetano (2011)	Measure of social-psychological well-being. Assesses the features of human flourishing such as positive social relationships, feeling competent and capable in activities important to the individual, meaning and purpose in life, and engagement and interest in one’s daily activities (e.g., ‘I lead a purposeful and meaningful life’). An 8-item self-reported scale scored on a seven-Likert-type format (1: strongly disagree to 7: strongly agree), with the total sum of scores on each item ranging from 8 to 56. Higher scores indicate higher psychological resources and strengths (original version: $\alpha=0.87$; Portuguese version: $0.77<\alpha>0.84$).	✓	✓	✓

Table 4.3 *Feasibility outcomes and assessment criteria for the Beyond Fertility intervention and its evaluation design*

Intervention: Beyond Fertility
Demand. Proportion of participants who were eligible to receive the intervention, who accepted to receive it (i.e., intention to use) and who actually engaged with each therapeutic activity (i.e., perceived demand). Reasons for non-participation and withdrawal over the course of the intervention (related to the intervention).
Acceptability. Responses to a set of two anonymous online open-ended questions about the appropriateness of each therapeutic activity (after completing it): the most appreciated aspects of the session and the least appreciated ones.
Implementation. Whether all the planned tasks for each therapeutic activity were delivered as planned (self-reported by the interventionist delivering the intervention). Mental healthcare professionals' performance while and confidence in implementing the intervention: the degree to which they felt confident implementing each activity (using a Likert-scale from 0: no confident at all to 10: totally confident).
Practicalities. Duration of the sessions. Proportion of participants who received the intervention as planned (factors that facilitated its delivery and reasons for not going as planned).
Study evaluation design
Acceptability. Proportion of participants who completed the informed-consent form and each of the three assessment moments. Reasons for non-participation and withdrawal over the course of the intervention (related to the assessments).
Implementation. Whether the recruitment procedures were followed as planned. Whether assessments were sent to participants on time. Reported issues relating to study procedures or materials.
Practicalities. Time taken to answer each assessment. Factors affecting the implementation of the evaluation design.

Qualitative Feasibility Evaluation - Focus Group Script. To evaluate participants' experiences with the overall study process (intervention itself and its evaluation design), a semi-structured script was developed following existing guidelines (Hennink, 2014; Krueger & Casey, 2000), available in Appendix J. Open questions were informed by Bowen et al.'s (2009) feasibility framework and covered: demand (e.g., experiences in the study), acceptability (e.g., satisfaction, perceived appropriateness of the therapeutic activities and materials), implementation (e.g., barriers and facilitators to engagement) and practicality (e.g., recruitment, time between sessions, format, ease of filling out the questionnaires). Participants were prompted for additional suggestions or comments. A final set of questions based on Mentimeter (interactive audience engagement platform) included the description, in one small sentence, of the participants' experience in the study; to rate the extent to which Beyond Fertility helped them adjust to EoT (from 1: did not help not at all to 7: was an essential help), if they would engage with Beyond Fertility again (from 1: not at all to 7: totally), whether they would recommend Beyond Fertility to a friend (from 1: I would not recommend it at all to 7: I would totally recommend it), and whether it would be an asset to implement Beyond Fertility in fertility clinics (not at all, yes maybe, yes totally).

Procedure

Female patients were consecutively screened for inclusion, contacted by phone, informed about the trial, and invited to participate with their partners (March-May 2021). A link to the study information sheet and informed consent were emailed using Qualtrics software (Qualtrics, Provo, Utah, USA). Those who met the inclusion criteria and consented to participate filled out the T1 assessment (using Qualtrics software) and received the first Beyond Fertility therapeutic session (i.e., EoT preventive care). The interventionist was the principal investigator (M.S.-L), an accredited psychologist. After the end of the cycle, those

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who faced an unsuccessful cycle and ended treatment (i.e., faced EoT) met the inclusion criteria to proceed with the study. All the other participants who received a positive beta hCG or decided to continue pursuing fertility treatment were excluded from the study (these participants were offered a referral to specialised support or other support sources).

Those who proceeded with the study were contacted by the psychologist to schedule the second therapeutic session. The link to the T2 questionnaires (using Qualtrics software) was sent after the session. The subsequent group sessions were scheduled following the same procedure at a suitable time among the group of participants. The link to the T3 questionnaires (using Qualtrics software) was sent after the final group session. Reminders about the surveys were sent to participants via email and phone. The estimated duration to fill out all the questionnaires at each assessment moment was around 30-40 minutes.

At the end of the study, all participants who initially consented to participate were contacted and invited to participate in a focus group about their experiences in the overall study process. An information sheet and informed consent were sent to the participants with a link to provide their availability. Those who consented received the invitation link for the focus group. The focus group was carried out on December 15, 2021, via Zoom (Zoom Video Communications, 2012) and was audio-recorded and transcribed verbatim. The focus group was moderated by another accredited psychologist and researcher (S.G.) to provide a safer and more comfortable environment for participants to feel at ease to share their thoughts (Hennink, 2014; Krueger & Casey, 2000). At the beginning of the discussion, the purposes and procedures were explained, and participants were alerted to the recording (as per consent) and informed about ground rules (e.g., confidentiality, absence of right or wrong questions, welcoming of all thoughts even if in opposite directions, freedom to ask

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additional questions). In the end, participants were given a link to access short Mentimeter questions and submit their answers.

Ethical Approval and Considerations

The Ethics Committees of the School of Psychology, Cardiff University, Cardiff, United Kingdom (EC.21.05.18.6351A) and the Centro Hospitalar Universitário de São João, Porto, Portugal (CHUSJ; 127/2020) approved the study. Participation in the study implied working and discussing challenging topics. Participants were informed that they could withdraw from the study at any point without providing explanations and encouraged to contact the research team (accredited psychologists) if they had questions/concerns, felt distressed or experienced negative emotions or feelings that interfered with their daily life and caused discomfort. Those patients who showed clinic emotional distress were offered a referral for specialised psychosocial support and provided with additional sources of support. The researcher was also attentive to participants' reactions during the focus group (e.g., distress, discomfort) and available to contact them if needed.

Data Management and Analysis

Descriptive statistics (*mean*, *SD*, absolute numbers, proportions, and interval ranges) were used to describe the participants' sociodemographic characteristics and fertility history and psychosocial care received. As per good practice in feasibility evaluation, no efficacy outcomes were reported and only the descriptives on the primary and secondary outcomes were reported (Craig et al., 2008; Skivington et al., 2021).

Thematic analysis following Braun and Clarke's (2006) recommendations was applied to analyse data from the open-ended questions and the focus group. This approach assumes a flexible epistemological position but offers a systematic and comprehensive framework for a

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detailed data account. The author adopted a critical realist epistemological and ontology position by limiting the extent of the research interpretation of the participants' experiences. The verbatim answers and focus group transcript were imported into NVivo software version 12 (QSR International Pty Ltd, 2018). M. S.-L. and S. G. familiarised themselves with the audio recording and transcripts. Using an inductive approach, M. S.-L. set codes (i.e., descriptive meaning labels) for each text segment. The research team (S. G., B. F., R. C. & M. S.-L.) met to review the coding, and disagreements on interpretation were discussed until a consensus was achieved. Connections and differences across the codes were analysed and systematically organised into categories. Having Bowen et al.'s (2009) feasibility criteria as reference, the main categories were then organised into sub-themes and themes (i.e., interpretative descriptions of several categories describing interrelated ideas). Representative verbatim quotes (translated into English) were used to support the sub-themes.). Quotes were referenced by participant number (Pa). '(...)' indicates that part of the quote was omitted as it did not add relevant information, and '[text]' represents clarifications added by the authors.

Results

Sample Characteristics

Figure 4.2 presents the participant flow diagram. Thirty-two participants (18 female patients, from which 14 with their male partners) consented to participate and filled out the T1 assessment. Table 4.4 describes participants' sociodemographic characteristics, fertility history and previous psychosocial care received at T1.

Figure 4.2 Flow diagram of Beyond Fertility's pilot feasibility single-arm trial

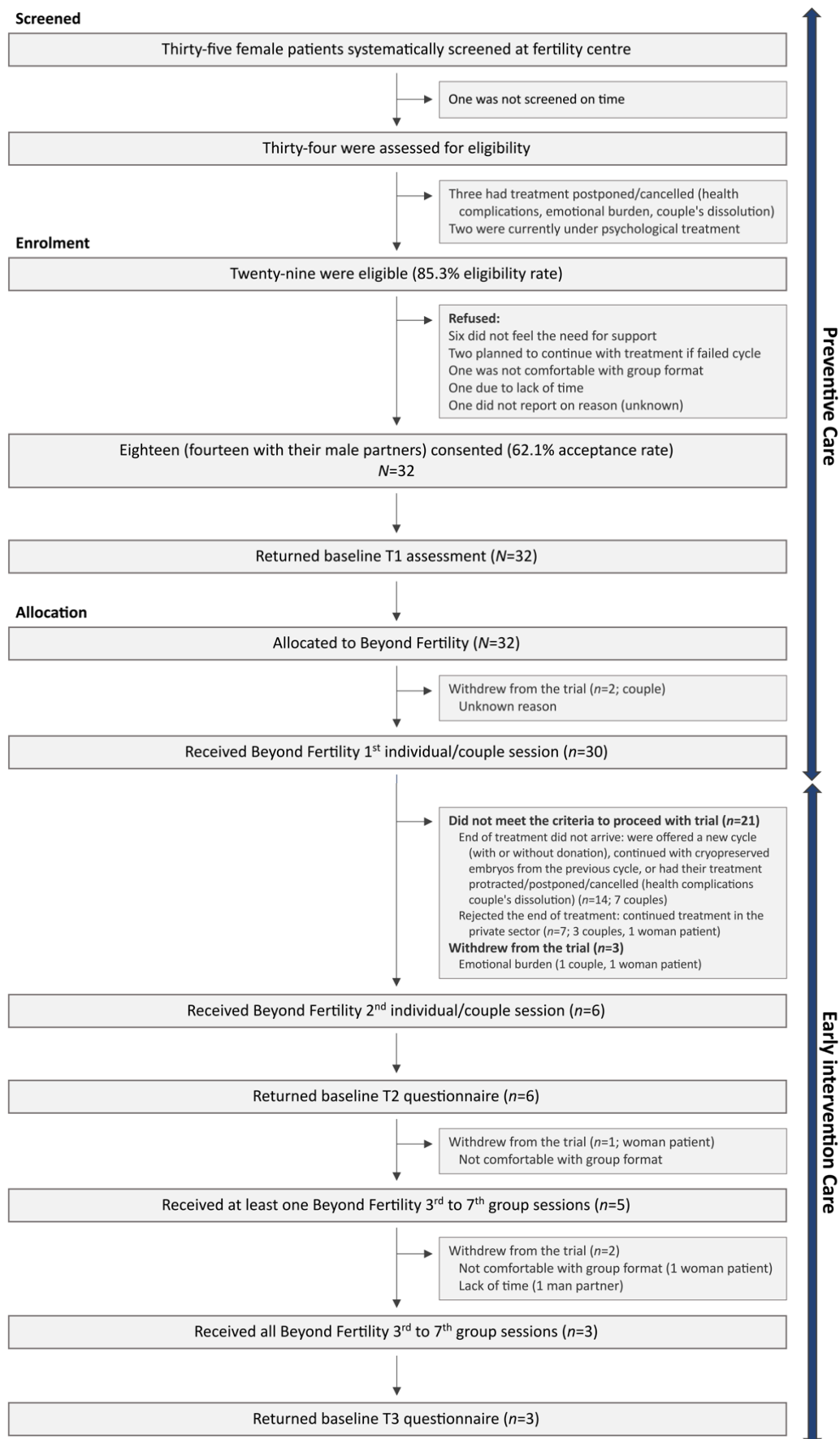


Table 4.4 Descriptive statistics of participants' sociodemographic characteristics, fertility history and care received at T1 (baseline) assessment

	Total (N=32)
Sociodemographic characteristics	<i>n</i> (%)
Age (years) <i>M</i> (<i>SD</i>)[interval range]	38.16(3.84)[29.00-45.00]
Women	18(56.25)
Portuguese	29(90.63)
Place of residence	
City	22(68.75)
Village	10(31.25)
University education	16(50.00)
Employed^a	29(93.55)
Financial difficulties <i>M</i> (<i>SD</i>)[interval range]	1.06(0.17)[1.00-1.50]
In a heterosexual relationship	32(100.00)
Duration (years) <i>M</i> (<i>SD</i>)[interval range]	11.58(5.51)[3.00-20.00]
Have children	
Biological	13(40.63)
Adopted	0(0.00)
Stepchildren	6(18.75)
Fertility history and previous specialised psychosocial care received	
Age at which started trying to conceive spontaneously^b <i>M</i> (<i>SD</i>)[interval range]	31.30(5.16)[22.00-38.00]
Age at which sought medical help^b <i>M</i> (<i>SD</i>)[interval range]	35.19(4.04)[24.00-42.00]
Duration undergoing treatment <i>M</i> (<i>SD</i>)[interval range]	2.24(2.18)[0.00-8.00]

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Previous treatments	25(78.13)
Medication	6(18.75)
Surgery	4(12.50)
Artificial insemination	8(25.00)
Number of cycles $M(SD)$ [interval range] ^a	2.00(0.89)[1.00-3.00]
IVF/ICSI	17(53.13)
Number of cycles $M(SD)$ [interval range] ^a	1.93(0.96)[1.00-4.00]
Had children from previous treatment	4(16.00)
Received specialised psychosocial care in the past	11(34.38)
Duration (years) $M(SD)$ [interval range]	1.40(1.45)[0.00-4.00]
Due to fertility-related issues	2(18.18)
Considered it helpful	2(100.00)

Note. M =mean; SD =standard deviation. ^avalid percentages were reported (^a1-2 participants did not report on this variable. ^b6 participants did not report on these variables).

Feasibility of the Beyond Fertility Intervention

Demand. Thirty-five female patients were screened, and thirty-four were assessed for eligibility. Five did not meet the eligibility criteria because their treatment was postponed or cancelled, or they were currently under psychological treatment. Of the twenty-nine who were eligible (85% eligibility rate), eighteen female patients, from which fourteen with their male partners ($N=32$ participants), consented to participate (62% acceptance rate). The main reason for those who did not consent was perceiving no need for psychosocial support. All 32 participants were allocated to the Beyond Fertility intervention. One couple did not attend the first session, with a total of 30 participants receiving the first session of Beyond Fertility (i.e., EoT preventive care). Of those who engaged with the Beyond Fertility

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intervention ($n=30$), only 30% ($n=9$) met the inclusion criteria to proceed in the study after the treatment ended. Most did not reach EoT after the cycle had ended ($n=14$, 47%), as they were offered a new cycle (with or without donation), were able to undergo another cycle with the cryopreserved embryos from the previous one, or had their treatment protracted, postponed, or cancelled, mainly due to health complications. Others ($n=7$, 23%) rejected EoT and continued pursuing treatment in the private sector. From those who met the inclusion criteria to proceed with the study ($n=9$, 30%), two-thirds ($n=6$, 67%) received at least one therapeutic session of early intervention care, and one-third ($n=3$, 33%) received all the complete intervention (i.e., EoT preventive and early intervention care; 9.4% completion rate). Reasons for withdrawing from early intervention care were the emotional burden of EoT ($n=3$), not feeling comfortable in group format ($n=2$) or lack of time ($n=1$).

Acceptability. Fifty-seven anonymous open-ended responses were reported on the most and least appreciated aspects of each therapeutic session of Beyond Fertility. Thematic analysis of participants' anonymous responses revealed one main theme and five themes, described in detail with illustrative quotes in Appendix K. The main theme reflected that Beyond Fertility was perceived as adequate, beneficial, and empathic support. The first two themes reflected positive evaluations of Beyond Fertility's aims and format, respectively. Patients valued having a session before the start of the treatment cycle (i.e., EoT preventive care), as patients valued being able to talk in a moment filled with uncertainty about their feelings and expectations and appreciated '*without any doubt, the full clarification*' about what most patients experience during the last cycle and what they could expect if it would end unsuccessfully. Although this was the perception of most patients, one participant stated that '*remembering past feelings and those that will come is always challenging to talk*', and another referred that '*as we are at the beginning of the IVF process, with all*

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possibilities still open, we feel that too much has been said about the possibility of ending it unsuccessfully'. Those who received the EoT early intervention care valued the *'strategies and tools'* and *'the themes discussed'*, in particular about *'deepening self-compassion'*, *'defining new life goals according to the values we desire beyond parenthood'*, and the *'availability of tools for relaxation and guidance'*. Only one participant referred they did not appreciate the range of tools provided in session four, but no further information was provided. Patients expressed very positive comments about having individual/couple sessions, as they appreciated having a private one-to-one space to freely *'talk about the situation in question without any restrictions'*. They also appreciated having group sessions, as they perceived *'sharing experiences with others'* going through the same journey as essential. The third theme reflected the perceived benefits of Beyond Fertility. Patients considered the preventive care helped them to *'clarify doubts that I was afraid to ask'*, feel validated and normalise their emotions, fears, and concerns (*'made us think we are no different, that the fears and anxieties we feel are common to couples going through the same thing'*) and better understand and feel more prepared for the treatment cycle and possible adverse outcomes. Those who received the early intervention care considered it fundamental and needed support at that stage. Patients reported it *'made us understand we are not alone'*, *'gave us strategies to cope with infertility'*, and helped them define and pursue alternative paths beyond parenthood (*'showed us there is a whole world beyond the pain'*). The fourth theme reflected positive reactions towards the psychologist. Patients highlighted specific characteristics, such as empathy, responsiveness, and expertise in psychosocial fertility care (*'the understanding and compassion of the psychologist'*). The last theme reflected no negative aspects from the sessions (*'I don't have anything that I didn't appreciate. Psychological support is essential!'*).

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'Certainly, the complete clarification of the psychologist and their empathy was positively surprising. Indeed, in the car going back home, my husband and I talked about matters we have never discussed. It strengthened us to face this new stage of our lives!'

Implementation. Each activity was delivered as planned. The interventionist felt totally confident in delivering most sessions, except session four (group session). One of the main goals of this latter session was to promote mutual communication within the couple and discuss relationship constraints (sexual difficulties, communication). Considering the sensitiveness of the topic and the low number of sessions these participants had with the group, the interventionist found it difficult to engage such a small group in this activity. Regarding the frequency of each session, the group sessions were scheduled every two weeks (instead of every week as initially proposed) in response to participants' limited availability and preferences.

Practicalities. Individual/couple sessions had a mean duration of 1h15, and group sessions of 2h. Three participants (10%) received all planned sessions, as most (70%) did not meet the inclusion criteria to proceed after EoT. The flexibility of the sessions being conducted online (78%) and outside of working hours were considered valuable features of the intervention, facilitating participants' engagement. However, considering the low number of participants, it was not possible to schedule the group sessions at the same time after EoT for all participants. For one participant, the group sessions started two weeks after EoT, and for the others started three to four months later.

Feasibility of the Beyond Fertility Evaluation Design

Acceptability. Of those female patients eligible to integrate the study, 18, from which 14 with their partners ($N=32$), filled out the informed consent and T1 assessment (62%

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acceptance rate). Reasons for not participating or withdrawing from the trial were related to the characteristics of the Beyond Fertility intervention itself and not the assessments. Only a minority ($n=3$) did not report reasons for not participating/withdrawing. All participants who started filling out the questionnaires completed them.

Implementation. The recruitment procedures were applied as planned. No constraints were reported due to the implementation procedures or evaluation protocol materials.

Practicalities. Participants took, on average, 35.04 minutes ($SD=18.60$, range: 12.02-87.38) to complete the baseline (T1) assessment, 21.15 minutes ($SD=10.83$, range: 14.47-37.33) to complete T2 and 48.13 minutes ($SD=41.40$, range: 15.40-94.67) to complete T3.

Qualitative Feasibility Evaluation

All participants who consented to participate in the study ($N=32$) were invited to participate in the focus group, seven accepted the invitation (22% acceptance rate), and six actually participated (two couples and two female patients; 19% participation rate). One focus group was conducted, with a total duration of 63 minutes. Three participants had only received the first preventive session: two did not want to proceed with Beyond Fertility due to the emotional burden of EoT, and the other did not meet the inclusion criteria to proceed with Beyond Fertility because their treatment was postponed. The other three participants received all the seven therapeutic sessions. One main theme, three themes and seven categories were generated. The main theme reflected Beyond Fertility's high acceptability and demand but perceived feasibility challenges. The themes are presented in Appendix L and described below.

The first two themes concerned the intervention. The first showed patients considered Beyond Fertility necessary and beneficial, meeting a perceived high demand for support.

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Patients *'feel grateful for the sessions'* (Pa5, men, received all sessions), considering *'it was a shame to only have it in the last cycle'* (Pa3, woman, received session 1). Patients valued having someone they could turn to, in particular, an expert in psychosocial fertility care (*'I think the psychologist was tireless in the way that she treated us and in the care she provided us, without a doubt that was important during the process'*, Pa4). They considered Beyond Fertility gave them *'a safe space where we can express our doubts, our anxieties, our fears, our apprehensions'* (Pa4), helped them on *'how to cope not to let these feelings get in the way of our decisions to move forward'* (Pa5), decreased their feelings of loneliness (*'I think the process was lighter because we could see that other couples were going through the same thing as us and we were not aliens'* Pa1), and *'gave us tools, made us see ahead'* (Pa1). The second theme reflected that Beyond Fertility's activities, format, and mode of delivery were perceived as appropriate, although a larger group would have been beneficial. Patients considered the *'topics addressed were helpful'* (Pa1) and the *'materials were the appropriate ones for sure'* (Pa1). They expressed particular satisfaction towards the defusion strategies, self-compassion exercises and step-by-step guidance on exploring and pursuing valued life goals. Nonetheless, patients highlighted that *'sometimes it is difficult to find the time to dedicate'* (Pa5) to the additional materials made available after each session due to *'the day-to-day rush'* (Pa1). However, they perceived these materials as a resource they could turn to whenever they felt they needed to and when confronted with future challenging situations (even in other life domains). Patients found the mix of individual/couple and group format adequate to their needs. They considered the individual/couple format *'let patients feel more at ease, by gradually start talking about these issues individually before joining the group'* (Pa5). They also considered the group format crucial but stressed that *'perhaps having more people could help enrich the group'* (Pa5). Regarding the mode of delivery,

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patients specifically valued conducting the sessions online and outside of working hours *'because there are not as many constraints. It's easier to coordinate, both in terms of schedules and locations, where we can be. It's easier for everyone, I think'* (Pa1). They also considered scheduling the group sessions every two weeks, allowed the group to find a suitable time for everyone and *'gave us time to think (...) and time for the next session'* (Pa1). The final theme concerned the evaluation protocol, reflecting that the recruitment strategy was empathic, informative, and appropriate (*'I also agree with Pa1. We were first contacted by phone, and the entire project was explained to us, and then the information was sent in writing, which allowed us to read it again. I think it was quite appropriate. I really liked it'* Pa4), with no further or alternative suggestion being reported (*'I don't think there's another way to do it'* Pa6). Although the online assessments were time-consuming, patients considered them comprehensive and easily accessible (*'Sometimes they were a bit long, but that's it, they were manageable, it was only necessary to dedicate some time to it. I suppose it's necessary, so it's part of the process'* Pa5).

Mentimeter results. All participants answered the online questions ($n=6$). Patients considered their experience in Beyond Fertility *'a precious help'* and *'a rewarding and enriching experience'*. Patients perceived Beyond Fertility helped them adjust to EoT ($Mean=5.8$; $SD=0.45$). They would totally engage with Beyond Fertility again ($Mean=6.8$; $SD=0.45$), would totally recommend it to a friend ($Mean=6.6$; $SD=0.55$), and totally agreed that implementing Beyond Fertility in clinics would be an asset.

Descriptives of Participants' Individual Trajectories on Quality of Life, Mental Health and Well-Being at T1: T1 (Baseline), T2 (post-exposure to the individual/couple sessions) and T3 (post-exposure to the group sessions)

Quality of life. Individual total scores and trajectories for the study's primary outcome, quality of life, and associated dimensions (emotional, mind-body, relational and social) at T1, T2 and T3 per gender (women, men) are presented in Appendices M and N, respectively. Individual trajectories suggested a decrease in quality of life from T1 to T2 for women and men (more pronounced for women). An increase in individual trajectories from T2 to T3 seemed to be observed for women (less pronounced for the social dimension), which appeared to remain stable for men. This trend did not seem to be observed in the relational dimension for women, where individual trajectories suggested a decrease from T1 to T3.

Mental health. Individual total scores and trajectories for mental health at T1, T2 and T3 are presented in Appendix O. Individual trajectories suggested a decrease from T1 to T2 with an increase from T2 to T3.

Well-being. Individual total scores and trajectories for the two measures of well-being (i.e., satisfaction with life and psychosocial well-being) at T1, T2 and T3 are presented in Appendix P. Women's individual trajectories suggested a decrease in the total scores of satisfaction with life from T1 to T2 and an increase from T2 to T3. Men's individual trajectories suggested an increase from T1 to T3. A decrease from T1 to T2 to T3 seemed to be observed for social-psychological well-being for both women and men.

Discussion

Beyond Fertility was perceived as a valuable source of support through participants' EoT journey. Patients considered Beyond Fertility eased their transition when confronted with

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EoT, helped them to accept this undesired outcome and gave them the tools to seek and pursue alternative pathways to or beyond parenthood. Patients considered EoT preventive care for EoT necessary, adequate, and valuable. However, the fluidity of treatment options, complications during treatment, delayed time-frames, complex decision-making about ending treatment, and the emotional impact of fertility cycle/EoT make the practicalities of a standardised implementation of early intervention care after EoT challenging. The end of treatment is not a clear endpoint for most participants, with many who had seen their completed cycle as the last, continuing to pursue other treatment options. Results suggest that adjustments to the Beyond Fertility logic model and some modifications to its evaluation protocol are required.

Triangulation of the present concurrent and retrospective qualitative data with quantitative data showed congruency in the findings that Beyond Fertility is a valuable source of support through the patients' EoT journey.

Offering a face-to-face intervention based on the CCBT principles (Hayes et al., 2013) to support patients adjusting to EoT is perceived as necessary and valued by patients and psychologist/interventionist. CCBT has been used successfully with fertility patients undergoing treatment (e.g., Hosseinpanahi et al., 2020; Njogu et al., 2023; Peterson & Eifert, 2011). The present results add to current knowledge by showing that CCBT is also perceived as beneficial when patients are coping with EoT.

Patients who received Beyond Fertility expressed positive reactions towards its design and quality. One of the main perceived benefits was feeling supported during and after treatment by knowing they had someone who cared and to whom they could turn if they felt the need to. This was mentioned by most patients, even those who only received preventive care. This is consistent with mixed-methods and systematic research showing patients want

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support during and after treatment and endorse the high demand for psychosocial care for EoT (Daniluk, 2001b; Gameiro & Finnigan, 2017; Hammarberg et al., 2001; Volgsten et al., 2010). Patients perceived benefits of EoT preventive care aligned with Beyond Fertility's previous results (reported in the previous chapters). Patients valued being informed about what to expect from EoT and having a safe place where they could express their emotions and concerns (Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022) about a potential outcome that is not desired and tends to be avoided in fertility care (Harrison et al., 2022; Harrison et al., 2021; Peddie et al., 2004, 2005). Patients perceived benefits of EoT early intervention care were consistent with the 3TM mechanisms of change, which corroborates previous acceptability results of support intervention for EoT that aligns with the mechanisms of change of this same model (Kraaij et al., 2015; Rowbottom et al., 2022). Patients who received early intervention care valued that Beyond Fertility gave them a unique opportunity to share their emotions and thoughts in a group, as it made patients feel validated and connected with others, which they perceived to facilitate their adjustment to EoT. This sense of group cohesion has been compared in the literature to the therapeutic alliance in individual psychotherapy and recognised as a primary predictor of the process of change (Burlingame et al., 2001; Weck et al., 2015). Patients' feedback also indicated they perceived Beyond Fertility equipped them with useful strategies they could use in their daily lives to cope with the 'roller coaster' of emotions triggered by loss, such as exercises on self-compassion and mindfulness. The valorisation of these strategies supports the use of ACT exercises and metaphors, which the literature has shown promotes people's adjustment to difficult life situations (Harris, 2019; Hayes et al., 2006). Patients also perceived Beyond Fertility helped them to build a more positive view of their future with a clearer sense of alternative fulfilling life values and priorities and equipped them with structured strategies

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to think about how to find, seek and pursue valued life goals. These results are in line with the literature showing how acceptance and meaning-making are related and associated with people's ability to construct new views about the world and redefine priorities in life (Park, 2010).

Patients expressed positive reactions about the form and delivery mode of Beyond Fertility. Many patients valued a combination of individual/couple format with group support. From the patients' views, individual/couple support fostered the therapeutic relationship, enabled patients to privately discuss more sensitive topics, and facilitated their participation in the following group sessions after EoT. However, when the group component was included, barriers were noted, as patients needed time with the group to feel at ease to discuss more intimate and sensitive topics (e.g., couples communication and sexual difficulties). Indeed, 22% of patients rejected the intervention due to the group format. These results suggested that some patients may benefit more from continuing to receive individual/group support or being directed to self-guided support. Some may need more time to acknowledge and manage their emotions before expressing them to others.

With regard to the intervention delivery mode, the present results showed that offering Beyond Fertility in an online format and outside of working hours is a positive feature, as it overcomes traditional barriers to accessing mental health services (e.g., time, travel costs, stigma; Rüsçh et al., 2005; Sora et al., 2022). However, this would require mental healthcare professionals to work outside standard working hours. This may prove unsustainable across clinics due to the lack of time and resources, high workload, and lack of coordination and care integration (Boivin et al., 2017). An additional aspect that patients particularly valued was the interventionist being a specialist in psychosocial fertility care, highlighting the

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specialised aspect of care and the need to integrate psychosocial care into fertility care (Sax & Lawson, 2022).

EoT preventive care in an individual/couple format is well received by patients and is the most feasible part of Beyond Fertility (62% acceptance rate and positive qualitative evaluations). Only a minority (21%) considered no need for such care. This is congruent with the author's and other previous research showing that most fertility patients want to receive psychosocial care for EoT (Daniluk, 2001b; Gameiro & Finnigan, 2017; Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022). Descriptives on participants' individual scores on quality of life, mental health and well-being seemed promising in indicating that this intervention support might attenuate the negative impact of EoT. In the few individual trajectories reported, a recovery seemed to be observed for quality of life, mental health, and well-being, as opposed to the grief trajectory observed in cohort studies (Gameiro et al., 2016; Verhaak, Smeenk, Nahuis, et al., 2007). Social-psychological well-being and relational/social trajectories might be the exceptions. This could indicate that Beyond Fertility is less successful at triggering these mediators or outcomes. Alternatively, it could imply the presence of a sleeper effect, where any benefits become apparent at a later assessment moment. The non-observed change in psychological-social (i.e., eudaimonic) well-being could be related to patients' difficulty in building new meanings. Indeed, other research suggested that cognitive processing related to posttraumatic growth requires time (Sears et al., 2003; Tedeschi & Calhoun, 2004). A sleeper effect could also play a role in the less pronounced improvement in the individual social trajectories. Social interactions are difficult for patients, and isolation is a typical and major response after EoT (Johansson & Berg, 2005; McCarthy, 2008). Patients might need to be more emotionally prepared before embarking on challenging social situations (Gameiro et al., 2016; Rockliff et al., 2014).

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Relational well-being assesses the extent to which the partnership (e.g., communication, sexuality) has been affected by fertility problems (Boivin et al., 2011). Research shows that after EoT, there is a lack of communication within the couple about their next steps and efforts to achieve their shared parenthood goals (da Silva et al., 2020), and the decrease in sexual satisfaction and desire observed during treatment tends to continue (Daniluk, 2001b; Daniluk & Tench, 2007; Volgsten et al., 2010). The non-observed increase that seemed to be observed in this domain in the present study is likely due to the inadequacy and feasibility constraints identified by patients and the interventionist when addressing these issues (in group vs individual format). Patients would benefit from validation of these difficulties and increased communication skills at this stage (Stammer et al., 2002). Preventive care should identify and validate these difficulties, and early intervention care should focus on promoting these skills right after EoT in an individual/couple setting. In sum, results provide some indication that preventive care for EoT might have a protective effect in promoting patients' adjustment to EoT and that early intervention care seems to facilitate patients' adjustment in the aftermath. However, these trajectories are just a description of individual total scores with no inferential statistics being performed. Therefore, due to the low number of participants who received the full intervention, one must be careful to conclude, and a proper efficacy evaluation of the unique impact of preventive and early intervention care on patients' adjustment is needed.

Among those who could proceed with early intervention care after EoT (30%), acceptance rates were moderate (67% acceptance rate), and engagement over time was moderate to low (33% completion rate) but still higher than those observed for self-guided support (>20%; e.g., Rowbottom et al., 2022). It is not possible to say if it was the preventive care or face-to-face component of support (or both) that contributed to retaining patients.

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However, around one-third of the patients (33%) rejected such support after EoT, as they could not be in contact with their suffering. This is critical and suggests that those who may be in higher need of psychosocial care are less able to access it. Indeed, recent research showed that even when patients acknowledge the negative impact of their fertility journey on their mental health, this does not translate into seeking support (Boivin et al., 2022; Pasch et al., 2016). However, this same research also shows that most (83%) report seeking it when their medical team are proactive in offering it. These results are in line with patients' preferences (Chapter 3: Sousa-Leite et al., 2022) and suggest that patients' compliance with support after EoT might be facilitated if the whole fertility team is involved and promotes such access.

An important finding is that many patients change their minds about ending treatment. For many patients, EoT did not arrive as expected, as some had medical complications during the cycle and/or had the cycle cancelled, postponed, or offered a new one. Others rejected EoT when confronted with the unsuccessful cycle and continued pursuing treatment in the private sector. These findings are consistent with cross-sectional survey research showing that patients tend to undergo more treatment cycles than initially intended (Marcus et al., 2011) and highlight the idiosyncrasy of fertility treatment journeys and the difficulty in identifying EoT patients.

The evaluation protocol was considered adequate and acceptable to the participants. All participants completed the questionnaires, and most considered the length of the questionnaires feasible. The exploratory nature of the trial is reflected in a long assessment protocol with quantitative and qualitative methods.

Considering the high demand with limited support for EoT, it seems beneficial to continue towards efficacy evaluation of Beyond Fertility. However, findings indicate implementation

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constraints, the most problematic being patients' lack of engagement with all sessions after EoT. In an attempt to overcome these barriers, the following modifications will be implemented: greater involvement of the fertility clinic in promoting Beyond Fertility in order to increase patients' awareness of the need for and access to support after EoT, more sensitive/private activities about patients' partnership (communication, sexual relationship) will be discussed early after EoT and in an individual/couple setting, those patients who end treatment unsuccessfully and are ambivalent about undergoing an additional cycle in the future will be offered the early intervention care of Beyond Fertility, as Beyond Fertility is a low-threshold intervention, for those patients who withdraw from support after EoT due to being in group format, bespoke individualised support will be offered, and to test the unique contribution of the effect of EoT preventive care (session 1) vs early intervention care, an additional assessment will be included after EoT.

Strengths and Limitations

The present study followed the Medical Research Council framework and was theoretically informed by Bowen et al.'s (2009) feasibility framework, which enabled a comprehensive evaluation of the Beyond Fertility intervention and its evaluation design. The evaluation design offered valuable insights for evaluating future face-to-face EoT interventions. The in-depth mixed-methods approach to acceptability and feasibility strengthened the results' reliability and the potential success and efficacy of Beyond Fertility (Sekhon et al., 2017; Skivington et al., 2021). The recruitment strategy was systematic in a large public hospital, which increased internal validity. Research has been suggesting that a sample size ranging from 12 to 15 per group is acceptable for a pilot feasibility study (Julious, 2005; Lancaster et al., 2004), with more cautious recommendations suggesting a sample size of 25 participants per group (Sim & Lewis, 2012). The study participation rate was low, but

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the convergence of results with previous research (reported in the previous chapters) suggested that a larger sample is unlikely to invalidate the conclusion that further testing of Beyond Fertility is warranted. Not contacting the male partners directly may have hindered their participation. It is known that men's uptake of mental health support is lower when compared with women's (Mackenzie et al., 2006). In the present study, the number of men engaging in the trial was high and higher than expected compared to other interventions (Frederiksen et al., 2015). Another researcher conducting the focus group promoted a safer environment for participants to express their experiences and views, increasing the reliability of the results. However, being external to the research team would be ideal to prevent research bias. Participants were representative of a white, employed, and heterosexual group of women, which raises questions about generalisability to other groups such as men and minority groups. The redundancy of the qualitative data strengthened the study results but suggested an over-assessment. Considering the low number of participants and substantial data variability, the descriptives of participants' individual trajectories should be carefully considered.

Conclusion

The findings from this trial indicate there is a high demand for EoT psychosocial care. A brief face-to-face intervention grounded on CCBT seems adequate and valued. Considering the positive feedback of patients who received Beyond Fertility, a better understanding of its efficacy in promoting their psychosocial adjustment to EoT seems worthwhile. However, feasibility challenges in implementation are expected, and modifications to the intervention and evaluation design are required to proceed with an RCT to evaluate its efficacy.

**CHAPTER 5 MULTICENTRE TWO-ARM PARALLEL GROUP OPEN-LABEL RANDOMISED
CONTROLLED TRIAL OF BEYOND FERTILITY**

Introduction

Beyond Fertility is a brief face-to-face specialised psychosocial intervention developed over the present doctoral thesis to promote patients' adjustment to EoT. To reiterate, EoT is the point when patients complete the last fertility treatment cycle without achieving a live birth and decide not to attempt more treatment cycles. Beyond Fertility encompasses seven therapeutic sessions: one individual/couple session before the end of treatment to inform and prepare patients for the possibility of EoT (referred to as EoT preventive care), and six sessions (one individual/couple and five group-based) delivered when and if EoT happens (referred to as EoT early intervention care). Beyond Fertility is expected to attenuate the negative impact of EoT, translated into better quality of life (primary outcome), mental health and well-being (secondary outcomes).

Beyond Fertility is theoretically informed by the 3TM (Gameiro & Finnigan, 2017) and applies CCBT principles (Hayes et al., 2013), in particular ACT and self-compassion (Gloster et al., 2020; Neff & Tirsch, 2013). These model and therapeutic principles proved effective when incorporated into a web app to support people who self-identify as having a definite unfulfilled wish for children, including those who faced EoT (Rowbottom et al., 2022). It remains unclear if offering psychosocial support in the immediate aftermath of ending treatment translates into high uptake and observable impact on patients' psychosocial adjustment.

A significant novelty of Beyond Fertility is that it integrates an element of preventive care for EoT, which, to the author's knowledge, has not been evaluated before, and it is not

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embedded in current practices at fertility clinics (Carson et al., 2021; Harrison et al., 2022; Peddie et al., 2005). Psychological theories (Snyder, 2002; Su & Chen, 2006) and research evidence (Gameiro & Finnigan, 2017; Harrison et al., 2022; Harrison et al., 2021; Leung et al., 2012; Lyon et al., 2014; Chapter 2: Sousa-Leite et al., 2023) suggest that by making patients aware of what most people experience when confronted with EoT and by reassuring them that most people who go through this experience can reach personal balance and re-build a fulfilling and meaningful life after EoT (and how), patients will be more prepared to cope with and less impacted by EoT if it comes to happen. Results from mixed-methods online survey research on patients' willingness and preferences towards EoT preventive care (Chapter 2: Sousa-Leite et al., 2023) showed that 73% of patients want to receive this care early in the treatment path (before initiating the first IVF/ICSI cycle), not only to better adjust to EoT but also to better cope with the treatment process and unsuccessful cycles, and make more informed and timely decisions about their parenthood goals. Focus group qualitative results from piloting Beyond Fertility (reported in Chapter 4) highlighted very positive experiences and reactions towards the Beyond Fertility EoT preventive care, with patients reporting they valued being informed about what most patients experience during treatment and what they can expect if it ends unsuccessfully. Results showed that even those who ultimately continue pursuing treatment after what is initially thought to be their last cycle report positive reactions towards preventive care, indicating they feel more supported during the cycle and after receiving a negative result (i.e., unsuccessful cycle). This evidence suggests that EoT preventive care can facilitate patients' psychosocial adjustment to EoT, even when patients decide to continue treatment. The present trial aimed to test this working hypothesis.

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A second significant novelty of Beyond Fertility is that it incorporates individual/couple- with group-based psychosocial care. Most interventions in fertility care focus on supporting patients during treatment via individual/couple or group sessions (Dube et al., 2023; Frederiksen et al., 2015). These different formats allow for the achievement of different therapeutic goals (e.g., exploring in greater depth individual emotions and concerns and couple dynamics vs sharing and learning through others' experiences and normalising psychosocial reactions; Van den Broeck et al., 2010) that are associated with positive change in patients' psychosocial adjustment outcomes (Dube et al., 2023; Frederiksen et al., 2015). Results from focus group research with EoT patients and fertility HCPs (Chapter 3: Sousa-Leite et al., 2022) showed high acceptability and feasibility of integrating individual/couple and group sessions. Although results from piloting Beyond Fertility (reported in Chapter 4) showed some patients (~22%) are not willing to receive early intervention care in a group format, most seemed open to receiving it in an individual/couple and group format, with patient qualitative reflections and quantitative descriptives on few individual trajectories on quality of life, mental health and well-being outcomes suggesting a promising effect as the result of exposure to both formats.

The present trial was a multicentre two-arm parallel group open-label RCT that aimed to investigate Beyond Fertility's efficacy in promoting patients' healthy psychosocial adjustment to EoT. RCTs are the gold standard and the most robust and effective method to reduce biases in the efficacy evaluation of complex interventions (Barlow, 2003; Craig et al., 2008; Moher et al., 2010; Schulz et al., 2010; Skivington et al., 2021). As no interventions are available to routinely support patients psychosocially adjusting to EoT, the usual care patients receive at clinics was considered a suitable comparator to be used in the present trial. Care as usual (CaU) is often used as a control condition in psychotherapy research, with

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systematic research showing it is adequate to test the effect of a psychosocial intervention (Cuijpers et al., 2021; Thompson & Schoenfeld, 2007). The main goal of the trial was to investigate whether participants who faced EoT and were allocated to Beyond Fertility experienced a lower decrease in their quality of life (primary outcome), mental health and well-being (secondary outcomes) from prior to starting their last treatment cycle to six months after EoT, compared with participants who were allocated to CaU. The trial had two secondary goals. One was to investigate if the Beyond Fertility EoT preventive care promoted patients' psychosocial adjustment to an unsuccessful last treatment cycle. Specifically, it investigated if participants who ended what they considered to be their last treatment cycle with a negative result (including those who faced EoT and those who continued pursuing treatment after being confronted with this result) and were allocated to the first session of Beyond Fertility (i.e., EoT preventive care) experienced a lower decrease in their quality of life (primary outcome), mental health and well-being (secondary outcomes) from prior to starting the cycle to two weeks after the end of the cycle, compared with participants who were allocated to CaU. The other secondary goal was to investigate if undergoing only the individual/couple sessions was by itself enough to create benefits for patients. Specifically, it investigated if participants who faced EoT and were allocated to the individual/couple sessions of Beyond Fertility experienced a lower decrease in their quality of life (primary outcome), mental health and well-being (secondary outcomes) from prior to starting their last treatment cycle to three months after EoT (i.e., before starting the group sessions), compared with participants who were allocated to CaU.

The literature indicates that EoT triggers moderate to large decreases in mental health and well-being (up to 20 years after; Gameiro & Finnigan, 2017) and that support intervention can restore these to normative levels within one to four months after

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completion of the intervention (e.g., Kraaij et al., 2015; Rowbottom et al., 2022). However, it is important to be conservative when estimating the effect size of Beyond Fertility, as the support interventions mentioned above were tested in different samples (Kraaij et al., 2015; Rowbottom et al., 2022). One was a heterogeneous group of people who self-identified as having a definite unfulfilled wish for children, also including people who did not do fertility treatment, and the other was a group of childless women with reported depressive symptomatology. It was hypothesised that participants allocated to CaU would report moderate to large decreases in quality of life from prior to starting their last treatment cycle to six months after EoT, while participants allocated to Beyond Fertility would also report decreases in quality of life, but these would be attenuated when compared with those allocated to CaU (i.e., moderate to small effect sizes were expected). The same pattern was expected to be observed when comparing participants allocated to CaU and those allocated to the Beyond Fertility EoT preventive care or when comparing participants allocated to CaU and those allocated to the Beyond Fertility individual/couple sessions. However, considering preventive care only included one to two sessions and the short periods of time in which the assessments took place (two weeks to three months after the treatment cycle ended), small effect sizes were expected for all groups.

Methods

Reporting followed the CONSORT (Consolidated Standards of Reporting Trials) guidance, the leading standard for reporting parallel group RCTs aiming to promote clarity, completeness and transparency in the reporting and critical appraisal and interpretation of RCTs (Moher et al., 2010; Schulz et al., 2010). Appendix Q presents the CONSORT 2010 checklist.

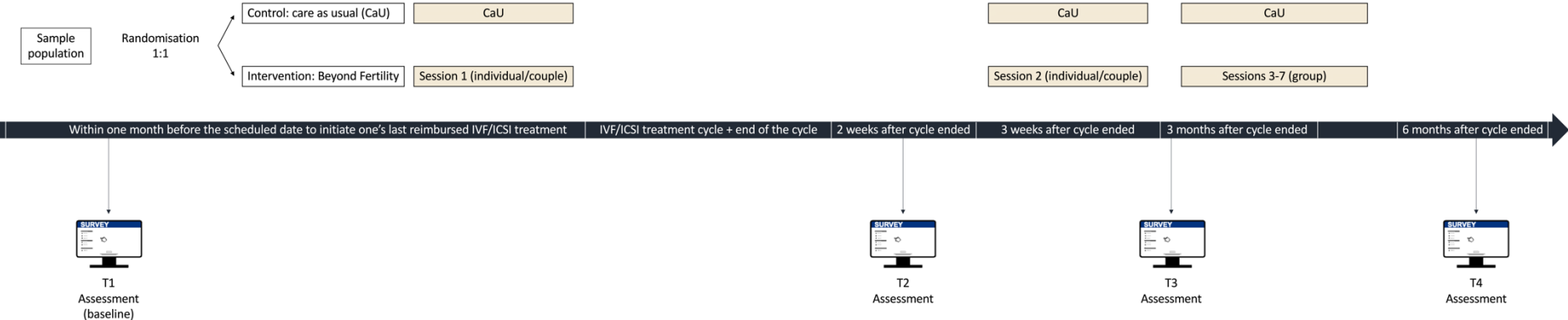
Design

Figure 5.1 presents a graphical depiction of the trial design. In a 1:1 allocation ratio, participants were randomly assigned to the control group, whereby participants received the usual mental healthcare currently offered at participating fertility clinics (CaU group) or the Beyond Fertility intervention (Beyond Fertility group). Four assessment moments were considered to align with: T1 (baseline) - pre-exposure to Beyond Fertility (within one month before the participants' scheduled date to start their last reimbursed IVF/ICSI cycle), T2 - post-exposure to the Beyond Fertility EoT preventive care, hereafter named EoT preventive care (two weeks after end of cycle), T3 - pre-exposure to group sessions (three months after end of cycle), and T4 - post-exposure to the Beyond Fertility EoT preventive and early intervention care, this latter hereafter name as EoT early intervention care (six months after end of cycle). To minimise variability in psychosocial adjustment as a result of time passing, the time of assessments was changed in relation to the pilot study so that all participants were assessed at the same time, on the assumption that the time between assessments was enough to deliver the planned Beyond Fertility's therapeutic sessions.

The trial was registered in the [ISRCTN registry](#), number ISRCTN85897617.

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Figure 5.1 Graphical depiction of the trial design of the two-arm parallel RCT



Note. EoT=end of unsuccessful fertility treatment. Session 1 corresponds to the Beyond Fertility EoT preventive care. Sessions 2 to 7 correspond to the Beyond Fertility EoT early intervention care. These latter sessions are only directed to those participants who faced EoT.

Participants

Eligibility Criteria. Inclusion criteria were being an adult (aged 18 years or older) scheduled to initiate, within one month, the last IVF/ICSI treatment cycle reimbursed by the NHS, including the last transfer, with own (fresh or cryopreserved) or donated gametes/embryos and with or without PGT. Exclusion criteria were self-reporting having been diagnosed with a mental health problem in the last two years (e.g., bipolar disorder, schizophrenia, and other psychoses or dementia), currently receiving therapy (psychotherapy or medication) for a clinically diagnosed mental health problem, currently under psychological treatment (either in individual or group format) by an accredited psychologist or therapist due to fertility issues and/or fertility treatment, and being unable to read and speak Portuguese.

Settings and Location. The recruitment took place between December 2021 and May 2023 at four major public fertility centres in Portugal, located in the metropolitan areas of Porto (two centres) and Lisbon (two centres).

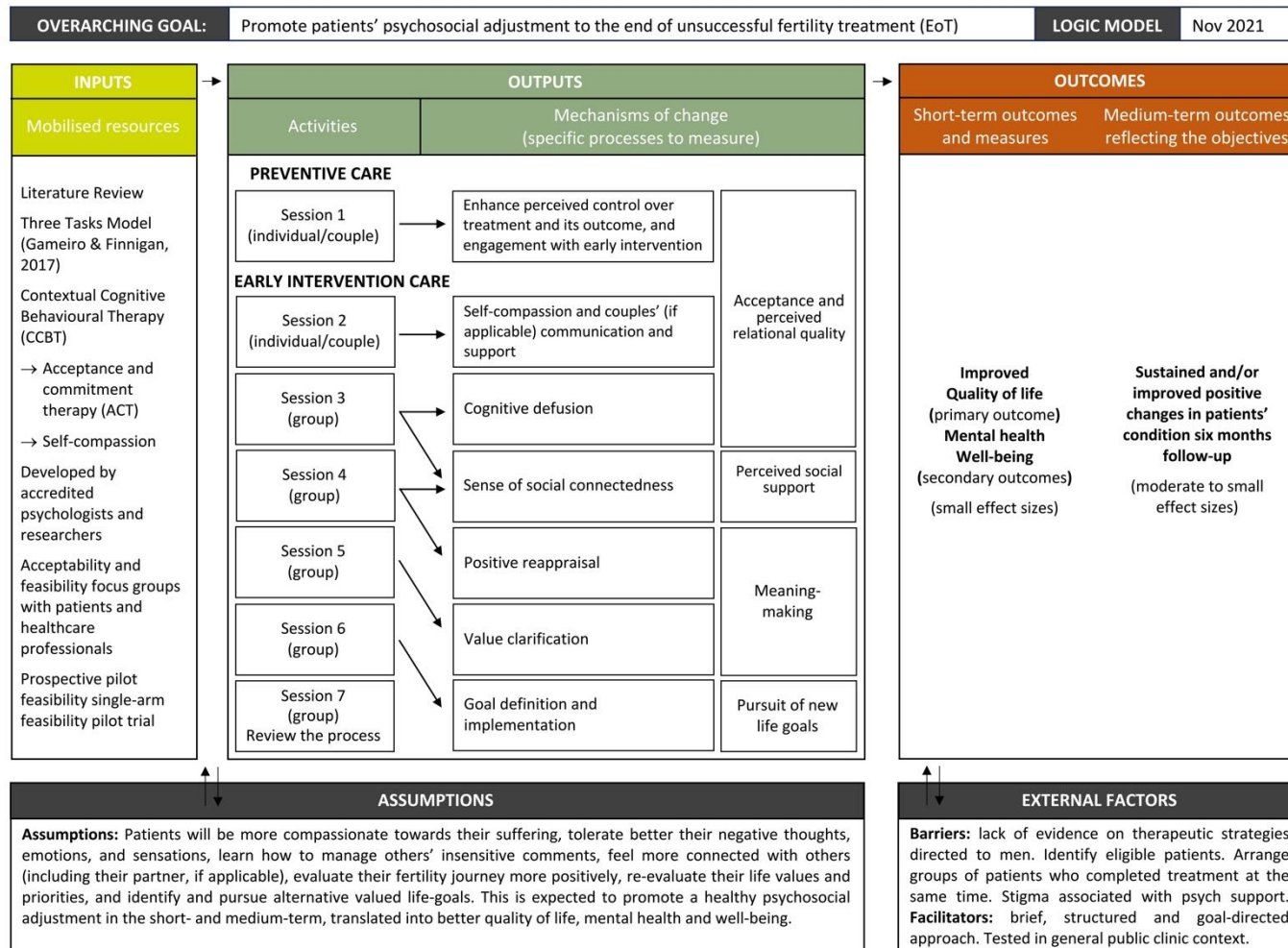
Manipulation

Care as Usual (CaU). The control group had no intervention but was exposed to the usual mental healthcare offered by the clinic, which included: patients who showed significant emotional stress could be signposted by the medical/nurse team for psychological support; all patients scheduled to initiate IVF/ICSI donated gametes/embryos were signposted for implications counselling; in one centre, all patients scheduled to initiate their first IVF/ICSI cycle were signposted to a screening psychosocial session to evaluate their need for continued support; and, finally, all patients could ask for psychosocial support.

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Beyond Fertility. The intervention group received Beyond Fertility. Figure 5.2 depicts the latest version of Beyond Fertility's logic model. Table 5.1 describes the final prototype of the Beyond Fertility intervention using the TIDieR checklist (Hoffmann et al., 2014). Participants in the pilot study reported concerns about discussing their partnership relationship (sexual difficulties, communication and commitment) in a group context. Therefore, the therapeutic activity aiming to promote couples' communication and support was moved from session 4 (group-based) to session 2 (individual/couple). Considering the difficulty in scheduling group sessions immediately after EoT, which was evident in the pilot trial, the timing of these sessions was changed to start three months after EoT and scheduled every two weeks. The interventionist remained the same: principal investigator and accredited psychologist (M.S.-L). All participants who were allocated to Beyond Fertility were offered EoT preventive care. After the end of the treatment cycle, those for whom the cycle was unsuccessful and were not offered or did not plan to undergo an additional treatment cycle (i.e., were confronted with EoT) met the criteria to proceed with Beyond Fertility and receive early intervention care. This group included participants who were ambivalent about doing more treatment. Participants for whom the cycle was successful (i.e., received a positive beta hCG) or not successful but continued pursuing more cycles did not meet the criteria to proceed with the intervention. These participants and those who withdrew were offered bespoke individualised support as per usual standards at the clinics but were not included in the CaU group.

Figure 5.2 Logic model of the Beyond Fertility psychosocial intervention - Version 3. Inputs represent the resources used to inform the development of the intervention. Outputs display the planned activities designed to target specific mechanisms of change (psychosocial processes). Outcomes represent the changes that are expected to be seen in real life after the planned activities are reached



Adapted from University of Wisconsin Extension Program Development and Evaluation resources

Table 5.1 Beyond Fertility description using the TIDieR checklist (Hoffmann et al., 2014) - Version 2

BRIEF NAME: Beyond Fertility: a brief psychosocial intervention to promote patients' adjustment to EoT.

WHY: Beyond Fertility was developed in response to a current unaddressed need in fertility care, recognised by several international fertility guidelines and regulatory bodies (Gameiro et al., 2015; HFEA, 2023a; NICE, 2017). It was designed by accredited psychologists and researchers, following the Medical Research Council (MRC) framework for developing and evaluating complex interventions (Craig et al., 2008; Skivington et al., 2021). Its mechanisms of change (i.e., acceptance, perceived social support and relational quality, meaning-making, and pursuit of new life goals) were informed by 3TM, which hypothesises that targeting these mechanisms promotes patients' psychosocial adjustment to EoT, translated into better mental health and well-being (Gameiro & Finnigan, 2017). The 3TM was evaluated in heterogeneous samples of people with unmet parenthood goals, including those who faced EoT and showed good acceptability and promising efficacy results in improving well-being (Rowbottom et al., 2022; Rowbottom & Gameiro, 2020). Beyond Fertility used CCBT principles (Hayes et al., 2013), in particular from ACT and self-compassion, as these gather high-quality evidence of effective psychosocial interventions and are adequate to target the mechanisms of change proposed by 3TM (Gloster et al., 2020; Neff & Tirsch, 2013). Based on these principles, the 3TM mechanisms of change were translated into several therapeutic activities implemented into seven therapeutic sessions (e.g., Harris, 2009; Harris, 2019). Figure 5.2 presents a graphical depiction of the Beyond Fertility logic model Version 3, including activities, mechanisms of change and outcomes.

WHAT: Materials: The interventionist is provided with a comprehensive manual describing each therapeutic session: specific goals, a step-by-step explanation of each therapeutic activity, and the required materials. **Procedures:** At the end of each session, patients are provided with a copy of the materials used during the session and additional materials (with other therapeutic tasks) to practice on their own. At the end of the intervention, patients are provided with a compound of all the materials.

WHO PROVIDED: The interventionist is a mental healthcare professional (accredited psychologist, psychiatric, or counsellor trained in psychology).

HOW: Seven face-to-face therapeutic sessions (in-person or online, depending on patients' preferences): two individual/couple and five group sessions.

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WHERE: In-person sessions in the fertility outpatient clinic and online sessions via the Zoom platform (Zoom Video Communications, 2012).

WHEN and HOW MUCH: The first individual/couple session occurs within one month before the patient's schedule date to initiate their last IVF/ICSI treatment cycle (i.e., Beyond Fertility EoT preventive care). Beyond Fertility EoT early-intervention care starts three weeks after EoT: the second in an individual/couple format three weeks after EoT plus five in group sessions starting three months after EoT and occurring every two weeks. Each individual/couple session has a planned duration of 1:15h, and the group sessions 2h. There is no recommended time to engage with the additional therapeutic tasks that patients are given after the session to practice on their own, with which patients can engage in repeated times.

TAILORING: Considering the face-to-face format of Beyond Fertility, there is some level of tailoring from the mental healthcare professional according to the reactions and queries from the individuals/groups during the sessions.

MODIFICATIONS: N/A.

HOW WELL: Planned: N/A. **Actual:** N/A.

Note. TIDieR=Template for Intervention Description and Replication; EoT=end of unsuccessful fertility treatment. Early intervention care is only directed to those patients who face EoT.

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Procedure

Female patients were consecutively screened for inclusion, contacted by phone, informed about the trial, and invited to participate with their partners. A poster about Beyond Fertility (see Appendix R) was displayed at the fertility centres' waiting rooms or consultants' offices, and patients were provided with a Beyond Fertility information flyer (see Appendix S). Those who expressed interest in participating were emailed an information sheet and informed consent form. Those who met the inclusion criteria and consented to participate were invited to complete the baseline T1 assessment, after which they were randomly allocated (those participating as a couple were allocated together) to the CaU or Beyond Fertility groups. The Beyond Fertility group participants were offered the first individual/couple therapeutic session of Beyond Fertility (i.e., EoT preventive care). All participants were invited to complete the T2 assessment two weeks after ending the last reimbursed IVF/ICSI treatment cycle, after which those in the Beyond Fertility group who faced EoT (i.e., to reiterate, faced unsuccessful cycle and decided to end treatment) were offered the second individual/couple therapeutic session of Beyond Fertility (EoT early intervention care). Three months after the cycle ended, all participants were invited to complete the T3 assessment, after which those in the Beyond Fertility group who faced EoT were offered the five therapeutic group sessions of Beyond Fertility (also part of the EoT early intervention care). Six months after the end of the cycle, all participants were invited to complete the follow-up T4 assessment. Reminders about the surveys were sent to participants via email and phone. The informed consent and questionnaires were developed using the Qualtrics platform (Qualtrics, Provo, Utah, USA) and sent via email by the principal investigator/interventionist. The estimated duration to complete all the questionnaires at each assessment moment was 30-40 minutes. At the end of the study, all participants were sent a debrief, including links to

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support resources and the possibility of being signposted for individualised support, as per usual clinic standards.

Outcomes

Primary and secondary outcomes. The primary outcome was the change in quality of life, and the secondary outcomes was the change in mental health and well-being, specifically satisfaction with life and psychosocial well-being, from prior to participants starting their last reimbursed IVF/ICSI treatment cycle to six months after EoT.

Outcome data were reported for modified intention to treat (mITT), per the recommended approach in prospective randomised studies analysis (Elkins & Moseley, 2015; Hollis & Campbell, 1999; McCoy, 2017). All participants who were initially randomised, faced EoT, and completed the outcome measures were included in the analysis, regardless of whether they received and engaged with CaU or Beyond Fertility (Elkins & Moseley, 2015; Hollis & Campbell, 1999; McCoy, 2017). This approach reflects a realistic application of interventions in real-life healthcare settings, producing a conservative estimate of the intervention effect(s) by acknowledging deviations from the trial protocol and preserving the prognostic balance afforded by randomisation (Elkins & Moseley, 2015; Hollis & Campbell, 1999; McCoy, 2017)

Data Collection. Data was collected via self-administered online questionnaires at T1 (pre-randomisation), T2, T3 and T4 (post-randomisation). All participants were invited to fill out the same questionnaires.

Questionnaire Design. Table 4.2 presents a complete description of what variables were measured at each assessment moment and the questionnaires used. Appendix I presents the questionnaires. In short, participants were asked about their personal context (i.e.,

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sociodemographic characteristics, fertility history and previous specialised psychosocial care received), quality of life (primary outcome), mental health and well-being (secondary outcomes). Additional hypothesised predictors and mediators were also assessed to be considered in subsequent secondary analyses and, therefore, not reported in the present trial. Only the trial's outcomes will be briefly described below.

Quality of life. Measured via the Portuguese versions of the Fertility Quality of Life - Core module (FertiQoL; Boivin et al., 2011; Portuguese validation: Melo et al., 2011). Assesses participants' perceived quality of life in the context of a fertility problem, covering four life domains: emotional (e.g., 'do your fertility problems make you angry?'), mind-body (e.g., 'are you bothered by fatigue because of fertility problems?'), relational (e.g., 'are you and your partner affectionate with each other even though you have fertility problems?'), and social (e.g., 'do you feel your family understand what you are going through?'). Scores range from 0 to 100. Higher values indicate a better quality of life. Cronbach's alpha in the present study was 0.89 at T1, 0.93 at T2, 0.83 at T3 and 0.90 at T4.

Mental health. Measured via the Portuguese version of the Mental Health Inventory (MHI-5; Berwick et al., 1991; Portuguese validation: Pais-Ribeiro, 2001). Assesses how participants have been feeling during the previous four weeks ('How much of the time, during the past month, have you felt calm and peaceful?'), covering four dimensions of mental well-being: anxiety (one item), depression (one item), emotional-behavioural control (one item), and general positive affect (two items). A technical error occurred while collecting the item covering the emotional-behavioural control dimension (not assessed). Therefore, the total score is based on the raw data from four items. Scores range from 4 to 24. Higher values indicate better mental health. Cronbach's alpha in the present study was 0.87 at T1, 0.83 at T2, 0.91 at T3 and 0.86 at T4.

Well-being was conceptualized in terms of life satisfaction and social-psychological well-being. Life satisfaction was measured via the Portuguese version of the Satisfaction With Life Scale (SWLS; Diener et al., 1985; Portuguese validation: Neto, 1993). Assesses global cognitive judgments of life satisfaction (e.g., ‘So far I have gotten the important things I want in life’). Scores range from 5 to 35. Higher scores indicate higher satisfaction with life. Cronbach’s alpha in the present study was 0.78 at T1, 0.88 at T2, 0.83 at T3 and 0.87 at T4. Social-psychological well-being was measured via the Portuguese version of the Flourishing Scale (FS; Diener et al., 2009; Portuguese validation: Silva & Caetano, 2011). Assesses the features of human flourishing such as positive social relationships, feeling competent and capable in activities important to the individual, meaning and purpose in life, and engagement and interest in one’s daily activities (e.g., ‘I lead a purposeful and meaningful life’). Scores range from 8 to 56. Higher scores indicate higher psychological resources and strengths. Cronbach’s alpha in the present study was 0.87 at T1, 0.94 at T2, 0.94 at T3 and 0.93 at T4.

Sample Size

A priori analysis indicated a minimum final sample size of 15 participants per group was required to detect a moderate effect-size change in the primary outcome, with a two-sided 5% significance level and a power of 90% (Faul et al., 2007). Considering the Beyond Fertility pilot study's eligibility rates of 85.3%, acceptance rates of 62.1% and intervention completion rates of 9.4%, it was necessary to recruit 340 female participants to achieve this final sample (women and men).

Randomisation

Randomisation occurred after participants completed the consent form and baseline assessment (T1). A computer-generated sequence of random numbers was used to allocate participants. The randomisation sequence was stratified by fertility centre and parenthood status (childless, with children) with permuted random block sizes. The principal investigator (M.S.-L) generated the random allocation sequence and enrolled and assigned participants to the groups. No allocation concealment mechanisms were used due to restrictions of the doctoral work, in which the doctorate was responsible for all procedures (i.e., generated the random allocation sequence, enrolled participants, and assigned participants to interventions).

Ethical Approval and Considerations

The Ethics Committees of the School of Psychology, Cardiff University, Cardiff, United Kingdom (EC.21.05.18.6351A), Centro Hospitalar Universitário de São João, Porto, Portugal (CHUSJ; 127/2020), Centro Hospitalar Universitário de Santo António, Porto, Portugal (CHUdSA; 2020.204: 161-DEFI/162-CE), Centro Académico de Medicina de Lisboa, Lisbon (CAML; 398/21) the Centro Hospitalar Universitário de Lisboa Central, Lisbon, Portugal (CHULC; 1244/2022) approved the trial. Patients who did not meet the inclusion criteria did not consent or withdrew from the trial were offered the possibility of being referred to individualised psychological support and other forms of support. Although participants in the CaU group did not receive Beyond Fertility, research has shown that, in general, people appreciate participating in research studies, even if related to traumatic events, and evaluate this experience as beneficial for their well-being (Deprince & Freyd, 2006; Legerski & Bunnell, 2010). As with most psychosocial interventions, participants were expected to experience negative emotions and thoughts during the therapeutic process. However, the

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therapeutic process was carried out in a controlled context, led by a trained, accredited psychologist. As Beyond Fertility is a pre-structured and goal-directed intervention, its tailoring to patient's individual needs and emotional reactions is limited. If there were cases where patients exhibited clinically significant discomfort that was not possible to manage in the context of Beyond Fertility, these patients were referred to individualised psychological support and other forms of support.

Data Analysis

Descriptive statistics (*mean, SD*, absolute numbers, proportions, and interval ranges) were used to describe the participants' sociodemographic characteristics, fertility history and previously received psychosocial care at baseline (T1 assessment).

Between-group comparisons via independent samples t-tests (continuous variables) and chi-squared tests (categorical variables) were performed to compare participants in the CaU and Beyond Fertility groups and those who withdrew from (non-completers) and completed the trial regarding their sociodemographic characteristics, fertility history and previously received psychosocial care, as well as the trial's primary (quality of life) and secondary outcomes (mental health and well-being) at baseline (T1 assessment).

The expected maximum maximisation method was employed to input missing at random data to estimate outcome variables. This method was applied only when fewer than half of a questionnaire's items were missing. Linear mixed effect models were used to compare participants in the CaU and Beyond Fertility groups on the outcome variables: quality of life (primary outcome), mental health, and well-being: satisfaction with life and psychosocial well-being (secondary outcomes) at different time points.

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Dr Richard Morey and doctoral student Jiawen Liu, both affiliated with the School of Psychology at Cardiff University, provided assistance in decisions about the analytical plan and data visualisation. Linear mixed-effect models were used to test the trial's hypotheses. These constitute flexible models to analyse data from within-subjects repeated measures designs, with the additional advantages of accounting for dependence between observations (such as participating with or without a partner) and for data missing at random while ensuring high statistical power (Gabrio et al., 2022; Schober & Vetter, 2021). Models were computed in the R Statistical Computing software version 4.3.1 (R Core Team, 2021) using the lme4 package (Bates et al., 2015).

For the primary goal, four linear mixed-effect models were built, with each outcome variable at T4 as the response variable. Each outcome variable at baseline (T1), group (CaU, Beyond Fertility), and the interaction between the outcome variable at baseline (T1) and group were included as fixed effects. To account for random variation between couples, a random number was assigned to each couple (i.e., the same number was assigned to both members of the same couple, when applicable), with this new variable entering the model as a random effect. For this mITT analysis, only participants who faced EoT (i.e., to reiterate, ended the last reimbursed cycle with a negative result and decided to end treatment) were included. This allowed estimation of the Beyond Fertility effect six months after EoT (i.e., at T4).

For the secondary goal, four linear mixed-effect models were built as before, with each outcome variable at T2 as the response variable. For this mITT analysis, all participants who ended their last reimbursed cycle with a negative result (regardless of their decision to end or continue treatment) were included. This allowed estimation of the Beyond Fertility preventive care effect two weeks after an unsuccessful last cycle (i.e., at T2).

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For the final secondary goal, the same procedure was applied, with each outcome variable at T3 as the response variable. For this mITT analysis, only participants who faced EoT were included. This allowed estimation of the effect of the individual/couple sessions at three months after EoT (i.e., at T3).

To optimise the interpretation of the parameter estimates, in all models, responses at different times were centred on the average of the baseline scores for each outcome variable. Therefore, the centred scores represented a meaningful anchor value from the mean of the baseline scores. Results were presented with regression coefficients (β) with 95% CIs and associated two-sided p values. The standard deviation at baseline was used as the standardising measure to calculate the size of the differences between the CaU and Beyond Fertility groups at T2 and T4. Cohen's d was used as a reference to estimate the magnitude of the effects: 0.2 was indicative of a small effect, 0.5 of a moderate effect, and 0.8 of a large effect (Cohen, 1988; Howell, 2013).

Results

Recruitment

The recruitment ended two months before the expected end date due to constraints related to the submission date of the doctoral thesis. Therefore, recruitment was conducted over a 22-month period between December 2021 and March 2023. Participants were recruited from December 2021 to March 2023 in two fertility centres, from March 2022 to March 2023 in another, and from November 2022 to March 2023 in a fourth centre. None of the participants receiving the Beyond Fertility intervention exhibited clinically significant discomfort that was not possible to manage in the context of Beyond Fertility.

Participant Flow

Figure 5.3 presents the participant flow diagram. One hundred fifty-eight female patients were assessed for eligibility, of which 15 did not meet the inclusion criteria, as they were currently receiving psychological treatment or had their last reimbursed cycle postponed or cancelled. Of the 143 women eligible to participate in the trial (90.51% eligibility rate), 75 (52.45% acceptance rate; and 42 male partners) consented to participate. The main reasons for refusing to participate were the perception of no need for psychosocial support (29.41%), lack of time (11.76%), and the emotional burden currently experienced due to treatment (8.82%). From those who provided consent, 74 women and 41 male partners (a total of 115 participants) filled out the baseline (T1 assessment) and were randomly allocated into the CaU ($n=55$) or Beyond Fertility ($n=60$) groups. After allocation, sixteen participants (13.91%) withdrew from the trial: nine in the CaU group, with those reporting a reason referring it was due to not being allocated to intervention, and seven in the Beyond Fertility group, mainly due to lack of time. Among those in the Beyond Fertility group, 46 (76.67%) participants received the first individual/couple session of Beyond Fertility (i.e., EoT preventive care), with six participants not receiving it due to the inability to find a suitable time for scheduling the session before starting the treatment cycle.

After the last IVF/ICSI treatment cycle ended, a total of 35 (35.35%) participants (CaU: $n=17$, Beyond Fertility: $n=18$) faced an unsuccessful last cycle and ended treatment (i.e., faced EoT), a total of 50 (50.51%; CaU: $n=20$, Beyond Fertility: $n=30$) faced an unsuccessful last cycle but continued pursuing treatment, and a total of 14 (14.14%; CaU: $n=9$, Beyond Fertility: $n=5$) did achieve a pregnancy (positive beta hCG). Most participants who faced an unsuccessful last cycle but continued pursuing treatment had the cycle postponed/cancelled or were offered an additional cycle due to health complications in the early stages of the

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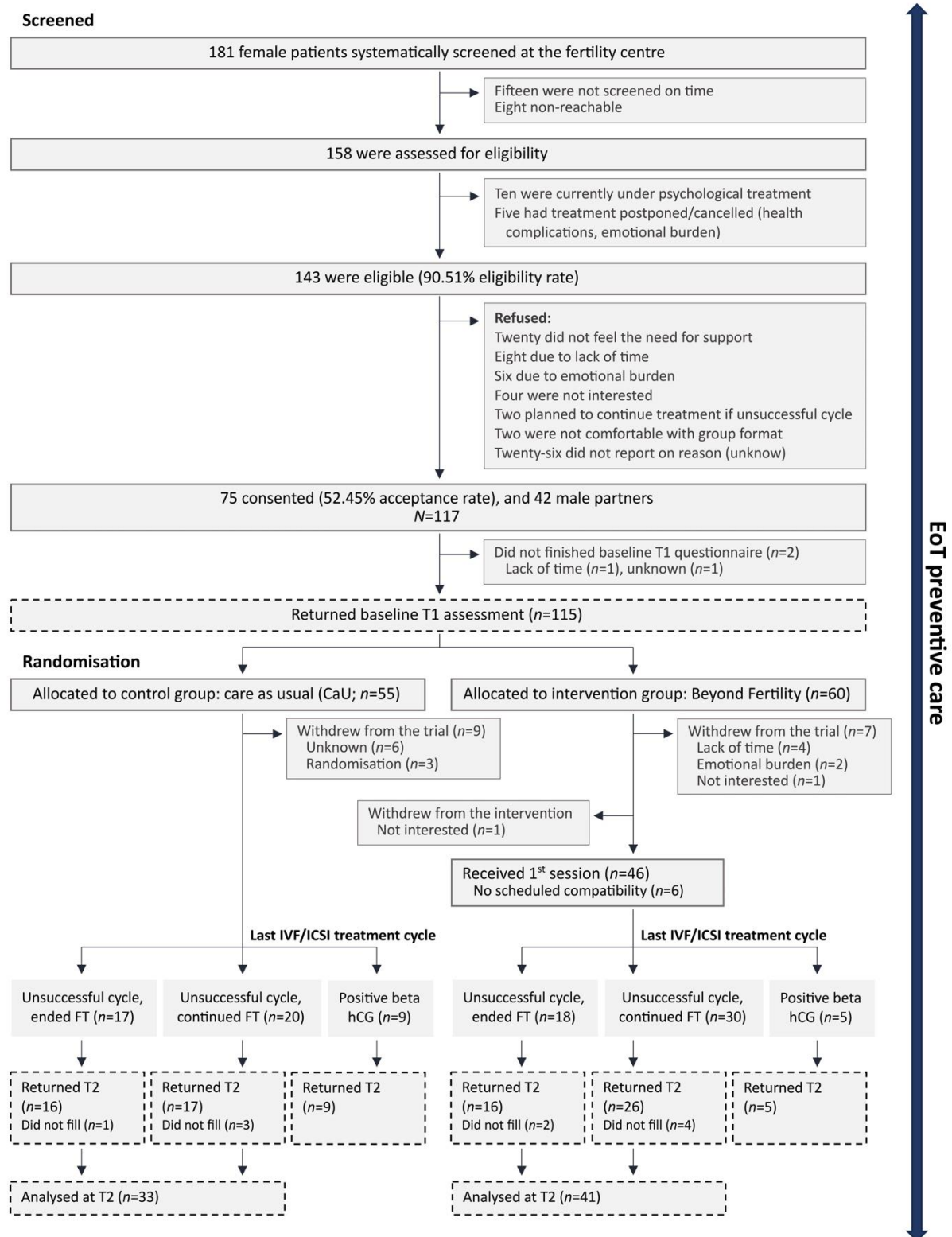
cycle (62.00%), went to the private sector (22.00%), or had cryopreserved embryos to proceed with further TEC (16.00%). From those who faced an unsuccessful last cycle (regardless of having ended or continued treatment), a total of 75 participants (88.24%) filled out the T2 assessment and 74 were analysed at T2 (completed at least 50% of the questionnaire assessing one of the trial's outcome). Only those who faced EoT ($n=35$; CaU: $n=17$, Beyond Fertility: $n=18$) were included in the trial's subsequent analysis at T3 and T4.

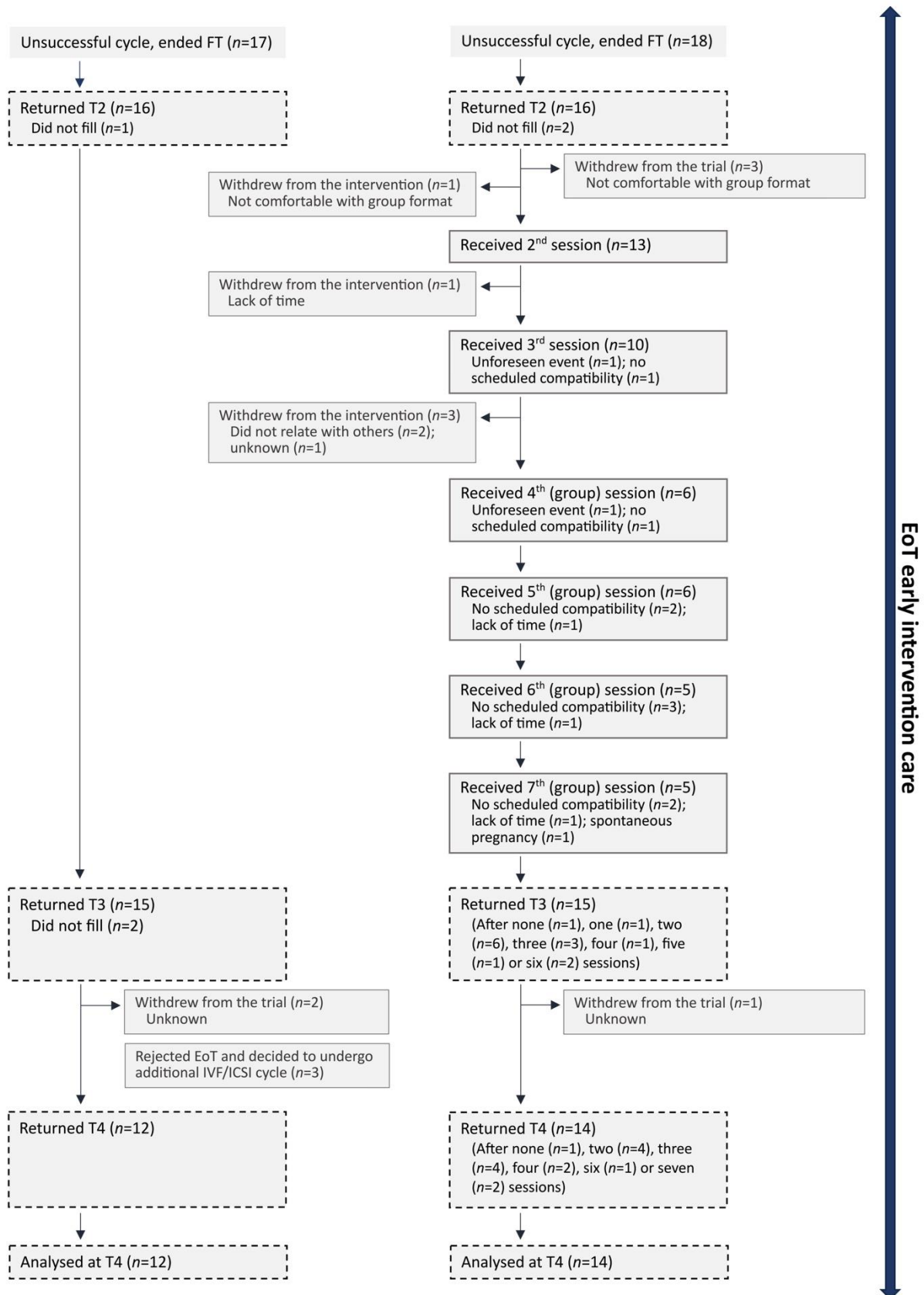
From those who faced EoT in the Beyond Fertility group ($n=18$), thirteen (72.22%) received the second individual/couple session, ten (55.56%) received at least one group session, with the main reason for not attending some of the sessions being lack of time, and four (22.22%) received all sessions. Eight participants (44.44%) withdrew from the trial/intervention, mainly due to not feeling comfortable with the group format due to the intense emotional burden they were experiencing after EoT or not relating with the group (e.g., solely constituted of women and childless people). From those who faced EoT in the CaU group ($n=17$), two participants withdrew from the trial (unknown reason, 11.76%), and three (17.65%) changed their minds and decided to continue pursuing treatment.

A total of 30 participants (85.71%) who faced EoT filled out the T3 assessment (CaU: $n=15$; Beyond Fertility $n=15$). Due to the low number of participants facing EoT, there was a high variability when they were offered the group sessions, ranging from 1.08 to 11.70 months ($Mean=4.56$, $SD= 3.81$). Only eight participants in the Beyond Fertility group (53.33%) filled out the T3 assessment before the group sessions commenced. Considering these numbers, the effect of the individual/couple sessions on the primary and secondary outcomes was not tested.

A total of 26 (81.25%) participants who faced EoT filled out the follow-up T4 assessment and were analysed at T4.

Figure 5.3 Participant flow diagram of the two-arm parallel RCT





Note. FT=fertility treatment; EoT=end of unsuccessful fertility treatment. Only those faced an unsuccessful last cycle and ended treatment (i.e., faced EoT) were included in the trial’s subsequent analysis at T3 and T4.

Sample Characteristics

Table 5.2 presents the sociodemographic characteristics, fertility history and previous psychosocial care received at baseline (T1 assessment) for the total sample and according to the allocated groups (CaU; Beyond Fertility). Participants were, on average, 38 years old, more than half were women and had a university education, and nearly all were employed. All participants were in a heterosexual relationship for around 12 years. Almost one-third had children, and most were biological. Participants were undergoing fertility treatment, on average, for three years.

Compared with participants in the Beyond Fertility group, participants in the CaU group experienced more financial difficulties and were more likely to have children from a previous fertility treatment, but not overall. Appendix T presents the sociodemographic characteristics, fertility history, and previous psychosocial care received at baseline (T1 assessment) for those who withdrew from the trial (non-completers) and those who completed the trial (completers). Compared with participants who completed the trial, participants who withdrew tended to be younger, from other nationalities rather than Portuguese, and not to have a university education. They tended to have started trying to conceive and seek medical help at a younger age, were undergoing treatment for a longer period of time and were more likely to have received psychosocial support in the past due to fertility-related issues. They were also more likely to report lower quality of life scores (*Mean*=65.56, *SD*=14.86, range: 42.71-91.67; completers: *Mean*=72.19, *SD*=12.35, range: 36.46-95.83; $t=2.39$, $p=0.019$, 95% confidence interval: 1.13-12.11) and lower mental health scores (*Mean*=14.35, *SD*=4.44, range: 6.00-20.00; completers: *Mean*=16.16, *SD*=3.13, range: 8.00-21.00; $t=2.08$, $p=0.044$, 95% CI: 0.05-3.56).

Table 5.2 Sociodemographic characteristics, fertility history and care received at baseline (T1 assessment) for the total sample and according to the allocated groups (control group: care as usual, CaU; intervention group: Beyond Fertility)

	Total (N=115)	CaU (n=55)	Beyond Fertility (n=60)	t [95% CI]/ χ^{2b}
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Sociodemographic characteristics				
Age (years) <i>M</i> (<i>SD</i>) [interval range]	38.01(3.85) [26.00-50.00]	37.67(3.56) [26.00-46.00]	38.32(4.10) [27.00-50.00]	-0.90[-2.07-0.78]
Women	74(64.35)	37(67.27)	37(61.67)	0.39
Portuguese	110(95.65)	52(94.55)	58(96.67)	0.31
Place of residence				
City	93(80.87)	48(87.27)	45(75.00)	2.79
Village	22(19.13)	7(12.73)	15(25.00)	
University education	71(61.74)	35(63.64)	36(60.00)	0.16
Employed^a	105(92.11)	48(88.89)	57(95.00)	1.46
Financial difficulties <i>M</i> (<i>SD</i>)[interval range] ^a	1.24(0.52) [1.00-3.50]	1.36(0.63) [1.00-3.50]	1.13(0.34) [1.00-3.00]	2.45[0.04-0.43]*
In a heterosexual relationship	115(100.00)	55(100.00)	60(100.00)	-
Duration (years) <i>M</i> (<i>SD</i>) [interval range]	11.88(5.72) [0.00-24.00]	11.68(5.93) [0.00-23.33]	12.06(5.56) [0.00-24.00]	-0.35[-2.50-1.75]
Have children	35(30.43)	19(34.55)	16(26.67)	0.84
Biological	24(20.87)	14(25.45)	10(16.67)	
Adopted	4(3.48)	3(5.45)	1(1.67)	
Stepchildren	8(6.96)	2(3.64)	6(10.00)	

Fertility history and previous specialised psychosocial care received

Age at which started trying to conceive spontaneously	32.26(5.04) [20.00-46.00]	32.03(5.05) [20.00-41.00]	32.49(5.08) [23.00-46.00]	-0.45[-2.49-1.57]
<i>M(SD)[interval range]^b</i>				
Age at which sought medical help	33.41(4.92) [19.50-48.00]	33.38(4.94) [19.50-40.00]	33.44(4.95) [22.00-48.00]	-0.06[-1.99-1.87]
<i>M(SD)[interval range]^b</i>				
Duration undergoing treatment	2.75(2.91) [0.00-19.00]	2.60(2.45) [0.00-10.00]	2.89(3.29) [0.00-19.00]	-0.53[-1.37-0.79]
<i>M(SD)[interval range]</i>				
Previous treatments	90(78.26)	41(74.55)	49(81.67)	0.86
Medication	41(35.65)	19(34.55)	22(36.67)	0.06
Surgery	20(17.39)	9(16.36)	11(18.33)	0.08
Artificial insemination	24(20.87)	10(18.18)	14(23.33)	0.46
Number of cycles	1.67(1.06)	1.60(0.97)	1.73(1.19)	-0.27[-1.12-0.87]
<i>M(SD) [interval range]</i>	[1.00-5.00]	[1.00-4.00]	[1.00-5.00]	
IVF/ICSI	73(63.48)	38(69.09)	35(58.33)	1.43
Number of cycles	2.43(1.40)	2.27(1.17)	2.61(1.61)	-1.00[-1.00-0.33]
<i>M(SD) [interval range]</i>	[1.00-8.00]	[1.00-5.00]	[1.00-8.00]	
Had children from previous treatment^a	14(15.91)	10(25.00)	4(8.33)	4.53*
Received specialised psychosocial care in the past	44(38.26)	25(45.45)	19(31.67)	2.31
Duration (years)	1.60(1.88)	1.23(1.21)	2.10(2.45)	-1.42[-2.13-0.39]
<i>M(SD) [interval range]</i>	[0.08-8.00]	[0.08-5.00]	[0.08-8.00]	
Due to fertility-related issues	11(25.00)	5(20.00)	6(31.58)	0.77
Considered it helpful	5(45.45)	2(40.00)	3(50.00)	.11

Note. *M*=mean; *SD*=standard Deviation; *CI*=confidence interval.

^avalid percentages were reported (^a1-2 participants did not report on this variable; ^b12-17 participants did not report on this variable). **p*<.05.

Effect of the Beyond Fertility Intervention on Quality of Life, Mental Health and Well-Being

Table 5.3 presents the descriptive statistics for the trial primary outcome (quality of life) at baseline (T1) and six months after EoT (T4) per mITT: for the sub-group of participants who faced EoT and were analysed for the primary outcome ($n=24^c$) and according to the allocated groups (CaU: $n=12$; Beyond Fertility: $n=12$). Table 5.4 presents the descriptive statistics for the trial secondary outcomes (mental health and well-being) at baseline (T1) and six months after EoT (T4) per mITT: for the sub-group of participants who faced EoT and were analysed for the secondary outcomes ($n=26$) and according to the allocated groups (CaU: $n=12$; Beyond Fertility: $n=14$). The estimated parameters from the linear mixed effects model of the effect of the Beyond Fertility on each trial outcome at T4 are also presented in both tables. Appendices U, V, and X depict the descriptives at baseline (T1) and two weeks (T2), three months (T3) and six months (T4) according to the allocated groups (CaU, Beyond Fertility).

Quality of Life (Primary Outcome). Figure 5.4 illustrates the association between reported quality of life scores at T1 and T4 according to the allocated groups. On average, there was a decrease of approximately six points in the overall observed quality of life scores from baseline (T1) to six months after EoT (T4), but the regression coefficient did not reach statistical significance (Intercept $\beta=-5.82$, $p=0.107$). Overall, participants' quality of life scores at T1 were significantly associated with their scores at T4; a difference in the baseline (T1) scores of one point was associated with an increase six months after EoT (T4) of almost one point (T1 scores $\beta=0.95$, $p=0.003$). After accounting for baseline quality of life scores

^cAlthough a total of 26 participants filled out T4 assessment, two did not complete at least 50% of the FertiQoL questionnaire assessing the quality-of-life outcome at T4.

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(T1), participants allocated to the Beyond Fertility group had an estimated mean quality of life score at six months after EoT (T4) of around eight points higher than participants allocated to the CaU group, but the regression coefficient did not reach statistical significance (Intervention $\beta=7.91$, $p=0.121$). Given the variability of 10.56 (standard deviation) at baseline (T1), Beyond Fertility increased participants' quality of life by 0.75 standard deviations above the mean compared to CaU; medium to large effect size. This effect can be observed in the graph (Figure 5.4) where the quality-of-life scores for the Beyond Fertility group tended to be above the equality line (i.e., higher at T4 compared with T1), whereas the CaU group's scores tended to be below the line. This indicates that for participants allocated to the Beyond Fertility group, quality of life tended to increase slightly, while for participants allocated to the CaU group, it tended to decrease. *Post-hoc* power calculations showed the trial's power to detect this effect was ~40%. There was no evidence that participants with different scores of quality of life at baseline (T1) reported a different effect of CaU or Beyond Fertility on their quality of life six months after EoT (T4), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance (Intervention x T1 scores $\beta=-0.04$, $p=0.924$). This can be observed in the graph (Figure 5.4), with the slopes of the two lines (CaU; Beyond Fertility) roughly equal.

Mental Health (Secondary Outcome). On average, reported mental health scores tended to remain the same from baseline (T1) to six months after EoT (T4; Intercept $\beta=0.20$, $p=0.888$). There was no evidence that higher participants' individual scores at T1 were associated with increases in their scores at T4 (T1 scores $\beta=0.76$, $p=0.083$). After accounting for baseline mental health scores (T1), participants allocated to the Beyond Fertility group had an estimated mean mental health score six months after EoT (T4) of around one point

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lower than participants allocated to the CaU group. The regression coefficient did not reach statistical significance (Intervention $\beta=-1.19$, $p=0.530$), and given the variability of 3.01 (standard deviation) at baseline (T1), can be considered a small effect size. There was no evidence that participants with different scores of mental health at baseline (T1) reported a different effect of CaU or Beyond Fertility on their mental health six months after EoT (T4), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance (Intervention x T1 scores $\beta=-0.19$, $p=0.685$).

Well-Being (Secondary Outcome). On average, reported satisfaction with life (Intercept $\beta=0.18$, $p=0.923$) and psychosocial well-being (Intercept $\beta=-0.28$, $p=0.889$) scores tended to remain the same from baseline (T1) to six months after EoT (T4). There was no evidence that higher participants' individual scores of satisfaction with life (T1 scores $\beta=0.43$, $p=0.334$) and psychosocial well-being scores (T1 scores $\beta=0.47$, $p=0.080$) at T1 were associated with increases in their scores at T4. After accounting for baseline scores of satisfaction with life, participants allocated to the Beyond Fertility group had an estimated mean satisfaction of life score at six months after EoT (T4) of around two points lower than participants allocated to the CaU group. The regression coefficient did not reach statistical significance (Intervention $\beta=-1.90$, $p=0.487$), and given the variability of 3.65 (standard deviation) at baseline (T1), can be considered a small to medium effect size. After accounting for baseline scores of psychosocial well-being, participants allocated to the Beyond Fertility group had an estimated mean psychosocial well-being score at six months after EoT (T4) of around three points higher than participants allocated to the CaU group. The regression coefficient did not reach statistical significance (Intervention $\beta=2.97$, $p=0.278$), and given the variability of 6.65 (standard deviation) at baseline (T1), can be considered a small effect size. There was no

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evidence that participants with different scores of satisfaction with life (Intervention x T1 scores $\beta=0.38$, $p=0.620$) and psychosocial well-being (Intervention x T1 scores $\beta=0.55$, $p=0.171$) at baseline (T1) reported a different effect of CaU or Beyond Fertility on their well-being six months after EoT (T4), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance.

Table 5.3 *Estimated parameters of the linear mixed effect models performed on the sub-group of participants who faced EoT to evaluate the effect of the Beyond Fertility EoT on the primary outcome variable quality of life at six months after EoT (T4 assessment; mITT)*

	Sub-sample of patients who reached EoT		Control: CaU <i>M(SD)</i> [range]		Intervention: Beyond Fertility <i>M(SD)</i> [range]		Linear coefficient (β) [95%CI] ^a			
	T1 (<i>n</i> =24)	T4 (<i>n</i> =24)	T1 (<i>n</i> =12)	T4 (<i>n</i> =12)	T1 (<i>n</i> =12)	T4 (<i>n</i> =12)	Intercept	T1 scores	Intervention	Intervention x T1 scores
Quality of Life	72.70(10.56) [47.92-88.54]	70.39(14.22) [41.67-92.71]	75.52(11.10) [47.92-86.46]	69.55(17.34) [42.71-92.71]	69.88(9.61) [50.00-88.54]	71.24(10.98) [41.67-79.89]	-5.82 [-12.16-0.61]	0.95** [0.36-1.51]	7.91 [-1.11-16.90]	-0.04 [-0.83-0.72]

Note. *M*=mean; *SD*=standard deviation; EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis; CaU=care as usual. Scores are presented for the sub-group of participants who faced EoT and were analysed for the primary outcome and according to the allocated groups.

^aThe model accounted for the correlation in outcomes between patients within the same couple.

***p*<.01

Table 5.4 *Estimated parameters of the linear mixed effect models performed on the sub-group of participants who faced EoT to evaluate the effect of the Beyond Fertility on the secondary outcome variables mental health and well-being at six months after EoT (T4 assessment; mITT)*

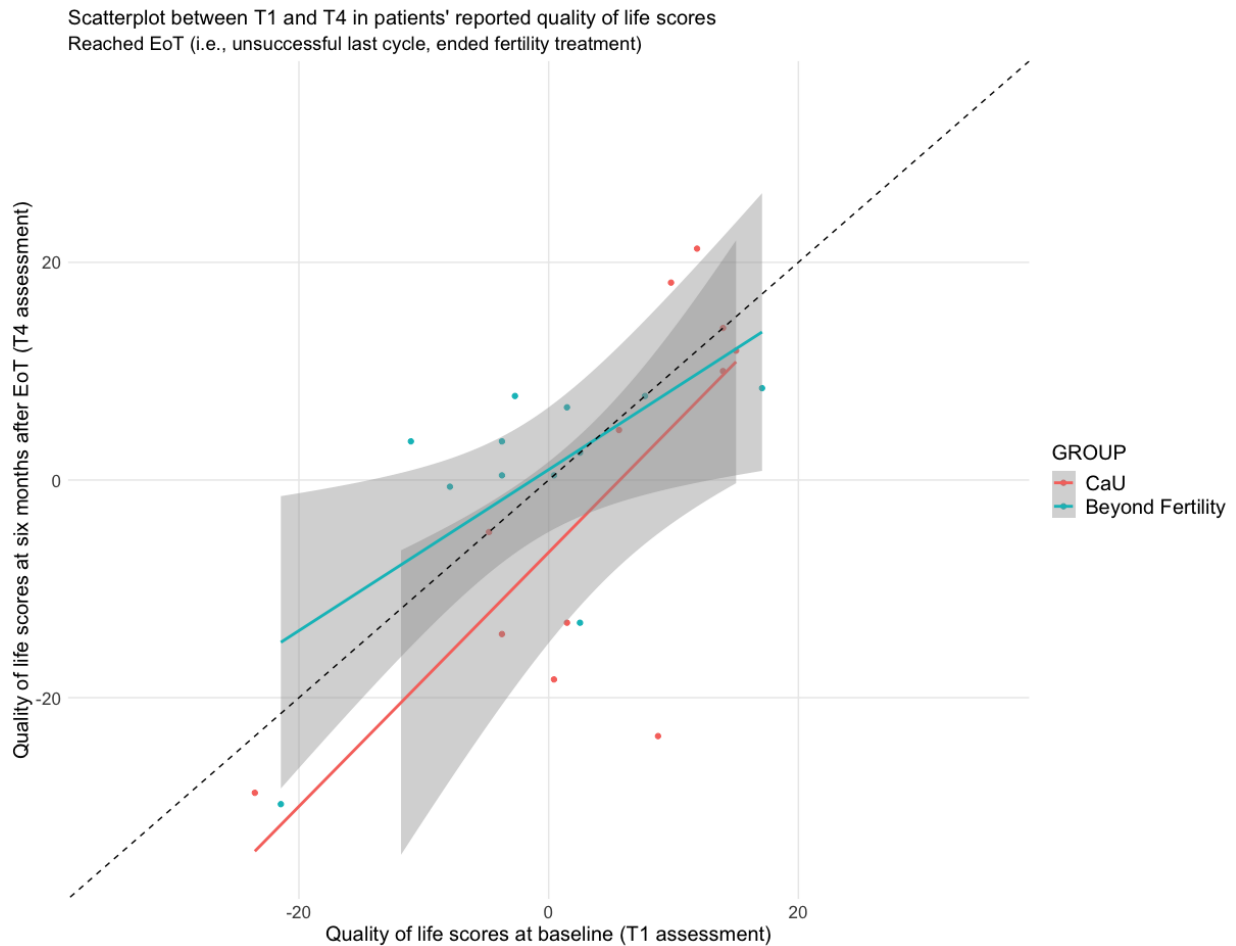
	Sub-sample of patients who reached EoT		Control: CaU		Intervention: Beyond Fertility		Linear coefficient (β) [95%CI] ^a			
	T1	T4	T1	T4	T1	T4	Intercept	T1 scores	Intervention	Intervention x T1 scores
	(n=26)	(n=26)	(n=12)	(n=12)	(n=14)	(n=14)				
Mental health^a	16.96(3.01) [10.00-21.00]	16.27(3.63) [8.00-22.00]	16.67(2.84) [11.00-20.00]	17.00(3.44) [13.00-22.00]	17.21(3.24) [10.00-21.00]	15.64(3.79) [8.00-20.00]	0.20 [-2.51-2.79]	0.76 [-0.09-1.59]	-1.19 [-4.81-2.34]	-0.19 [-1.11-0.68]
Well-being										
Satisfaction with life	24.96(3.65) [19.00-30.00]	23.92(6.36) [10.00-31.00]	24.25(4.41) [19.00-30.00]	24.33(6.39) [12.00-31.00]	25.57(2.87) [20.00-30.00]	23.57(6.55) [10.00-29.00]	0.18 [-3.26-3.63]	0.43 [-0.38-1.25]	-1.90 [-6.91-3.10]	0.38 [-1.03-1.79]
Social-psychological well-being	45.02(6.65) [32.00-56.00]	46.31(8.08) [24.00-56.00]	45.08(7.50) [34.00-56.00]	44.67(7.90) [32.00-56.00]	44.97(6.11) [32.00-56.00]	47.71(8.26) [24.00-56.00]	-0.28 [-3.97-3.34]	0.47 [-0.01-0.97]	2.97 [-1.95-7.94]	0.55 [-0.19-1.28]

Note. M=mean; SD=standard deviation; EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis; CaU=care as usual. Scores are presented for the sub-group of participants who faced EoT and were analysed for the secondary outcomes and according to the allocated groups.

^aThe model accounted for the correlation in outcomes between patients within the same couple.

^aScores based on raw data from four items, ranging from 4 to 24, with higher scores indicating a higher level of general mental health.

Figure 5.4 Scatterplot on participants' reported quality of life scores at baseline (T1 assessment) and at six months after EoT (T4 assessment) according to the allocated groups (control group: care as usual, CaU; intervention group: Beyond Fertility) for mITT



Note. EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis. Each data point on the graph represents each participant's reported quality of life scores at T4 according to their scores at T1. The coloured regression lines represent the relationship between participants' T1 and T4 reported quality of life scores for the CaU group (red line) and the Beyond Fertility group (blue line). The dashed black line represents the equality line, which predicts the scenario where the quality-of-life scores at T1 are equal to the scores at T4. All reported scores were centred at baseline (T1) average.

Effect of the Beyond Fertility EoT Preventive Care on Quality of Life, Mental Health and Well-Being

Table 5.5 presents the descriptive statistics for the trial primary outcome (quality of life) at baseline (T1) and two weeks after an unsuccessful last cycle (T2) per mITT: for the sub-group of participants who faced an unsuccessful last cycle and were analysed for the primary outcome ($n=72^d$) and according to the allocated groups (CaU: $n=33$; Beyond Fertility: $n=39$). Table 5.6 presents the descriptive statistics for the trial secondary outcomes (mental health and well-being) at baseline (T1) and two weeks after an unsuccessful last cycle (T2) per mITT: for the sub-group of participants who faced an unsuccessful last cycle and were analysed for the secondary outcomes ($n=74^d$) and according to the allocated groups (CaU: $n=33$; Beyond Fertility: $n=41$). The estimated parameters from the linear mixed effects model of the effect of the Beyond Fertility on each trial outcome at T2 are also presented in both tables.

Quality of Life (Primary Outcome). Figure 5.5 illustrates the association between reported quality of life scores at T1 and T2 according to the allocated groups. On average, there was a significant decrease of approximately four points (T2; Intercept $\beta=-4.37$, $p=0.014$) in the overall reported quality of life scores from baseline (T1) to two weeks after an unsuccessful last cycle (T2). Overall, participants' quality of life scores at T1 were significantly associated with their scores at T2; a difference in the baseline (T1) scores of one point was associated with an increase at two weeks after an unsuccessful last cycle (T2) of around one point (T1 scores $\beta=1.03$, $p<0.001$). After accounting for baseline quality of life scores (T1), participants allocated to the Beyond Fertility group (session 1, EoT preventive

^dAlthough a total of 75 participants filled out T2 assessment, some (1-3 participants) did not complete at least 50% of the questionnaire assessing this outcome at both T1 and/or T2.

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care) had an estimated mean quality of life score at two weeks after an unsuccessful last cycle (T2) of around four points higher than participants allocated to the CaU group. The regression coefficient did not reach statistical significance but can be considered marginally significant (Intervention $\beta=4.42$, $p=0.070$). Given the variability of 12.88 (standard deviation) at baseline (T1), Beyond Fertility increased participants' quality of life by 0.34 standard deviations above the mean compared to CaU; small effect size. This effect can be observed in the graph (Figure 5.5), where the quality-of-life scores for the Beyond Fertility group tended to be more above the equality line (i.e., higher at T2 compared with T1), and the CaU group's scores more below the line. This indicates that for participants allocated to the Beyond Fertility group, quality of life tended to increase slightly, while for participants allocated to the CaU group, it tended to decrease. *Post-hoc* power calculations showed the trial's power to detect this difference was ~50%. There was no evidence that participants with different scores of quality of life at baseline (T1) reported a different effect of CaU or Beyond Fertility EoT preventive care on their quality of life two weeks after an unsuccessful last cycle (T2), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance (Intervention x T1 scores $\beta=-0.08$, $p=0.635$). This can be observed in the graph (Figure 5.5), with the slopes of the two lines (CaU; Beyond Fertility) roughly equal.

Mental Health (Secondary Outcome). On average, there was a significant decrease of around one point and a half in participants' mental health scores from baseline (T1) to two weeks after an unsuccessful last cycle (T2; Intercept $\beta=-1.55$, $p=0.002$). Overall, participants' mental health scores at T1 were significantly associated with their scores at T2; a difference in the baseline (T1) scores of one point was associated with an increase at two weeks after an unsuccessful last cycle (T2) of almost one point (T1 scores $\beta=0.74$, $p<0.001$). After

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accounting for participants' baseline scores (T1), there was no evidence of a difference in the mental health scores two weeks after an unsuccessful last cycle (T2) between the participants allocated to the CaU and Beyond Fertility groups (Intervention $\beta=0.27$, $p=0.681$). There was no evidence that participants with different scores of mental health at baseline (T1) reported a different effect of CaU or Beyond Fertility EoT preventive care on their mental health two weeks after an unsuccessful last cycle (T2), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance (Intervention x T1 scores $\beta=-0.21$, $p=0.300$).

Well-Being (Secondary Outcome). On average, reported satisfaction with life (Intercept $\beta=-1.12$, $p=0.168$) and psychosocial well-being (Intercept $\beta=0.42$, $p=0.681$) scores tended to remain the same from baseline (T1) to two weeks after an unsuccessful last cycle (T2). Overall, participants' quality of life scores at T1 were significantly associated with their scores at T2, a difference in the baseline (T1) satisfaction with life (Intercept $\beta=0.57$, $p=0.001$) and psychosocial well-being (Intercept $\beta=0.62$, $p<.001$) scores of around one point was associated with an increase two weeks after an unsuccessful last cycle (T2) of around half of a point. After accounting for participants' baseline scores (T1), there was no evidence for a difference in the satisfaction with life (Intervention $\beta=0.90$, $p=0.404$) and psychosocial well-being (Intervention $\beta=-0.47$, $p=0.731$) scores two weeks after an unsuccessful last cycle (T2) between the participants allocated to the CaU and Beyond Fertility groups. There was no evidence that participants with different scores of satisfaction with life at baseline (T1) reported a different effect of CaU or Beyond Fertility on their satisfaction with life two weeks after an unsuccessful last cycle (T2), with the regression coefficient for the interaction between the outcome variable at baseline (T1) and the randomised group not reaching statistical significance (Intervention x T1 scores $\beta=0.35$, $p=0.095$). Participants with different

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scores of psychosocial well-being at baseline (T1) reported a different effect of CaU or Beyond Fertility EoT preventive care on their psychosocial well-being two weeks after an unsuccessful last cycle (T2; Intervention x T1 score $\beta=0.42$, $p=0.024$). Figure 5.6 illustrates the association between reported psychosocial well-being scores at T1 and T2 according to the allocated groups. As observed in the graph, participants allocated to the Beyond Fertility group tended to report the same scores of psychosocial well-being two weeks after an unsuccessful last cycle (T2) as reported at baseline (T1), whereas those participants allocated to the CaU group who reported lower scores of psychosocial well-being at T1 tended to report higher scores at two weeks after an unsuccessful last cycle (T2) and participants who reported higher scores of psychosocial well-being at baseline (T1) tended to report higher scores at two weeks after an unsuccessful last cycle (T2).

Harms

No harms or unintended effects of the intervention were reported.

Table 5.5 *Estimated parameters of the linear mixed effect models performed on the sub-group of participants who faced an unsuccessful last cycle regardless of having ended or continued pursuing treatment to evaluate the effect of the Beyond Fertility EoT preventive care on the primary outcome variable quality of life at two weeks after an unsuccessful last cycle (T2 assessment; mITT)*

	Sub-sample of patients who reached EoT		Control: CaU <i>M(SD)</i> [range]		Intervention: Beyond Fertility <i>M(SD)</i> [range]		Linear coefficient (β) [95%CI] ^a			
	T1 (<i>n</i> =72)	T2 (<i>n</i> =72)	T1 (<i>n</i> =33)	T2 (<i>n</i> =33)	T1 (<i>n</i> =39)	T2 (<i>n</i> =39)	Intercept	T1 scores	Intervention	Intervention x T1 scores
	Quality of Life	70.90(12.88) [36.46-95.83]	68.94(15.15) [28.13-92.71]	72.43(12.11) [42.71-95.83]	68.43(16.12) [28.13-92.71]	69.61(13.52) [36.46-89.58]	69.38(14.48) [34.38-92.11]	-4.37* [-7.70-(-1.06)]	1.03*** [0.78-1.29]	4.42 [-0.18-9.08]

Note. *M*=mean; *SD*=standard deviation; EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis; CaU=care as usual. Scores are presented for the sub-group of participants who faced an unsuccessful last cycle and were analysed for the primary outcome and according to the allocated groups.

^aThe model accounted for the correlation in outcomes between patients within the same couple.

p*<0.05. **p*<.001.

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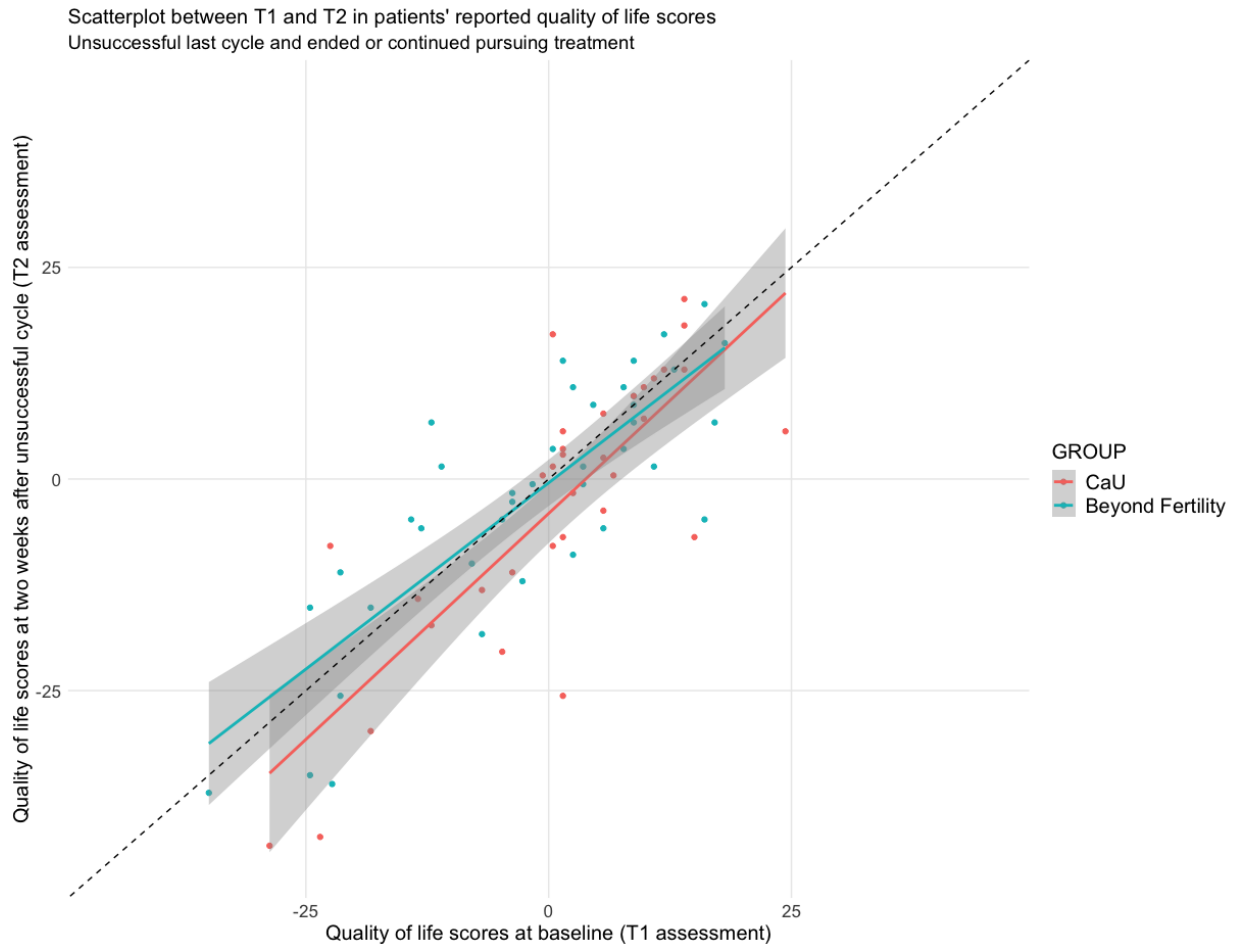
Table 5.6 *Estimated parameters of the linear mixed effect models performed on the sub-group of participants who faced an unsuccessful last cycle regardless of having ended or continued pursuing treatment to evaluate the effect of the Beyond Fertility EoT preventive care on the secondary outcome variables mental health and well-being at two weeks after an unsuccessful last cycle (T2 assessment; mITT)*

	Sub-sample of patients who reached EoT		Control: CaU M(SD)[range]		Intervention: Beyond Fertility M(SD)[range]		Linear coefficient (β) [95%CI] ^a			
	T1 (n=74)	T2 (n=74)	T1 (n=33)	T2 (n=33)	T1 (n=41)	T2 (n=41)	Intercept	T1 scores	Intervention	Intervention x T1 scores
	Mental health^a	15.91(3.31) [8.00-21.00]	14.55(3.36) [4.00-24.00]	16.18(2.94) [9.00-20.00]	14.58(3.61) [6.00-24.00]	15.68(3.60) [8.00-21.00]	14.54(3.19) [4.00-20.00]	-1.55** [-2.48-(-0.62)]	0.74*** [0.41-1.06]	0.27 [-0.98-1.52]
Well-being										
Satisfaction with life	23.93(5.36) [9.00-35.00]	23.38(6.25) [5.00-35.00]	23.70(4.91) [10.00-30.00]	22.74(5.12) [12.00-31.00]	24.12(5.75) [9.00-35.00]	23.90(7.05) [5.00-35.00]	-1.12 [-2.67-0.42]	0.57** [0.25-0.88]	0.90 [-1.17-2.98]	0.35 [-0.05-0.75]
Social-psychological well-being	44.22(7.14) [29.00-56.00]	44.24(8.39) [15.00-56.00]	45.27(6.93) [32.00-56.00]	45.42(6.90) [32.00-56.00]	43.38(7.29) [29.00-56.00]	43.29(9.40) [15.00-56.00]	0.42 [-1.52-2.35]	0.62*** [0.35-0.89]	-0.47 [-3.10-2.16]	0.42* [0.06-0.78]

Note. M=mean; SD=standard deviation; EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis; CaU=care as usual. Scores are presented for the sub-group of participants who faced an unsuccessful last cycle and were analysed for the secondary outcomes and according to the allocated groups. ^aThe model accounted for the correlation in outcomes between patients within the same couple.

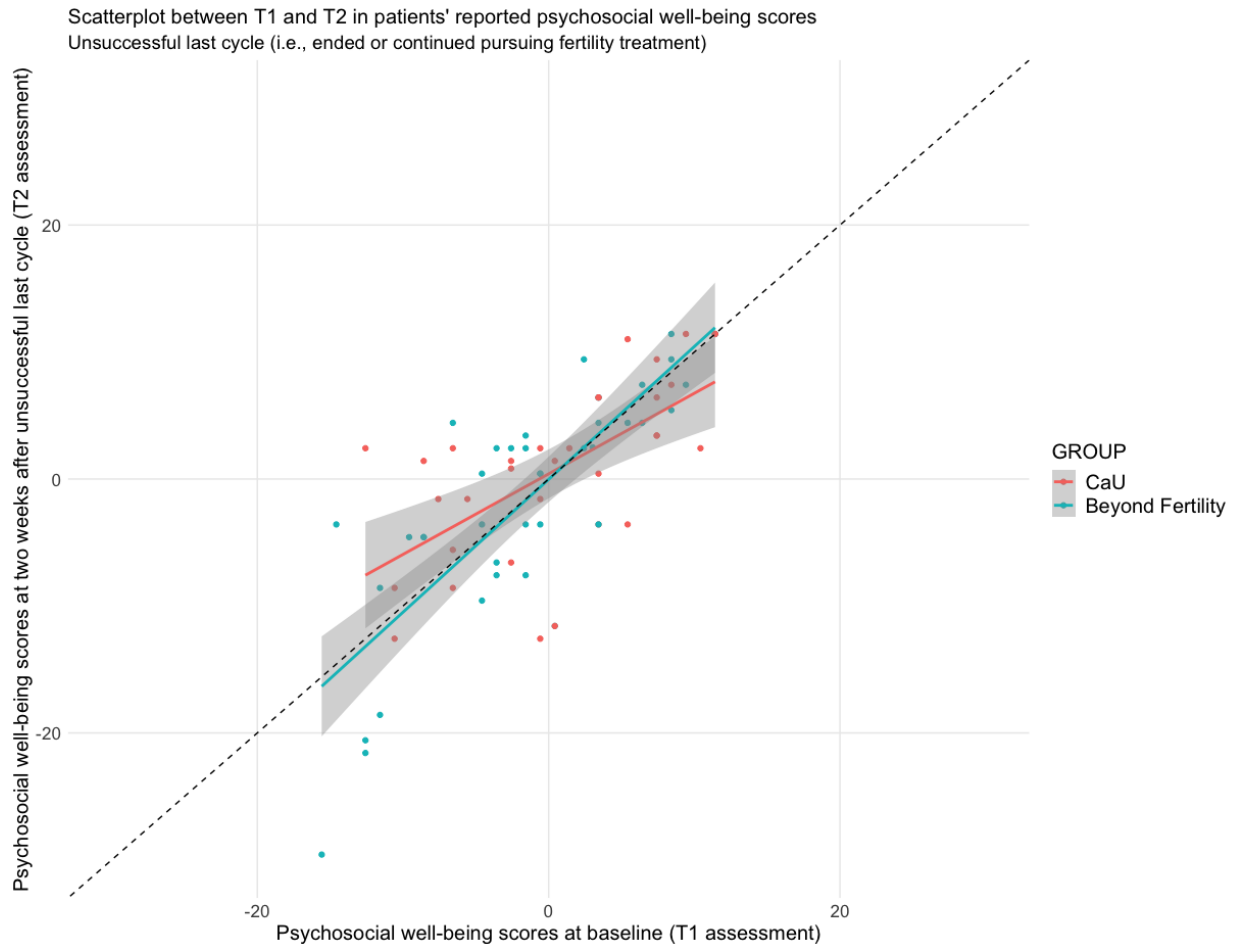
^aScores based on raw data from four items, ranging from 4 to 24, with higher scores indicating a higher level of general mental health. * $p < 0.05$. ** $p < .01$. *** $p < .001$.

Figure 5.5 Scatterplot on participants' reported quality of life scores at baseline (T1) and at two weeks after an unsuccessful last cycle (T2) according to the allocated groups (control group: care as usual, CaU; intervention group: Beyond Fertility) for mITT.



Note. EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis. Each data point on the graph represents each participant's reported quality of life scores at T2 according to their scores at T1. The coloured regression lines represent the relationship between participants' T1 and T2 reported quality of life scores for the CaU group (red line) and the Beyond Fertility group (blue line). The dashed black line represents the equality line, which predicts the scenario where quality-of-life scores at T1 are equal to scores at T2. All scores were centred at baseline (T1) average.

Figure 5.6 Scatterplot on participants' observed psychosocial well-being scores at baseline (T1) and at two weeks after an unsuccessful last cycle (T2) according to the allocated groups (control group: care as usual, CaU; intervention group: Beyond Fertility) for mITT.



Note. EoT=end of unsuccessful fertility treatment; mITT=modified intention-to-treat analysis. Each data point on the graph represents each participant's observed psychosocial well-being scores at T2 according to their scores at T1. The coloured regression lines represent the relationship between participants' T1 and T2 observed psychosocial well-being scores for the CaU group (red line) and the Beyond Fertility group (blue line). The dashed black line represents the equality line, which predicts the scenario where psychosocial well-being scores at T1 are equal to scores at T2. All scores were centred at baseline (T1) average.

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Discussion

Beyond Fertility did not prove efficacious in ameliorating declines in quality of life (primary outcome) usually experienced during the EoT period. Its EoT preventive care also did not prove efficacious in ameliorating declines in quality of life in the immediate aftermath of an unsuccessful last cycle, and results did not create respite in mental health and general well-being (secondary outcomes). The trial had low power to detect small to large effect sizes, only around one-fifth of the participants received the entire intervention package, and the trial's sample was particularly resilient in terms of psychosocial adjustment at baseline. Overall, the trial provided fundamental considerations about the format, time, and mode of delivery of EoT psychosocial care that can guide the future development and testing of further support initiatives, including the redesign of Beyond Fertility. High-quality, well-powered testing is needed and warranted.

To the author's knowledge, the present chapter constitutes the first empirical evidence of testing specialised face-to-face psychosocial care to support EoT patients. Results from this RCT indicated that Beyond Fertility was not efficacious in easing patients' psychosocial adjustment to EoT, as none of the outcomes showed statistically significant improvements in the aftermath of EoT when compared with those receiving the usual care at clinics. However, those receiving the Beyond Fertility intervention reported a positive difference in quality of life by around eight points (medium to large effect size) compared to those receiving CaU six months after EoT, which may warrant consideration. Indeed, this difference is higher than significant differences observed between patients at different stages of treatment (differences ranging from 2.26 to 7.12 points; Massarotti et al., 2019; Ni et al., 2023), albeit similar or lower when comparing infertile women and men (differences ranging from 6.2 to 12.6; Bose et al., 2021; Santoro et al., 2016) or fertility patients with clinical vs non-clinical

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levels of anxiety or depression (differences ranging from 16.6 to 21.1; Aarts et al., 2011).

Several aspects may explain Beyond Fertility's lack of efficacy in promoting patients' psychosocial adjustment after EoT.

First, it is important to note that *post-hoc* power analysis indicated that the trial has a lower power to detect the observed effect on quality of life (~40%), which likely caused the lack of statistical significance (Serdar et al., 2021). Second, Beyond Fertility's effects on quality of life may have resulted from the patients' lack of engagement with the whole intervention package. Most (~64%) did not receive what could be considered a sufficient dose of Beyond Fertility (i.e. receiving at least one session associated with each of the 3TM mediators, that is, a minimum of four sessions) or all Beyond Fertility sessions at the time of the follow-up assessment (six months after EoT). This likely means that the mechanisms of change that, according to 3TM, are primarily to promote patients' psychosocial adjustment to EoT (i.e., perceived social support, meaning-making, pursuit of new life goals) were not triggered or not triggered in sufficient dose (Gameiro & Finnigan, 2017). A higher effect of Beyond Fertility might be expected if more patients had received the whole intervention. This hypothesis is supported by the qualitative data reported in the pilot study, which reflects that the patients' perceived benefits from receiving all sessions of Beyond Fertility were consistent with all 3TM mechanisms of change. Third, it is also important to note that the ability to (re)engage in social situations (Daniluk, 2001b; Volgsten et al., 2010), the process of meaning-making and the pursuit of other goals - the mechanisms of change mentioned above less likely triggered - can also take time to evolve (Park, 2010), so higher effects in psychosocial adjustment might still be observed later in the adjustment process. Fourth, the lack of an effect can also be due to the present trial's sample being particularly resilient, as initial adjustment and trajectories of quality of life, mental health, and well-

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being did not follow the declines (for both the CaU and Beyond Fertility groups) that would have been expected after EoT (Gameiro & Finnigan, 2017; Verhaak et al., 2005). Indeed, the trial's sample reported comparable scores of quality of life and well-being to other samples of patients at different stages of treatment (Domar et al., 2015; Neumann et al., 2018; Whynott et al., 2023) or later on in the EoT adjustment process (Bryson et al., 2000; Hammarberg et al., 2001), where more positive scores would be expected (Chan et al., 2016; Ni et al., 2023; Verhaak, Smeenk, Evers, et al., 2007). This is supported by the trial's between-subject comparisons showing that those participating in the trial reported higher quality of life and mental health at the start of the last cycle than those who withdrew. It can be argued that those patients who maintain their decision to end treatment and accept psychosocial support are more adjusted to their inability to achieve their parenthood goals (Chan et al., 2016; Peddie et al., 2004, 2005). These two arguments indicate that higher effects of Beyond Fertility might be expected with patients with lower psychosocial coping resources. This is supported by the data visualisation suggesting that Beyond Fertility's benefits were larger for those who reported lower quality of life before starting the last cycle. In addition, a protective effect on CaU may have also played a role, as due to research procedures, those in the CaU group may have been more likely to have received more than they usually do or more likely to seek support, as the study may have raised awareness of the need for support or facilitated the uptake of such support at this stage (Boivin et al., 1999; Boivin et al., 2022; Kazdin, 2017). Therefore, this may have decreased the true effect of Beyond Fertility when compared with CaU.

Contrary to what was observed with similar interventions (Kraaij et al., 2015; Rowbottom et al., 2022), benefits in mental health and general well-being were not noticeable. Results provided some indication that Beyond Fertility might moderately ameliorate the impact of

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an unfulfilled child wish on people's perception of their life, but this did not translate into patients feeling or functioning better. It can be argued that Beyond Fertility is less effective in triggering these secondary outcomes. It could also be the case that, and as mentioned above, an effect from Beyond Fertility would be expected if more patients receive the whole package or a sleeper effect is being observed where any benefits on these secondary outcomes may only be visible later. Indeed, research shows that recovery tends to be observed on average over two years after a stressful life event (Bonanno, 2004). Little can be compared with the descriptives reported in the pilot study about the patients' individual trajectories throughout the intervention, albeit somehow promising in promoting patients' mental health and well-being, only encompassed three complete trajectories with different assessment times and only with patients that received the whole intervention package.

In isolation, the Beyond Fertility EoT preventive care did not have an immediate buffer effect on patients' adjustment after an unsuccessful last cycle. It is true that those receiving this preventive care reported a positive difference in quality of life by around four points compared to those receiving CaU two weeks after the unsuccessful cycle. This difference can also be compared to some of the other significant differences observed between patients at different stages of treatment (differences ranging from 2.26 to 7.12 points; Massarotti et al., 2019; Ni et al., 2023) and reached marginal significance in the present trial. However, the trial had a lower power to detect this observed effect (~50%), and overall, the effect was small and also did not create respite in mental health and general well-being. It is important to note that the assessment moment to evaluate this preventive care might not have been ideal as it captures the very raw emotional reactions to the unsuccessful cycle. Benefits may be underestimated and could better be captured after these initial emotional reactions subside (Verhaak, Smeenk, Nahuis, et al., 2007; Verhaak et al., 2005). In addition, there was

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some suggestion that, in comparison with CaU, Beyond Fertility EoT preventive care is more beneficial for those who report higher scores of psychosocial well-being before initiating the last cycle and less beneficial for those who report lower scores. However, data visualisation showed that this effect is likely to be driven by the few extremely low scores of psychosocial well-being at T2, which did not happen in the CaU group, so this effect should be carefully considered. One crucial and novel aspect of the trial is that EoT preventive care has no counterproductive effects on patients in terms of psychosocial adjustment and decision-making about EoT. These constitute the main concerns reported by HCPs that prevent them from discussing negative treatment outcomes with their patients (Fedele et al., 2020; Harrison et al., 2022), including the possibility of treatment not working (Chapter 3: Sousa-Leite et al., 2022). Indeed, decisions about ending vs continuing treatment were roughly similar (*post-hoc* analysis: $\chi^2=0.62$; $p=0.507$) between those in the CaU (80.4% faced an unsuccessful cycle, from these, 54.1% continued treatment) and the Beyond Fertility (90.1% faced EoT, from these, 62.5% continued treatment) groups. In sum, results indicate that it is acceptable and feasible to offer EoT preventive care (52% acceptance rate), at the very least when offered at the start of the last planned treatment cycle, which would meet patients' expressed need for support at this stage of treatment (Chapter 4; Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022). However, the small effect size at two weeks after an unsuccessful cycle is indicative that one session is likely not enough to produce an effect. It can be the case that further preventive sessions early in the treatment path not only inform and prepare patients for EoT and its psychosocial implications but also prepare them, with a multidisciplinary team, for the whole treatment process and alternative and parallel paths to and beyond parenthood would be more impactful (Chapter 2: Sousa-Leite et al., 2023). However, a proper evaluation is warranted.

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When this EoT preventive care was integrated with psychosocial intervention care in the aftermath of this event (i.e., early intervention care), a larger effect on patients' quality of life was suggested six months after EoT. Considering the psychological theory and all previous quantitative and qualitative research supporting the beneficial effect of informing and preparing patients in advance for negative treatment outcomes (Snyder, 2002; Su & Chen, 2006; Thomas et al., 2000; Waller et al., 2014), it can be argued that EoT preventive care may be beneficial for sustaining quality of life over time but also foster positive perceptions towards and promote patients' willingness to uptake support in the aftermath of EoT. Indeed, the attrition rate (28%) among participants receiving Beyond Fertility in the immediate aftermath of EoT (2nd session) was low and lower than observed with other similar interventions (Rowbottom et al., 2022).

Although reported as preferable, it was clear that the group format of EoT early intervention care was not attractive for this subgroup of patients. Individual/couple support appears more acceptable than group-based support, as almost half of the patients withdrew from the trial/intervention when support was swapped to a group format. However, it can be the case that group support might be desired if offered exclusively in an individual/couple format or at a later point in the adjustment process to EoT after the initial negative impact of this event has subsided. This is congruent with Beyond Fertility's pilot study (reported in Chapter 4), where 22% (44% in the present trial) of patients rejected the Beyond Fertility early intervention care due to being in a group, as in the immediate aftermath of EoT, patients found it hard to share their emotions even with other people going through the same experience. Indeed, some previous research supporting EoT early intervention care provision in a group format was conducted two to three years after EoT (Hammarberg et al., 2001). The other included patients who were still undergoing treatment (Chapter 3: Sousa-

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Leite et al., 2022; Warne et al., 2023), which likely overestimated the acceptability of such support after its end. Even so, the benefits of group-based support are well-known, particularly when referring to the fertility experience (Dube et al., 2023; Van den Broeck et al., 2010). It is also known that patient initiatives for this subgroup of EoT patients benefit from the group format, and patients see benefits in coming together with people in the same situation (e.g., [Moving on from Treatment](#) support group led by FNUK). This is reflected in the Beyond Fertility piloting results, where those receiving the group sessions perceived many benefits (e.g., a unique opportunity to share their emotions and thoughts, emotional validation, and a sense of connectedness with others). However, it is important to note that group format in the short-term after EoT is not optimal, even more so due to practical difficulties in bringing groups together as most patients continue in the treatment process after what they planned to be their last treatment cycle is unsuccessful. Even when including four main fertility centres in Portugal, this difficulty remained. This may have also attenuated excitement with intervention support or created some negative views due to the delay in receiving support. In sum, results suggested that in the immediate aftermath of EoT, early intervention care in an individual/couple format might be more acceptable and feasible to implement to achieve the expected psychosocial outcomes. Still, such support in a group format may also be desirable and beneficial to patients if delivered at later stages of the EoT psychosocial adjustment process. However, a proper evaluation is needed.

Future research

A better powered RCT is needed to reach a definitive conclusion about the effects of EoT preventive and early intervention care on patients' psychosocial adjustment to this event, specifically larger patient recruitment to achieve sufficient power to detect the suggested effects (Apriori power calculations recommend a minimum of 73 participants at T4 to reach

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a traditional 80% power; Green et al., 2016). A longer assessment period can also be recommended to detect effects likely to appear later in patients' EoT adjustment process. A two-year follow-up may be considered, as loss reactions are expected to attenuate within this time (Bonanno, 2004). A multi-cycle trial may be considered to test the potential benefits of delivering EoT preventive care at different stages of treatment in the hypothesised outcomes and in the decision-making process about ending vs continuing treatment. Early intervention care needs to be re-designed, particularly its individual/couple and group format and delivery time. Data visualisation also suggests the need to investigate the impact of such care according to patients' initial levels of psychosocial adjustment. Finally, to move beyond simple efficacy testing, future research should endeavour to better document how Beyond Fertility and other 3TM-based psychosocial interventions (Rowbottom et al., 2022) may operate to create changes in the hypothesised outcomes. Therefore, even higher patient recruitment is needed to allow for causal modelling or Realist Evaluation Methodology to be used to better understand how these interventions 'work, for whom, under what circumstances and how' (Jagosh, 2019; Pawson & Tilley, 1997).

Strengths and Limitations

The trial was multi-centre, registered, and used consecutive recruitment, increasing the findings' validity. Beyond Fertility was theoretically informed by the 3TM, and its evaluation followed the MRC framework. Efficacy evaluation was based on mITT analysis, which accurately reflects real-life usage, increasing the ecological validity of the findings. However, the interventionists, researchers, and participants were not blind to allocation, and no concealment mechanisms were used, which might have contributed to bias in the trial's results by overestimating the effect of Beyond Fertility. *Apriori* power calculations were based on multivariate approaches that did not pay enough consideration to the

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interdependence between partners. The insufficient trial's power compromised the ability to detect statistically significant effects, even when moderate to large effects were reported. The actual psychosocial care patients received in the CaU group was not registered during the trial, which may have underestimated the efficacy of Beyond Fertility. Fertility guidelines and authorities define a treatment cycle as including all replacement of fresh and frozen embryos (NICE, 2017). As per the pilot study (Chapter 4), to standardise patients' experiences, a last treatment cycle was considered any attempt to initiate a last IVF/ICSI cycle. Patients who had their treatment cancelled or postponed or had remaining cryopreserved embryos from this attempt (i.e., did not have a 'complete cycle') were considered as facing an unsuccessful cycle, which may have underestimated the proportion of patients who faced EoT. As with most studies in the field, the sample lacked diversity, and the acceptability and efficacy of Beyond Fertility to ethnic or other minoritised groups are still unclear.

Conclusion

Beyond Fertility did not prove efficacious. There was some indication that benefits may be achieved with structured psychosocial care that starts during treatment and continues in its aftermath, but a definitive answer will only be achieved with a well-powered, high-quality RCT. Beyond Fertility will need significant reformulation if it is to be re-evaluated. EoT patients continue to be underserved at fertility clinics. Findings provide foundational knowledge to support clinics' endeavour to develop further initiatives to support patients adjusting to EoT, as requested by fertility inter(national) guidelines and regulators.

CHAPTER 6 MyJourney WEB-BASED EDUCATIONAL RESOURCES TO SUPPORT THE CLINICS'

ROUTINE PROVISION OF EoT PREVENTIVE PSYCHOSOCIAL CARE: HEALTHCARE

PROFESSIONALS' and PATIENTS' VIEWS

Introduction

Evidence meta-synthesis indicates that EoT is a devastating experience for most patients, who report undergoing a protracted period of grief (lasting, on average, two years) associated with moderate to large impairments in mental health and well-being (Gameiro & Finnigan, 2017). Even though EoT is a common outcome in fertility care, discussions and initiatives to support patients who go through this adverse outcome are limited. This is reflected in patient reports of lack of support, dissatisfaction, and even frustration at what they perceive to be substandard care from their clinics (Dancet et al., 2010; Daniluk, 2001b; Peddie et al., 2005; Volgsten et al., 2010). The current study aimed to investigate the perceived acceptability and feasibility of web-based educational resources for patients and healthcare professionals (HCPs) to promote end-of-treatment care at fertility clinics.

It is well established that HCPs have low control over the outcome of fertility treatment. However, they can have high control and efficacy over the psychosocial care they deliver to patients negatively affected by this undesired outcome (Gameiro et al., 2015). As noted in the previous chapters, a few initiatives to support patients coping with the aftermath of EoT have been developed and evaluated and shown to be effective in promoting patients' psychological adjustment to their unmet parenthood goals (Kraaij et al., 2015; Rowbottom et al., 2022). However, there is still an overall lack of evidence-based psychosocial intervention available to this end (Dube et al., 2023; Frederiksen et al., 2015), and the ones that exist show uptake is lower than desired (Kraaij et al., 2015; Rowbottom et al., 2022). Results presented in the previous chapter (Chapter 5) reporting on a multicentred RCT on

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the effectiveness of Beyond Fertility (a brief psychosocial intervention that aimed to promote patients' adjustment to EoT) did not prove the efficacy of this latter intervention. Results identified two major related barriers to support uptake. One was that patients were surprised and unprepared to cope with the intensity of the suffering they experienced after EoT. Engaging with group support at this stage can be triggering because it reminds patients of the pain of having undergone treatment and not achieving one's parenthood goals (Gameiro & Finnigan, 2017), and it equates to accepting their child's wish will not be fulfilled (Peddie et al., 2005; Rowbottom et al., 2022). The other was the non-planned multiple treatment trajectories patients can pursue, waiting times associated with these, and difficulties in facing the reality that one's child's wish may never come true, which make it difficult to know when and how to achieve one's parenthood goals.

The author has argued that adopting a preventive approach, whereby patients have the opportunity to be informed and prepare for this possible and undesired outcome while still undergoing treatment, may ease the grief process and facilitate patients' engagement with psychosocial care, if and when it comes to happen. As previously noted, this care was referred to in the present thesis as EoT preventive care. With a view to future implementation at clinics, the author investigated patients' experiences, willingness and preferences to receive EoT preventive care integrated into the routine psychosocial care delivered in fertility clinics, which is the responsibility of all fertility clinic staff that have contact with patients (Chapter 2: Sousa-Leite et al., 2023). Results from this mixed-methods online survey showed that nine in 10 patients want to receive EoT preventive care early in the treatment path offered as part of routine psychosocial care provided at fertility clinics. However, the same research showed only around four in 10 are given this opportunity, and only a small minority consider they engage in helpful in-depth discussions about the

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psychosocial implications of EoT (Chapter 2: Sousa-Leite et al., 2023). Results showed patients perceive many potential benefits from EoT preventive care, the most endorsed being better coping with EoT and making more informed and timely decisions about all treatment options and future alternatives. Qualitative research involving focus groups with patients and HCPs (Chapter 3: Sousa-Leite et al., 2022) also supported the high acceptability and demand for EoT preventive care. However, this and other research indicated that conversations about adverse treatment outcomes can be emotionally challenging for both patients and HCPs and that HCPs feel ill-equipped to start these, fearing negative emotions and evaluations from patients and their own feelings of guilt and frustration for not achieving the 'expected' or 'desired' outcome (Fedele et al., 2020; Meier et al., 2001). Within the context of Beyond Fertility, this care was designed in one individual/couple therapeutic session delivered by a mental healthcare professional while patients prepare to initiate their last fertility treatment cycle. Results from the RCT showed that this care is acceptable and feasible to implement at this stage of treatment. However, offering this care in one single session only addressing the psychosocial implications of EoT was not enough to ease patients' adjustment to EoT two weeks after this event. However, results showed it also did not have any counterproductive effects on patients' psychosocial adjustment, with some suggestion that benefits may be achieved. For instance, in promoting patients' quality of life after EoT and in facilitating support uptake at this stage. However, further well-powered, high-quality testing is warranted.

Considering all this evidence on EoT preventive care and related evidence proving the benefits of informing and preparing patients for other negative treatment outcomes that also involve a high emotional burden and devastating outcome in promoting their psychosocial adjustment when confronted with these events (e.g., cancer treatment; Thomas et al., 2000;

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Waller et al., 2014), it can be argued that more efforts should be put into further investigating what would make EoT preventive care acceptable and feasible and developing and evaluating support tools for staff and patients.

Educational resources could support HCPs and patients in having conversations about EoT. Health educational resources can shape clinical routine practice by providing HCPs with necessary knowledge and support about when and how to discuss sensitive health issues (e.g., prenatal alcohol exposure, cancer treatment, end-of-life support; Young et al., 2014) and patients with information on their likely experiences, risks and adverse outcomes, alternatives and coping strategies (Jones et al., 2020; Ussher et al., 2021). This type of resource, particularly web-based (video and text-based), has been increasingly used in infertility and cancer treatment (Jones et al., 2020; Nguyen et al., 2019; Noordman et al., 2019). These resources can be particularly useful in fertility care, considering patients' appetite to use online sources to seek fertility-related information (Haagen et al., 2003), and in particular, if these resources are offered as an adjuvant to face-to-face discussions with HCPs (Ussher et al., 2021), which is congruent with patients' expressed preferences on how to receive EoT preventive care (Sousa-Leite et al., 2023). Health educational resources have proven promising in improving HCPs' attitudes towards having sensitive conversations with patients (Kleinpell et al., 2011; Noordman et al., 2019; Payne et al., 2011). They are also successful in increasing HCPs' knowledge and ability to prepare for clinic encounters and in enhancing their communication skills (Kleinpell et al., 2011; Noordman et al., 2019; Payne et al., 2011). Health educational resources have proven promising for patients in promoting their psychosocial adjustment when confronted with these adverse health outcomes. This is translated in patients' reports of more adaptive coping, lower anxiety and depressive

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symptoms and higher quality of life (Albada et al., 2012; Nguyen et al., 2019; Thomas et al., 2000; Waller et al., 2014; Zurlo et al., 2023).

In sum, the gap in care about patient high demand and acceptability for EoT preventive care vs actual provision led to a collaborative project between Cardiff University, fertility scientific societies and patient charities in Portugal, the UK, Europe and Latin America, involving HCPs, patients and patient advocates. This project aimed to develop web-based educational resources - named MyJourney web-based resources - to support both clinics and patients in the routine provision of EoT preventive care in fertility clinics. The author was involved in this project as a Co-I.

The development of the MyJourney web-based resources was informed by the HBM and TPB, which provided a comprehensive framework to promote stakeholders' intentions for behavioural change towards the provision of EoT preventive care at clinics (Ajzen, 1985; Rosenstock, 1974). The resources tailored to HCPs were informed by the TPB, and resources tailored to patients were informed by the HBM, as the literature has often applied these theories in this way (Eccles et al., 2005; Jones et al., 2014; Kortteisto et al., 2010). According to the TPB, HCPs' intentions to implement EoT preventive care depend on their positive attitudes about its provision (e.g., beneficial, useful), whether significant others (e.g., partner, family, healthcare professionals) want them to provide it (social norms) and whether they feel equipped to do so (perceived behavioural control; Ajzen, 1985). According to the HBM, patients' intentions to engage with EoT preventive care depend on their perceived susceptibility to EoT, how severe they evaluate its consequences, and the perceived benefits and barriers of doing it (Rosenstock, 1974). Specific cues to action may prompt patients to consider EoT preventive care (Rosenstock, 1974), such as going through multiple unsuccessful cycles (Harrison et al., 2022; Harrison et al., 2021). As mentioned in

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previous chapters, several authors suggest that semi-structured focus groups with relevant stakeholders can help understand initial reactions towards health resources (Bowen et al., 2009; Sekhon et al., 2017; Sidani & Braden, 2011). Framework Analysis is an optimal and recommended methodology for analysing focus group data, as it provides an in-depth and holistic view of the data without losing the participants' individual views and allowing for the differentiation of views between different stakeholder groups, which, in the present study, were HCPs and patients/patient advocates. Specific objectives were to investigate: (1) HCPs', patients' and patient advocates' experiences, views and preferences of EoT preventive care and (2) their perceived acceptability and feasibility of evolving prototypes for the MyJourney web-based resources to support the routine provision of EoT preventive care in fertility clinics.

Methods

Design

Cross-sectional multi-country focus group study.

Participants

Eligible HCPs were working in fertility care. Eligible fertility patients were waiting to initiate or undergoing fertility treatment or having undergone it in the previous six months, and eligible patient advocates were working at a fertility charity. Additional eligibility criteria for all participants were being an adult (aged 18 or older) and being able to read and speak English, Spanish or Portuguese.

Materials

Sociodemographic, Clinical and Professional Form. Participants were asked about their age (in years), gender identity and country of residence. HCPs were also asked about their

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professional title (embryologist/andrologist, clinician, lab technician, midwife/nurse, psychologist/counsellor, clinic manager, other - please specify), workplace (public, private, both public and private sectors, other - please specify), and for how long they were working in fertility care (in years). Patients and patient advocates were asked about their education and occupational status. Patients were additionally asked about their sexual orientation (heterosexual/straight, homosexual/gay/lesbian, bisexual, other, prefer not to say), relationship status and duration (when there is one, in years), parenthood status (no children, biological, adopted, stepchildren), whether they had children from fertility treatment (no, yes; if applicable), their current situation regarding treatment (list of seven descriptors, e.g., undergoing diagnosis; other - please specify), and for how long they were trying or had tried to achieve a pregnancy or father a(nother) child (in years).

MyJourney web-based resources. A research-informed initial prototype for self-help web-based educational resources to support EoT preventive care routine provision at clinics was developed. The original prototype of the MyJourney web-based resources comprised two web pages, one directed to support HCPs in providing EoT preventive care to their patients and another to support patients in receiving such care. The original web page for HCPs was guided by the TPB. It aimed to raise awareness about: patients' high willingness to receive and their perceived benefits of receiving EoT preventive care (positive attitudes), fertility regulators and international guidelines recommendations about the need to support patients adjusting to EoT (norms), and how to provide such preventive care (perceived behavioural control). The web page consisted of step-by-step guidance on why, when and how to engage in conversations about the possibility of EoT according to patients' expressed preferences (Sousa-Leite et al., 2023). The original web page for patients was guided by the HBM. It introduced the possibility of EoT (perceived susceptibility), the grief process it can

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entail (perceived severity), and the perceived barriers and benefits of receiving EoT preventive care. The web page included a short video animation introducing EoT preventive care, followed by in-depth research-informed written information about what most patients experience in the (immediate) aftermath of EoT, emotional and coping resources and positive psychosocial adjustment to this event, and a referral for psychosocial support: the MyJourney web app (www.myjourney.pt), which, to the author's knowledge and as mentioned in the previous chapters, is the only evidence-based psychosocial self-guided web app intervention available for public use that aims to support people who want to reach acceptance of their unfulfilled wish for children. Both pages addressed common questions and concerns that reproductive literature shows patients express on this topic (Gameiro & Finnigan, 2017). Improvements were made to these prototypes throughout the study based on the participants' feedback.

Focus Groups Script. Following existing guidelines (Hennink, 2014; Krueger & Casey, 2000), one semi-structured script comprising 14 open questions and informal clarification prompts was developed. The wording was adapted for each participant group (HCPs; patients and patient advocates; available in Appendix X). The script started by defining 'end of unsuccessful treatment' as all cycles of treatment being unsuccessful, and no new cycles being attempted in the future. Open questions were informed by Bowen et al. (2009) framework and were organised into two sections. The first section targeted participants' views and experiences on current EoT preventive care provision at clinics (acceptability), perceived need for and benefits of such care (demand), and perceived barriers and facilitators to its provision (practicalities). The second section started by presenting participants with the evolving prototypes of the MyJourney web-based resources. As per the previous section, questions targeted participants' views and first reactions to the resources,

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willingness to use them (acceptability), perceived benefits and adverse effects (demand), and barriers and facilitators to its provision at clinics (practicalities).

Procedure

A convenience sample of HCPs who were members of leading fertility societies (such as the ESHRE in Europe, British Infertility Counselling Association [BICA] in the UK, Sociedade Portuguesa de Medicina da Reprodução [SPMR] in Portugal and Red Latinoamericana de Reproducción Asistida [REDLARA] in Latin America) were emailed a gatekeeper letter (with a direct link to the study) to participate in a focus group study with other HCPs.

Patients and patient advocates were recruited (February-December 2022) via social media adverts (Facebook, Instagram and Twitter) with the assistance of social influencers and international fertility charities (such as FNUK, APF in Portugal, Red Latinoamericana de Organizaciones de Personas Infértiles [Red TRAscender] in Latin America, and Concebir Asociación Civil in Argentina). A gatekeeper letter was sent to these influencers and international charities asking whether they would be willing to distribute the study advert (with a direct link to the study) via their social media pages and among their members. UK patients were additionally recruited via the Prolific platform (Prolific, 2014), which is a well-established, trustworthy and cost-effective online recruitment platform where researchers can invite a screened sub-group of people based on specific criteria (Peer et al., 2017). In the present study: location (i.e., where participants should be located): UK, fluent languages: English, chronic condition/illness: pregnancy and reproduction, video call interview: yes, I would be willing to take part in a video focus group. These participants were emailed a gatekeeper letter (with a direct link to the study) asking whether they would be willing to participate in a focus group study with other patients and patient advocates.

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The study link directed interested people to an information sheet and consent form. Participants who filled out the inclusion criteria and consented to participate were invited to fill out a Qualtrics form (Qualtrics, 2005) to report on their sociodemographic (all participants), professional (HCPs) and clinical (patients) characteristics, and to provide their availability to attend the focus group. Participants were then allocated to a group (based on their availability).

The focus groups were carried out separately with HCPs and patients to promote a safe and comfortable environment for participants to share their views (Krueger & Casey, 2000). Patient advocates were invited to attend the patients' focus groups to represent patients' perspectives and encourage discussion. All focus groups were conducted via the Zoom platform (Zoom Video Communications, 2012). Participants were sent a Zoom invitation link to join the discussion on the day. The focus groups were moderated or assisted by a clinical psychology-trained researcher (M. S.-L and/or S.G), had a planned duration of 1h/1h30, and were video- and audio-recorded and transcribed verbatim. At the start of the discussion, participants were provided with information about the focus group procedures (including the recording, as per consent) and ground rules (e.g., respect time and their turn, welcoming all thoughts, even if in opposite directions, freedom to ask additional questions), and on the study aims. At the end of participation, all participants were debriefed (with direct links to support resources), and patients were offered a £20 token for participation.

Ethical Approval

The Ethics Committees of the School of Psychology, Cardiff University, Cardiff, United Kingdom (EC.21.11.09.6443G) approved the study.

Data Management and Analysis

Descriptive statistics were used to describe the sample's sociodemographic, professional and clinical characteristics.

Framework analysis was applied to the focus group qualitative data (Gale et al., 2013). The verbatim transcripts were imported into NVivo software version 12 (QSR International Pty Ltd, 2018). M. S.-L. and S. G. familiarised themselves with the audio recordings and transcripts. Using an inductive approach, M. S.-L. set codes (i.e., descriptive meaning labels) for each text segment. S. G. and M. S.-L. met several times to review the coding, and disagreements on interpretation were discussed until consensus was achieved. Connections and differences across the codes were analysed and systematically organised into categories. The main categories were then organised into themes (i.e., interpretative descriptions of several categories describing interrelated ideas) and one meta-theme. A data matrix was created, with the categories and themes in different rows, stakeholders' groups (HCPs: patients and patient advocates) in columns and a summary of the codes with supporting representative verbatim quotes (translated into English) in the cells. '(...)' indicates that part of the quote was omitted as it did not add relevant information, and '[text]' represents clarifications added by the authors. A framework thematic map was created to illustrate the final matrix.

Results

Participants

Two focus groups were conducted (March 2022) with a total of 15 HCPs, and five focus groups were conducted (March-December 2022) with a total of 34 patients and seven patient advocates. Table 6.1 and Table 6.2 present the composition of each focus group of

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HCPs and patients/patient advocates, respectively, and participants' sociodemographic, professional (for HCPs) and clinical (for patients) characteristics.

Focus groups with HCPs comprised 7 to 8 participants and lasted 54 to 57 minutes ($Mean=55.26$, $SD=1.94$). HCPs were, on average, aged 51 years ($SD=13.65$, range: 32.00-75.00). Most were female ($n=12$, 80.00%), from Europe ($n=11$, 73.33%) or South America ($n=4$, 26.67%). Most HCPs were psychologists/counsellors ($n=6$, 40.00%) or clinicians ($n=4$, 26.67%), working in the private ($n=10$, 66.67%) and/or public ($n=6$, 40.00%) sectors, with an average of 23 years ($SD=13.10$, range: 10.00-49.00) of experience. Focus groups with patients and patient advocates comprised 4 to 18 participants and lasted 65 to 90 minutes ($Mean=78.03$, $SD=10.87$). Patients and patient advocates were, on average, aged 39 years ($SD=6.59$, range: 30.00-64.00). Most were female ($n=37$, 90.24%), from South America ($n=26$, 65.00%) or Europe ($n=14$, 35.00%), had higher education ($n=38$, 92.68%) and were employed ($n=37$, 92.50%). Most patients self-identified as heterosexual ($n=26$, 76.47%) and were in a relationship ($n=32$, 94.12%) for around 10 years ($SD=4.62$, range: 1.00-17.17). A small minority had biological children ($n=4$, 11.76%), with half ($n=2$, 50.00%) reporting they were conceived with fertility treatment. On average, patients were undergoing treatment for around three years ($SD=2.43$, range: 0.42-9.00), most were waiting to initiate a(nother) cycle of treatment ($n=11$, 32.35%), undergoing a cycle ($n=10$, 29.41%) or having finished treatment within the past six months ($n=12$, 35.29%), with only one being under diagnosis (2.94%).

Table 6.1 *Composition of each focus group carried out with HCPs, their sociodemographic and professional characteristics (n=15)*

	FG1 (n=7)	FG2 (n=8)
FG composition	7 HCPs	8 HCPs
Age (in years) <i>M(SD)</i> [range]	44.43(5.74)[37.00-53.00]	57.50(15.92)[32.00-75.00]
Gender identity	7 females	5 females, 3 males
Country of residence	3 Portugal, 1 Belgium, 1 Finland, 1 Italy, 1 United Kingdom	2 Brazil, 1 Argentina, 1 Chile, 1 Belgium, 1 Germany, 1 Portugal, 1 Spain
Professional title	1 clinician, 2 midwives/nurses, 4 psychologists/counsellors	3 clinicians, 2 psychologists/counsellors, 1 embryologist/andrologist, 1 clinic manager, 1 ethicist
Workplace	4 public sector, 2 private sector, 1 private and public sector	6 private sector, 1 private and public sector, 1 education/university
Working in the field (in years) <i>M(SD)</i> [range]	14.62(3.90)[10.00-21.00]	30.55(13.96)[10.42-49.00]

Note. FG=Focus group; HCPs=Healthcare professionals.

Table 6.2 *Composition of each focus group carried out with patients and patient advocates, their sociodemographic and clinical characteristics (n=41)*

	FG1 (n=8)	FG2 (n=18)	FG3 (n=5)	FG4 (n=4)	FG5 (n=6)
FG composition	7 patients 1 patient advocate	16 patients 2 patients advocate	4 patients 1 patient advocate	2 patients 2 patients advocate	5 patients 1 patient advocate
Age (in years) <i>M(SD)[range]</i>	35.43(1.90) [32.00-38.00] ^b	39.78(6.80) [30.00-64.00]	34.00(3.32) [30.00-37.00]	46.50(10.41) [40.00-62.00]	39.50(3.62) [33.00-44.00]
Gender identity	8 females	15 females, 3 males	5 females	4 females	5 females, 1 prefer not to say
Country of residence	8 Chile	18 Argentina	5 Portugal	4 United Kingdom	5 United Kingdom ^b
Education	8 with higher education	3 with secondary/high school 15 with higher education	5 with higher education	4 with higher education	6 with higher education
Employment status	7 employed, 1 unemployed	16 employed, 1 unemployed ^b	5 employed	4 employed	5 employed, 1 student
Sexual orientation^a	7 heterosexuals	10 heterosexuals 6 homosexuals	4 heterosexuals	1 heterosexual 1 homosexual	4 heterosexuals 1 bisexual
Relationship status^a	6 in a relationship 1 single	15 in a relationship 1 separated/divorced/widow	4 in a relationship	2 in a relationship	5 in a relationship

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Relationship duration^a (in years) <i>M(SD)</i> [range]	9.65(5.03)[3.83-16.17]	9.01(5.09)[1.00-16.50]	10.75(4.91)[3.75-15.17]	15.08(2.95)[13.00-17.17]	8.73(1.98)[6.50-11.00]
Parenthood status^a	5 childless, 1 with biological children, 1 with stepchildren	12 childless, 2 with biological children, 2 with stepchildren	4 childless	1 with biological children, 1 with stepchildren	4 childless, 1 with stepchildren
Children from treatment?^a	0	1	-	1	-
Fertility treatment stage^a	1 undergoing diagnosis, 2 waiting to initiate treatment, 2 undergoing (IUI/AI), 2 finished treatment in the past six months	8 waiting to initiate treatment, 6 undergoing (FIV/ICSI), 2 finished treatment in the past six months	1 undergoing (FIV/ICSI), 3 finished treatment in the past six months	1 waiting to initiate, 1 undergoing (FIV/ICSI)	5 finished treatment in the past six months
Trying to achieve parenthood^a (in years) <i>M(SD)</i> [range]	3.61(2.28)[2.00-8.17]	3.22(2.69)[0.83-9.00]	2.44(0.39)[2.17-3.00]	0.71(0.41)[0.42-1.00]	5.75(1.41)[4.25-8.00]

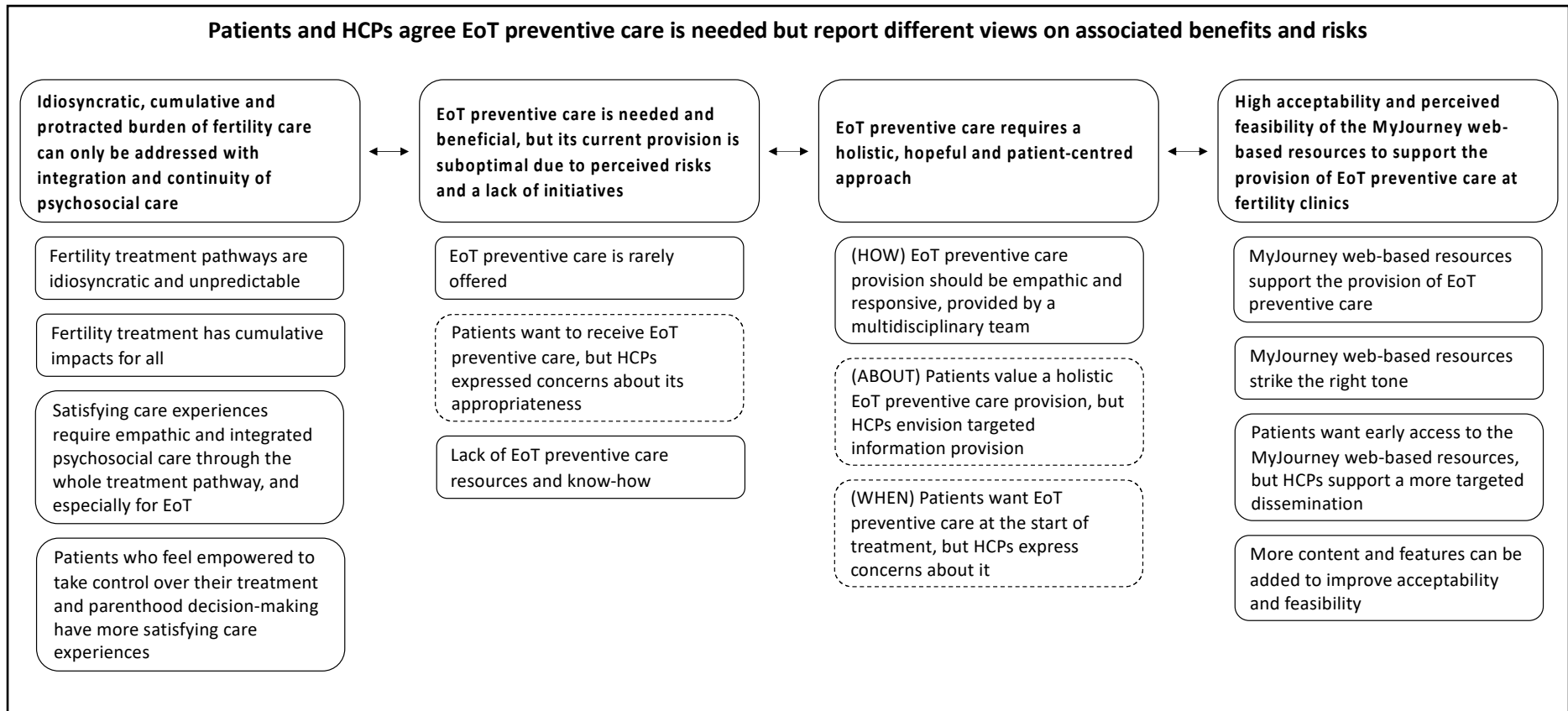
Note. FG=focus group; IUI=intrauterine insemination; AI=artificial insemination; IVF=in vitro fertilisation; ICSI=intracytoplasmic sperm injection.

^aOnly for patients(*n*=34). ^bValid percentages were reported (one participant did not report on their age/country of residence/employment status).

Thematic Themes

Framework analysis yielded 650 codes, systematically organised into 14 categories, four themes and one meta-theme. Figure 6.1 depicts the framework thematic map, and Appendix Y presents the final data matrix. All themes and categories of codes were endorsed by both HCPs and patients/patient advocates, albeit some categories were more endorsed by one group of participants than the other, and some reflected different views. Overall, patients' clinical experiences and views on EoT preventive care and the MyJourney web-based resources were congruent, and when differences were reported, these did not seem to be due to the country of residence.

Figure 6.1 Framework thematic map. Fourteen categories grouped into four themes and one meta-theme. Continuous lines represent consensus between HCPs and patients/patient advocates and dashed lines represent some level of disagreement



Note. EoT=end of unsuccessful fertility treatment; HCPs=healthcare professionals.

Meta-Theme: Patients and HCPs Agree EoT Preventive Care is Needed but Report

Different Views on Associated Benefits and Risks. Both patients and HCPs considered there is a high demand for better integration and continuity of psychosocial care during the treatment journey, particularly at EoT. Patients strongly endorsed this need and emphasised that EoT preventive care is rarely offered but highly needed as part of informed consent. Although patients acknowledged conversations about EoT are difficult, they considered that having them would increase their trust in and satisfaction with the clinic and help patients to better cope with the treatment journey, particularly with EoT and the period in its aftermath (when and if it happens). While HCPs agreed that EoT preventive care is necessary and beneficial, they expressed ambivalence about its appropriateness. HCPs tended to only discuss the possibility of EoT with very few patients due to concerns about patients not being emotionally prepared to have such conversations and that it could trigger negative emotions and dissatisfaction with care. HCPs also stressed they feel unprepared to provide it, reporting they do not have the required knowledge on when and how to offer it to their patients and lack resources to support this provision.

Overall, patients and HCPs agreed EoT preventive care should be offered in an empathic, hopeful, and patient-centred way, but expressed different views about what information it should entail and when and to which patients it should be offered. Patients valued receiving in-depth and comprehensive information from the start of treatment and covering the whole treatment process, impacts of EoT, coping strategies and alternative routes to and beyond parenthood. HCPs perceived EoT preventive care should only be provided towards the end of treatment and as a way to inform about (un)success rates, discuss the uptake of treatment cycles, and signpost patients for psychological support. Both patients and HCPs expressed positive reactions towards the MyJourney web-based resources as an acceptable

and feasible way to support EoT preventive care routine provision at clinics. Several suggestions were made to optimise the resources.

Theme: Idiosyncratic, Cumulative and Protracted Burden of Fertility Care Can Only Be Addressed with Integration and Continuity of Psychosocial Care. HCPs and patients referred to the difficulty of predicting individual treatment pathways due to high patient idiosyncrasy in reasons for treatment (e.g., health reasons, same-sex couples, single women), and systemic differences in service delivery, such as legal and healthcare system variations (*'accessibility [to third-party reproduction] also differs greatly, I think, between countries'* FG1, N1) and financial possibilities (e.g., access to the private sector). They also referred to the evolving treatment responses (e.g., treatment options, treatment complications; *'I'm going for the second cycle, and this time is through egg and sperm donation'* FG1, Pa7; *'each of them [treatment cycle] failed at a different stage'* FG5, Pa1) and experiences (satisfaction with the provided fertility care; *'we're not entirely sure that we will stop, but we have definitely stopped with our current clinic, partly because of how they handled this'* FG5, Pa2).

From the patients' perspective, the unpredictability of their treatment journey adds to the psychosocial burden of the medical procedures. Both patients and HCPs referred that this unpredictability leads to *'patients changing from one clinic to the other'* (FG2, CM1), which, from the HCPs' perspective, makes it difficult to organise long-term care. To add to this, there was consensus that most patients experience cumulative negative impacts of treatment. Those identified were the low success rates, lack of control over treatment outcomes, repeated and many times unexpected complications, unsuccessful cycles, and losses (*'I agree that it is very difficult when the result comes back negative, and then negative again, and they keep coming back negative'* FG2, CM1). In addition, the protracted nature of treatment, caused by long waiting lists and providers often offering more

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treatment options and add-ons (*'there are also endless treatments with doing a lot of add-ons which are not successful'* FG2, CL2) was also an extra emotional burden for patients. Patients endorsed these sources of burden more than HCPs and stressed additional ones that, in their view, were the most impactful and could be better managed by clinics. For instance, the lack of psychosocial care and the lack of forewarning and preparation for treatment complications and adverse outcomes (*'My first cycle ended like a surprise ectopic [pregnancy], and I definitely did not feel prepared for the idea that there were other outcomes besides pregnant or not pregnant, and that was a really, really huge shock'* FG5, Pa2), and particularly for EoT. The period after EoT was described as something patients struggle to accept, that triggers unexpected feelings of denial, anger, and frustration, and where patients feel they *'completely lose [their] identity'* (FG5, Pa1) and go through an *'existential crisis'* (FG5, Pa2). Patients expressed the frustration associated with EoT, which they believed is shared by everyone involved.

'I never expected to respond the way I did [when treatment was unsuccessful] (...) my world fell through the floor when I got the news, and I've never known a feeling like it, and it is the most isolating thing in the world even if you were doing it as a couple' (FG5, Pa1).

Patients and HCPs agreed on multiple aspects of care that contribute to (dis)satisfying experiences of care. These mapped into three areas of patient-centred care that were overall more strongly endorsed by patients: empathic care, shared decision-making, and organisation of care (personalisation). Both patients and HCPs valued empathic, timely, and responsive care during and immediately after challenging key treatment procedures and in situations of stress and loss (*'the doctor was very warm, very empathetic'* FG2, Pa4; *'the medical colleagues always call the patients two, three days after the procedure to check if everything is fine'* FG2, CM1). However, many patients perceived a lack of empathic

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communication skills from HCPs, particularly when discussing adverse outcomes (*'I started crying during the phone call [to inform about the unsuccessful cycle], and there wasn't even nearly a validation of my feelings'* FG3, Pa1). Most felt they were treated as in a *'conveyor belt'* (FG5, Pa1, Pa5), as care was provided in a rush and *'support was totally deficient'* (FG2, Pa1), particularly after each unsuccessful cycle and EoT: *'they just left us'* (FG5, Pa1). Patients reported not being involved in decision-making about their treatment plan and not receiving the required information, in particular about adverse treatment outcomes, to be able to make informed decisions about treatment and parenthood. Patients perceived that HCPs *'skimp on information'* (FG2, Pa2), with some perceiving *'they [HCPs] assume we already know and don't tell us or assume we don't care'* (FG3, Pa2). Patients have to proactively do their *'own research'* (FG4, Pa1), as information would not be provided by default, but many were concerned about the reliability of these sources (mainly online). Both patients and HCPs agreed that psychosocial care should be integrated, referring that it is important to receive an integration of both medical and psychosocial care and have contact with all staff members (*'the doctor, the psychologist, and the endocrinologist'* FG2, Pa4). However, most patients perceived there was *'no articulation between the psychologist and the doctor'* (FG1, Pa2), the care *'was very medically oriented, professionals [clinicians] didn't have training on the psychological impact of treatment'* (FG5, Pa4), and there was no referral for support, being *'the patient who has to ask for an appointment'* (FG1, Psych1). Patients and HCPs agreed that the private sector had overall more resources to invest in patient psychosocial and personalised care, but even so they were insufficient.

Theme: EoT Preventive Care is Needed and Beneficial, but its Current Provision is Suboptimal due to Perceived Risks and a Lack of Initiatives. HCPs and patients *'often don't have that conversation'* (FG1, N1) about EoT. Patients referred that *'only the success*

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chances' (FG4, Pa2) are mentioned, with most treatment-related discussions being focused on *'what the [treatment] next step will be'* (FG1, Pa5). Patients did not feel prepared for EoT (*'I don't recall any preparatory conversation for it, if it fails or what that might be like'* FG5, Pa1) and felt *'completely caught off guard'* (FG5, Pa1) when treatment (cycles) were interrupted due to unexpected complications (e.g., failed stimulation, oocyte pickup). The possibility of *'stopping trying was never talked about'* (FG2, Pa13) and alternative (parenthood) pathways, such as adoption, *'aren't mentioned either'* (FG1, Pa6), except gametes/embryos donation, which is discussed but only at the end of the treatment process and as the last resource.

'I remember asking the doctor in one of the appointments what would happen, so what the next step would be if it [the treatment cycle] didn't work, and he even said to me: oh, let's not think about it now, like, let's be optimistic' (FG3, Pa1).

HCPs referred they often inform about treatment success rates but highlighted that *'patients don't internalise this, always think: - okay, it may not work, but it's going to work with me'* (FG1, Psych4). HCPs only discuss the possibility of EoT with *'very, very, very few patients'* (FG1, CL1), specifically those with very poor prognosis or those who are *'certain they will not have treatment anymore, not with you nor anywhere else'* (FG1, N1).

Patients *'do feel a great need to prepare for the possibility that nothing works or that each [cycle] won't work'* (FG2, Pa11), considering *'without a doubt'* (FG3, Pa1) that these conversations would make them trust their fertility clinic more, and would be beneficial to *'have more knowledge'* (FG1, Pa5), *'not being given false expectations'* (FG2, Pa2), *'receive more psychological support'* (FG1, Pa5), *'make more informed decisions'* (FG5, Pa1) and have the *'confidence'* (FG1, Pa5, Pa10) and *'the tools to face those times when treatment fails'* (FG1, Pa1). Although patients recognised EoT *'conversations are hard'* (FG4, adv2) and

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having them would be difficult for both patients and HCPs, patients did not consider this potential downside should prevent conversations from happening, as *'not having any conversation at all about the impact of it failing on you, would lead to bigger trauma then, if experienced'* (FG5, Pa1). Although HCPs recognised the importance of having such conversations, they expressed some ambivalence and concerns about it. HCPs were particularly worried these conversations could be seen as inappropriate, as patients would be too invested in and hopeful about treatment and would not be emotionally prepared to discuss negative outcomes (*'if you concentrate on what cannot be done with treatment (...) the treatment will be unsuccessful, or if you stop the treatment, then I can see how the couple disintegrates because they want to explore other possibilities, other clinics abroad or anywhere else, and any errors or whatever'* FG1, CL1). HCPs also expressed concerns that these conversations could trigger negative emotions and dissatisfaction towards the clinic (*'they would be extremely angry'*, FG1, CL1). HCPs were also reluctant to label a cycle as a *'last one'* (FG1, Psych4) due to the difficulty of knowing when treatment indeed ends, which is related to the idiosyncrasy in decision-making (*'the difficulties are reaching the end of the road, rather than being at the end of the road'* FG2, CL1).

Allied to these latter concerns, both patients and HCPs highlighted the lack of resources to support the provision of EoT preventive care (*'there is so much in the whole world. But this, the aftermath, there was nothing. If you search for it, there's nothing'* FG2, adv1). HCPs felt unprepared to provide such care, with a lack of know-how about the amount of information that should be provided, how it should be provided, and when (*'it is a difficult job'* (FG1, CL1); *'the majority of the doctors are not trained right from the beginning to properly approach this topic with their patients'* FG2, CL2), compounded by a lack of resources to offer to their patients, during and after treatment.

'many clinics don't have that conversation early enough because they don't have anything to really offer' (FG1, N1).

Theme: EoT Preventive Care Requires a Holistic, Hopeful and Patient-Centred Approach.

(HOW) Both patients and HCPs considered EoT preventive care should use an empathic, sensitive and patient-centred approach, respecting patients' values, needs and preferences. Although both agreed all staff should be involved in such provision, clinicians considered mental healthcare professionals would be more equipped to provide such support. Both considered that EoT preventive care should have a *'delicate balance'* (FG5, Pa2) between realism and hope, as patients need *'the energy and the hope you know, to get through an incredibly difficult journey'* (FG4, adv2), but patients highlighted it should be informative, *'open and honest'* (FG4, adv2) to enable patients to be *'in charge of their own health, the treatments, and the choices'* (FG2, Pa2).

(ABOUT) Patients would value EoT preventive care to provide an in-depth psychosocial and medical view of treatment. They would appreciate being offered holistic psychosocial care to cope with the emotional, relational and social burdensome experienced of EoT, in particular, being informed about *'what you could do in those circumstances to support those feelings of grief'* (FG5, adv1), how to manage relational and social relationships, alternative pathways (including adoption and childfree lifestyle) and different types of support, in particular, specialised psychosocial (group) support, which *'should be considered from the first moment you begin treatment'* (FG1, Pa1). Medical information should include individual success rates and prognosis, *'an explanation of all steps of treatment'* (FG3, adv1) and *'what can go wrong at each step'* (FG2, Pa2), *'how many rounds of treatment'* (FG4, adv2) and *'all treatment options'* (FG2, adv11).

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'so, what's plan B? If plan A doesn't work, what will be plan B, or plan C or plan D?' (FG3, adv1).

HCPs were concerned about how in-depth these conversations should be, not to superimpose the hope for a successful treatment. HCPs envisioned present-focused information and support, mainly targeting success and, in particular, unsuccess rates (*'I think it's all part of explaining success rates of treatments'* FG1, N1), uptake of treatment cycles, and signpost for psychological support. Indeed, HCPs referred they would feel more comfortable providing EoT preventive care if they had support sources to signpost patients to.

'If you're among those 30 unlucky per cent, then we'll also, you know, offer you some support to go on with your life. I think that would be like a really important thing to offer, and it could even help us (...) because we might be brave enough to say that to the patient because we can offer them some support afterwards because it's all interconnected' (FG1, N1).

(WHEN) All patients considered EoT preventive care *'vitaly important at the beginning, before treatment commences'* (FG4, adv2), as they perceive this care *'is part of the informed consent'* (FG2, Pa1/adv2). Many stressed they would value the opportunity to revisit this care between the treatment cycles but not during the actual cycle, as they are too invested in treatment. Patients considered EoT preventive care should always be offered to all patients at the start but acknowledged that a minority might not be emotionally prepared to explore some topics and that HCPs should use discretion and tailor EoT preventive care according to each patient's profile.

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'It's a right to be informed from the beginning, perhaps about that I am going to undergo treatment and how these things can happen, and then I consent that I want to undergo this treatment, assuming those risks and knowing' (FG2, adv2).

Although HCPs recognised patients would benefit from EoT preventive care from the start, they considered actual preparation and planning for EoT would be difficult while patients are pursuing treatment due to patients' lack of willingness and readiness and would be more appropriate at later stages of treatment when patients are reaching the treatment end.

'I think it would help in the beginning just to have a first conversation of the options that we have here and be available to discuss them along the way of the treatment' (FG2, Psych2).

Theme: High Acceptability and Perceived Feasibility of the MyJourney Web-based Resources to Support the Provision of EoT Preventive Care at Fertility Clinics. All participants expressed very positive views towards the MyJourney web-based resources, considering them *'reliable'* (FG3, Pa1), *'totally necessary'* (FG2, Pa9), *'really good'* (FG4, adv2), *'super interesting'* (FG2, adv2) and *'super useful'* (FG2, Pa14). All patients were highly willing to engage with the resources (*'without a doubt that I would [after the clinical appointment] be curious to explore these better at home, in a private and safe place'*, FG3, Pa1). HCPs also referred that most patients *'would definitely want to explore that in their own surroundings and time'* (FG1, Psych2) and that they would be willing to offer them to their patients. However, they expressed concerns about exploring these in the consultation due to lack of time, appropriateness and training (*'how can this project fit in reality? When clinicians are with a patient in front of them, how would they share this information?'* FG2, Psych1).

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All participants appreciated the features of the MyJourney web-based resources being self-administered, online and *'open and free'* (FG1, Pa1). All participants appreciated the *'mixed media. I like that you have the video and then you have the written part'* (FG1, N1), considering *'the questions [common questions and concerns] and the video very, very well done'* (FG1, Pa5) and the common questions and concerns section *'brilliant'* (FG4, adv2).

Patients perceived more benefits from these resources (*'support, information, guidance, points for reflection, ways that you can try and progress and move forward'* FG5, Pa5) than HCPs, but overall, both considered them beneficial support for patients (*'it's comforting (...)* *it's like a virtual hand, isn't it!?' FG3, Pa2)* and a valuable training tool *'not only for the clinicians but for all clinic staff'* (FG2, CL3). Although some patients agreed the MyJourney web-based resources could trigger negative emotions and negatively impact their engagement with treatment, patients believed that, as the resources included *'signposting links and contacts they [patients] can seek for further advice or support'* (FG5, Pa5), they would find it supportive and comforting (*'I think that if this type of information reached everyone on time, even if it's cruel, it would avoid a lot of pain'* FG2, Pa9).

'I really needed something like that, some support like that (...) *it's very valuable for the patients'* (FG1, Pa1).

Aligned with the experiences reported above, patients considered the MyJourney web-based resources should be disseminated as much and early as possible and that in the clinic, all staff should be involved in the dissemination. In particular, patients referred that these resources should be embedded in the clinics' website, with many patients stressing they would be much more likely to choose that clinic if this information were there (*'I would say that this clinic would immediately go up a few points in my consideration (...)* *[It] would demonstrate the clinic or the hospital is concerned with the emotional part of the treatment'*

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FG3, Pa1). Most HCPs considered these resources *'should come later'* (FG1, N2/Psych3) in the treatment pathway, with some suggesting signposting patients in the *'cycle review appointment'* (FG1, Psych2) after at least one cycle *'had completely failed'* (FG1, N1) as patients have already experienced a failed cycle and could more easily *'relate'* (FG1, N1) with it. Most HCPs also agreed these resources could be made available *'on the clinic's website' but not on the front page, it will be down at the bottom, somewhere'* (FG1, N1), *'like additional information'* (FG1, CL1), as they concerned it could *'scare patients away'* (FG1, CL1) and negatively impact their trust in the clinic.

All patients provided suggestions on further content and features that could be included in the MyJourney web-based resources to improve acceptability and feasibility. In particular, further emotional and coping resources, support links and testimonies, higher personalisation and tailoring to minoritised groups.

Discussion

Findings showed a clear unbalance between the perceived high demand to provide patients with EoT preventive psychosocial care and its current provision at clinics. This lack of provision seems to reflect a lack of awareness about patients' views and preferences on EoT preventive care, concerns about when and how to provide it per each patient's profile and a lack of resources and know-how. Results validated the need for solutions to support EoT preventive care provision and indicated that it is possible to develop acceptable educational resources to this end. Both patients and HCPs expressed positive reactions towards the co-developed MyJourney web-based resources, perceiving them as needed, acceptable and a beneficial way to support the provision of EoT preventive psychosocial care. However, it is unlikely these resources will be enough to achieve a normative change in practice. EoT preventive care has to serve a clear function for the different stakeholders

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involved so that its implementation at clinics is perceived as worthwhile. Further evidence-based discussion and training on how to implement this care in a hopeful and supportive way is needed.

Results highlighted the contrast between the high demand perceived by both patients and staff for the routine provision of EoT preventive care at clinics and the lack of accessibility to it. This gap in care aligns with previous quantitative and qualitative research showing that treatment-related discussions tend to focus on the 'next step of treatment' and achieving a successful treatment outcome (Harrison et al., 2022; Harrison et al., 2021; Peddie et al., 2004, 2005; Sousa-Leite et al., 2023; Sousa-Leite et al., 2022), which was also clearly highlighted in the present results. The present results suggest that the lack of accessibility to EoT preventive care reflects HCP's concerns about multiple perceived risks of engaging with such care. Foremost, it seems to reflect HCPs' lack of awareness about patients' views and preferences on EoT preventive care. In line with results from mix-methods cross-sectional survey research on patients' willingness and preferences to receive routine EoT preventive care in clinics (reported in Chapter 2; Sousa-Leite et al., 2023), the present results validated that patients want to receive EoT preventive care from the start of treatment and value receiving in-depth and comprehensive information covering the impacts of treatment not working, coping strategies and alternative routes to and beyond parenthood, which implies a delivery by an holistic and multidisciplinary team. However, the present results showed that HCPs perceive patients are fully committed to and hopeful of achieving a positive outcome with treatment and not willing to discuss an outcome other than this. This aligns and echoes past perceptions in other health-related settings (e.g., end-of-life care) about HCPs not being aware of patients' preferences when it comes to discussing and preparing them for difficult and sensitive situations (Abdul-Razzak et al.,

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2014; Hudak et al., 2008). These perceptions may be driven by HCPs' own idealisation that their duty of care relies upon achieving a successful treatment and their own unmotivating and sense of incompetence when confronted with the limits of treatment (Fedele et al., 2020; Meier et al., 2001). Indeed, the present results showed that HCPs perceive that discussing the possibility of EoT negatively affects patients' satisfaction with and their evaluation of the clinic-provided care. This avoidance towards the 'undesired' outcome of treatment may contribute to the patients' over-optimistic expectations about achieving a positive treatment outcome (Devroe et al., 2022; Miron-Shatz et al., 2021) and their difficulty in acknowledging its success rates when HCPs mention it. However, these perceptions do not seem to be supported by patients. The present results indicated that more than achieving a positive outcome, patients' satisfaction with care is mainly determined by the quality of the relationship with the fertility staff and the amount of information received, particularly about and after adverse outcomes. This aligns with results from cross-sectional and prospective studies on advanced life-threatening illnesses showing that patients want to be forewarning and prepared for potential adverse outcomes of treatment, and when this happens, patients report increased overall satisfaction with and confidence in the clinic (Leung et al., 2012; You et al., 2014).

Secondly, the lack of EoT preventive care provision seems also to reflect HCPs' expressed concerns about the appropriateness and the use of professional discretion. From the perspective of the HCPs, EoT preventive care should only be provided towards the end of treatment as a way to inform about the chances of it working (or not), discuss the uptake of treatment cycles, and signpost patients for psychological support. HCPs concerned that exploring the possibility of EoT, in particular at the early stages of treatment, could trigger negative emotions in patients, 'crushing' their hope and negatively impacting their

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engagement with treatment. These are valid concerns and, as above, echo past fears and apprehensions reported with other health-related sensitive situations (e.g., end-of-life discussions; Brighton & Bristowe, 2016). It can be argued that this negative impact can be attenuated by how EoT preventive care is provided. Patients acknowledged these same concerns but perceived they do not superimpose the benefits of receiving EoT preventive care and believed empathic communication skills and timely referral for psychosocial support could attenuate them. Cross-sectional, prospective and systematic studies showed that giving patients a comprehensive view of the benefits, risks and potential adverse outcomes of treatment, what patients will likely experience when confronted with these outcomes, and appropriate strategies to cope with them, promote patients' psychosocial adjustment when it happens, translated into lower emotional distress, better well-being and quality of life (Emanuel et al., 2004; Thomas et al., 2000; Waller et al., 2014; Wright et al., 2008). While it is likely that patients would benefit from these discussions, not all would be ready and willing to receive it at the early stages of treatment. In line with patients' expressed preferences and ethical requirements of information provision (Bernat, 2004; Michel & Moss, 2005), it can be argued that EoT preventive care should be offered to all patients at the start of treatment, but HCPs should explore with their patients if and when they feel ready to receive it, with the reassurance that patients know how to and can easily access such support (Abdul-Razzak et al., 2014; Parker et al., 2007).

Finally, the lack of EoT preventive care provision seems to reflect a lack of resources and know-how on how to provide such care. Delivering bad news and discussing potential adverse outcomes is one of the most distressing tasks for HCPs in fertility care (Boivin et al., 2017). The present results showed that HCPs feel unprepared and lack confidence in providing EoT preventive care. HCPs referred that they do not know how and when to

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initiate such sensitive conversations, with which patients, and how to manage patients' emotional reactions over the discussion. HCPs referred that when patients are confronted with EoT, they express reactive emotions, mainly anger, and HCPs feel helpless as they do not have the required know-how to manage such reactions and support to signpost patients. To add to this, HCPs may avoid such discussions, as these may trigger negative emotions in HCPs themselves, such as stress, hopelessness, and frustration (Fedele et al., 2020; Meier et al., 2001). The present results showed that HCPs welcome and highly need solutions to support the provision of EoT preventive care to their patients. The positive reactions that both patients and HCPs expressed about their intentions and willingness to use the co-developed MyJourney web-based resources suggest that this type of resource can be an acceptable and beneficial way to support this current need in fertility care provision. As a result of the consultations with the fertility stakeholders (HCPs, patients, and patient advocates), a final prototype of the MyJourney web-based resources was developed. The resources are now freely available online for public use in four languages (English, Portuguese, Spanish (from Europe and Latin America) and German; web page for HCPs: www.myjourney.pt/clinics; web page for patients: www.myjourney.pt/patients; web page's screenshots are available in Appendix Z). The web page for HCPs includes an additional section of in-printed materials that HCPs can use to ease the provision of EoT preventive care (e.g., information flyers, poster). The patients' webpage includes a new separate section of alternative routes for parenthood with signposting for different sources of support (gamete and embryo donation, surrogacy, adoption and fostering). Both patients and HCPs considered these resources were likely to raise awareness among HCPs about patients' needs and preferences on EoT preventive care and give them practical tools to support such provision. They also considered these resources valuable for patients as they

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provide helpful information and required support sources to help patients feel in control of their treatment and parenthood decision-making. Being freely accessible online, interactive and visually attractive, containing reliable information ‘under the same roof’, being tailored to patients and HCPs, and being respectful and responsive to patients’ values, needs and preferences were considered valuable and unique features. Not all suggestions were feasible to be integrated. In particular, personalising and tailoring the resources to minoritised groups and cultures. It is well-known that perceptions and views on fertility and parenthood are culturally moderated and strongly differ among social contexts (van Balen & Bos, 2004), so tailoring the resources to these groups would require a full assessment of their needs and, most likely, specific and new tailored resources. These resources were also not tailored to the treatment stage, as they were designed to support patients coping with EoT. Other support sources to help patients cope with the treatment process have already been developed and evaluated and are freely available online for public use (e.g., Ockhuijsen et al., 2013). Additional features were not included but should be considered in the future, in particular including testimonies/personal stories of other patients who have positively moved on from treatment, with results from research suggest it can be a beneficial way to communicate health information (Bekker et al., 2013). Further applications for funding to include these additional features should be considered.

Considering the lack of initiatives for EoT preventive care provision, patients’ and HCP’s positive views and willingness to use the web-based educational resources and the increasing use of digital technologies, particularly after the COVID-19 pandemic (Budd et al., 2020), high use of these resources can be expected. However, it is unlikely that these resources will be enough to achieve a normative change in practice. Further investigation on how to implement such care as a routine practice at fertility clinics is needed to ensure EoT

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preventive care serves a clear function for the different stakeholders involved (patients, HCPs). In particular, evidence-based discussions and further training for HCPs are necessary to change their current ambivalent attitudes towards the appropriateness of providing this care. Training whereby staff have opportunities to express concerns and acquire resources and skills may be required, or whereby they have opportunities to trial approaches to address concerns (e.g., via role modelling). To the author's knowledge, a recent online self-administered training to support fertility staff sharing bad news with their patients is being developed and evaluated (Gameiro, 2022). This training is based on the SPIKES framework (i.e., a six-step protocol for sharing bad news in fertility care; Baile et al., 2000; Buckman, 1992) and targets bad news in general. Although further evaluation testing is needed, initial acceptability and feasibility results showed promising results (Gameiro, 2022).

Strengths and Limitations

This study is timely and targets an unmet need in care. It used a theoretical, patient-centred, and focus group approach. It applied Bowen et al.'s (2009) theoretical feasibility framework to assess the acceptability and feasibility of EoT preventive care. It used Framework Analysis, which captured participants' individual views while capturing consensual and divergent views and specific needs across different stakeholders. The emerging codes in the final focus groups were anticipated by researchers, suggesting that the qualitative analysis process reached a saturation point. The plurality of positive and negative perceptions and suggestions for improving EoT preventive care offers reassurance that the study results reflect a comprehensive view of such care. However, most patients were childless, well-educated women recruited from social media via patient support groups. These patients might be more interested in treatment-related issues and motivated to participate in research (Benedict et al., 2019; Sousa-Leite et al., 2019), so their expressed

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demand and acceptability towards EoT preventive care may be over-positive. Despite the efforts to have an inclusive sample (e.g., use of the Prolific platform and a high number of participants recruited from multiple countries), it is unclear if these resources are acceptable to men, ethnic groups, and certain minority groups. In addition, informative comparisons across treatment stages were also not possible. Nonetheless, the convergency in results with prior research on EoT preventive care, patient support and self-help educational resources suggests that participant bias is unlikely to invalidate the study results. HCPs were representative of both the public and private sectors, and most of them were professionals that have a more frequent contact with patients (i.e., clinicians and psychologists/counsellors), so the views likely reported their actual experiences with patients. Considering the low number of HCPs per country, informative comparisons across countries were not possible. However, the differences that were reported among patients on clinical experiences and views on EoT preventive care and the MyJourney web-based resources did not seem to be due to the country of residence. All differences, indeed both reported by patients and HCPs, seemed to be mostly related to the private vs public clinical sectors. However, a structured analysis per country of residence would be desired.

Conducting the focus group separately with patients and HCPs may have hindered a fruitful discussion between these two groups, considering the differences in their understanding of EoT preventive care. However, considering the sensitiveness of the topic and the lack of knowledge on HCPs' views of EoT preventive care, the possibility of having both in separate groups ensured a safe environment for them to express their actual experiences and views without regard to the views of one another.

Conclusion

There is a high demand for solutions to support the implementation of EoT preventive care as routine practice in fertility clinics to promote patients' psychosocial adjustment to EoT. The co-developed MyJourney web-based resources seemed feasible and acceptable for addressing this need in patient care. However, staff expressed ambivalence and concerns about if, how, and when to use them with their patients, with their primary concern being such care could crush their patients' hope and engagement with treatment. Future work should focus on further investigating how best to support staff in this endeavour to ensure such care is provided in a confident, hopeful and supportive way and that patients have the opportunity to be fully informed about the realities of their fertility treatment in a way that optimise their parenthood plans and promote their psychosocial adjustment during treatment and after its unsuccessful end.

CHAPTER 7 GENERAL DISCUSSION

The present doctoral thesis has brought substantial advances to the emergent research on psychosocial care for the end of unsuccessful fertility treatment (referred to in the present thesis as EoT). EoT constitutes one of the worst possible outcomes of undergoing fertility treatment, and patients who go through this experience are an underserved group within the field of reproductive medicine. The present thesis included a set of research initiatives aimed at developing support resources (for HCPs and patients) to enable the provision of EoT psychosocial care at clinics and gathering research evidence to guide decision-making about how to provide such care. The present chapter will integrate and discuss the research conducted. The chapter will start by highlighting the knowledge contributions of the body of work implemented and discussing the theoretical and practical implications of the findings for the continuous development and implementation of routine psychosocial care for EoT. The discussion will then move to identify areas of research that have emerged from the current research yet remain uninvestigated. To conclude this discussion, critical points of reflection about the present research's strengths and limitations will be discussed, offering insights into areas of success and opportunities for improvement.

Knowledge Contribution

EoT Preventive Psychosocial Care is Valued by All Fertility Stakeholders and Feasible to be Implemented at Fertility Clinics. The present findings challenge traditional views of routine psychosocial care in ART. A major contribution is the proposal to integrate EoT preventive care, which consists of informing and preparing patients for the possibility of EoT, into routine psychosocial care at fertility clinics (Gameiro et al., 2015). This thesis' multi-methods and multi-informant research indicate that most stakeholders (patients, patient advocates, and HCPs) consider EoT preventive care provision imperative and valuable for

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patients as long as it is provided in an empathic, hopeful, and patient-centred way. The present results constitute the first empirical evidence that it is valued and feasible to provide EoT preventive care during fertility treatment. Results indicate that both fertility clinic staff and patients think this care addresses an unmet need in fertility care, with as much as 9 in 10 patients reporting willingness to receive it early in their treatment pathway as an inherent and necessary aspect of their informed consent. When offered in a single face-to-face (online or in-person) individual/couple psychosocial therapeutic session delivered by a mental healthcare professional at later stages of treatment (as part of the specialised psychosocial Beyond Fertility intervention), fertility patients' uptake rate was 52%. When integrated into web-based educational resources to support the provision of this care by all clinic staff as routine practice in fertility clinics, patients, patient advocates, and HCPs, all recognise the value of such resources. All consider that these resources can help address the unmet informational and support needs patients experience in fertility care, both during and after treatment. Moreover, offer valuable guidance to HCPs on how to provide such care in alignment with patient preferences, thereby increasing their confidence in delivering it - which appears to be a necessary requirement for addressing negative treatment outcomes (Fedele et al., 2020). Results from the Beyond Fertility efficacy trial also indicate no visible harm from providing patients with EoT preventive care and that such care may promote the uptake of psychosocial care in the aftermath of EoT (72% acceptability rate). Positive benefits from this care were perceived by most patients when piloting Beyond Fertility. Benefits were related to feeling validated and emotionally supported. However, efficacy testing of Beyond Fertility indicates no visible benefits within two weeks of the end of the last cycle. Results were suggestive that benefits in quality of life may be achieved but would be small effects with no respite in a more holistic change in mental health and well-being.

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Considering patients' perceived benefits from receiving EoT preventive care, their expressed preferences on how to receive such care, stakeholders' positive evaluations of the outputs presented (Chapter 4; Chapter 6; Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022), and the empirical evidence body of research that informed the rationale for EoT preventive care regarding the benefits of informing and preparing patients for complex treatment options and adverse outcomes (e.g., cancer treatment; Brighton & Bristowe, 2016; Leung et al., 2012; Thomas et al., 2000; Waller et al., 2014), it seems arguable that benefits to be achieved require a holistic and multidisciplinary provision of such care from all clinic staff as part of routine clinic practice.

Overall, the set of doctoral studies clearly highlighted a discrepancy between patients' preferences towards an EoT preventive care provision as a comprehensive and multidisciplinary discussion about all potential trajectories that may be part of their treatment/parenthood pathway and its current provision, which tends to focus on the 'here and now', does not look beyond the next cycle, and appears to be somewhat dismissive of the possibility that the treatment cycle may not work (Carson et al., 2021; Harrison et al., 2022; Peddie et al., 2005). The doctoral work showed that this discrepancy in the demand vs current provision of EoT preventive care does not seem specific to the UK or Portuguese care system but seems to characterise care provision across European and Latin American countries, at the very least. The apparent consequences are that patients feel disempowered to take full ownership of decision-making about how to pursue parenthood goals given that what is perceived as crucial information is omitted or provided too late in the treatment pathway to allow patients to properly consider all options, including ending treatment and pursuing alternative paths. Patient reports indicate that suboptimal communication and support during the treatment period is associated with worse adjustment in its aftermath

when it is unsuccessful (Bluth, 2023; Peddie et al., 2004, 2005; Chapter 2: Sousa-Leite et al., 2023; Chapter 3: Sousa-Leite et al., 2022; Chapter 6: Sousa-Leite & Gameiro, 2023).

EoT Early Intervention Psychosocial Care Is Needed. Another major contribution of the present doctoral work consisted of expanding the evidence base on how to support patients in the immediate aftermath of EoT, which was named in the present thesis as EoT early intervention care. Results made visible that fertility clinics fail to provide psychosocial care to support those patients for whom treatment does not work, which can be considered a derelict of their duty of care. Results from the different studies with different patient and HCP populations showed that almost all patients are dissatisfied with the lack of psychosocial care they are being offered during and after treatment. Patients referred to this lack of provision as particularly critical and devastating when confronted with and in the period after an unsuccessful cycle and ultimate EoT. Results showed that clinics are aware that efforts to support patients after these events are almost non-existent. Results consistently indicated that all fertility stakeholders (patients, HCPs) consider it highly valuable to implement psychosocial care that is acceptable by patients at this stage of treatment and welcome solutions to facilitate this provision in fertility clinics. This is surprising given the research field's overall low investment in developing and evaluating these types of support initiatives. Nonetheless, so far, the few existing initiatives have proved effective in improving patients' mental health or well-being (Kraaij et al., 2015; Rowbottom et al., 2022). Although Beyond Fertility did not prove efficacious, the observed eight-point difference between those allocated to receive Beyond Fertility and those allocated to receive CaU in their quality of life six months after EoT may warrant further exploration. With necessary modifications to its delivery format, uptake is likely to prove higher and larger differences may be achieved with a well-powered, high-quality RCT.

Overall, given the body of findings from the three interventions assessed (Chapter 5; Kraaij et al., 2015; Rowbottom et al., 2022), it is definitely justifiable that more investment is put into pursuing acceptable and feasible support initiatives to be tested in larger scale trials.

There is Suboptimal Patient-Centred Communication About Multiple Treatment Trajectories and Unsuccessful Outcomes. Another major contribution was developing a better understanding of how patients navigate the end of treatment. Overall, findings show that the ‘end of treatment’ is not a clearly predictable endpoint for patients and HCPs. Even when patients and HCPs consider a cycle to be the ‘last treatment cycle’, when confronted with its unsuccess, only around one-third (35%) actually decide to end treatment. When faced with very poor or unexpected treatment outcomes (e.g., hyperstimulation, no oocyte pickup), patients are offered an additional cycle, or they themselves seek additional cycles in the private sector. Other times, health complications occur (e.g., thin endometrial lining, endometrial polyps), and patients are forced to postpone treatment, in many cases repeatedly over several months. Even when treatment goes as planned but ends unsuccessfully, one in five patients (22%) change their minds about ending treatment and decide to continue in the private sector. The number of patients who pursue additional cycles in the private sector may be underestimated, as some of those who face unexpected outcomes or have their treatment postponed and continue in the treatment process may also consider the private sector afterwards. These latter patients may face additional decision-making challenges due to the vast treatment options and add-ons they may be offered (Perrotta & Hamper, 2021), which have been increasing over the last decade (HFEA, 2020; Wise, 2019). In focus groups, patients reported that all these treatment trajectories/outcomes are not contemplated when planning for treatment, leading to patients feeling ‘caught off guard’ when these happen. The unpredictability and

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heterogeneity of treatment trajectories coupled with a lack of planning for the end of treatment make it difficult to identify end-of-treatment patients in advance to offer support. Patients perceive this lack of preparation for how treatment can unfold over time, and the multiple treatment options they are offered as they advance in treatment are not conducive to valued-based decisions about how many cycles of treatment they are willing to undergo (Harrison et al., 2022; Harrison et al., 2021) or, and as stated above, about the optimal point to end treatment and explore other alternatives paths to or beyond parenthood. Patients also consider this intensifies their negative emotional reactions to unsuccessful cycles and impairs their psychosocial adjustment to EoT. The findings are consistent with the only other investigation of EoT decision-making (Peddie et al., 2004, 2005), which also showed that patients saw ending treatment positively as a ‘way out’ of the emotional burden of treatment (Peddie et al., 2005). These studies showed that when women perceive they are adequately informed about the possibility of EoT and involved in the treatment decision-making, even if only at later treatment stages, they feel less conflicted and more satisfied with their decisions (Peddie et al., 2004, 2005). Overall, these findings endorse the high demand for a multidisciplinary provision of EoT preventive care that goes beyond being provided exclusively by a mental healthcare professional to optimise patients’ decisions about their treatment and the pursuit of alternative plans to and beyond parenthood and to promote their psychosocial adjustment towards these decisions.

HCPs Want to Provide EoT Preventive Care to Their Patients But Need Training and Support on When, What, and How to Provide it According to Patients’ Expressed Preferences. The present doctoral work explored for the first time the willingness to and perceptions of HCPs about the provision of EoT preventive care. While HCPs express a high demand for a patient-centred provision, they express reluctance to offer it as patients

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envison. HCPs envision this care as a more present-focused information provision, suggesting that a more comprehensive approach integrating the possibility of EoT should be introduced later in the treatment pathway. The findings indicated that this reluctance stems from concerns that seem to be unfounded. In particular, concerns about patients' unwillingness to talk about negative aspects of treatment, fear that such conversations may trigger negative emotional responses in patients, potentially diminishing their engagement with treatment, and fear of patients' negative evaluations of the clinic-provided care and their competence as HCPs, as these latter consider achieving a live birth as the only measure of success. This reluctance also stems from a lack of training, as HCPs feel they do not possess the required abilities to effectively manage patients' emotional reactions and lack the know-how on what, when, and how to provide such care and support sources to signpost patients to. Overall, findings suggest that the provision of EoT preventive psychosocial care in ART mirrors the trajectory akin to psychosocial care in other healthcare domains. For instance, exit counselling, critical illness and aggressive therapy such as cancer treatment and palliative or end-of-life care. EoT share commonalities with these domains, as all involve a high emotional burden associated with the diagnosis and the treatment itself, a high complexity of treatment options and outcomes, and a devastating impact when treatment does not work (Bernat, 2004; Brighton & Bristowe, 2016; Burns, 2004; Fallowfield et al., 2002). In oncology and end-of-life care, preventive care proved to be beneficial in ameliorating patients' psychosocial adjustment to treatment and its negative outcomes (Fallowfield et al., 2002; Leung et al., 2012; Lyon et al., 2014; Thomas et al., 2000; Waller et al., 2014; Wright et al., 2008). In these settings, preventive care has been integrated into evidence-based best practice recommendations (General Medical Council, 2010; Ngo-Metzger et al., 2008; NHS Improving Quality, 2014) and, for many, considered an ethical

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clinical duty (Bernat, 2004). Its actual integration as routine practice is still non-optimal, but it is moving towards that direction (Jordan et al., 2020; Shepherd et al., 2021). Such an approach to care is still not the norm in fertility care. It seems to be lagging behind in the conceptualisation of care and associated investment in developing a high-quality, evidence-based base to support recommendations for best practice so that HCPs feel reassured their practice in this domain is evidence-based.

Novel Outputs Co-Produced to Support the Routine Provision of EoT Preventive Care at Fertility Clinics. The present doctoral thesis work resulted in the co-production of EoT support resources that can be routinely used at fertility clinics. The MyJourney web-based educational resources constitute the first freely accessible resources to support patients and HCPs in the provision of EoT preventive care at fertility clinics. These resources were co-produced with an international group of partners of leading fertility scientific societies and charities in Europe and Latin America and optimised based on an iterative development and stakeholder consultation process. They are freely accessible online worldwide at www.myjourney.pt/patients; www.myjourney.pt/clinics, and clinics have the flexibility to use them in the way that best fits their care provision model, from embedding these in their clinic website to signposting these to patients or using these to structure their clinical appointments.

The research-informed Beyond Fertility intervention, specifically tailored to the EoT stage, integrating EoT preventive and early intervention psychosocial care, has an implementation manual to promote fidelity in its implementation via comprehensive descriptions of each therapeutic session (specific goals, a step-by-step explanation of each therapeutic activity, and the required materials). Although Beyond Fertility did not prove efficacious, results provided an indication that, with necessary modifications, benefits may be achieved. The

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MyJourney web app is based on a similar causal theory (i.e. 3 TM) and proved efficacious in promoting the well-being of those with an unfulfilled wish for children, including EoT patients (Rowbottom et al., 2022). Overall, all the Beyond Fertility resources (manual, associated manuscripts) will be helpful and are freely available and easily accessible to guide further research on end of treatment care.

Contribution to the 3TM, ACT and Self-Compassion Therapeutic Models to Inform the Development and Evaluation of EoT Psychosocial Care. The 3TM is the only model specifically developed to inform support intervention in the context of long-term psychosocial adjustment to EoT. Integrating all evaluation studies of Beyond Fertility (focus groups, pilot, RCT), it can be argued that the 3TM (Gameiro & Finnigan, 2017; Rowbottom et al., 2022) holds significant value as a theoretical framework to this end. While Beyond Fertility did not prove efficacious, little can be said about the definitive workability of 3TM. However, given results suggesting potential benefits for patients' quality of life and previous evidence proving the 3TM efficacy in similar support interventions (Rowbottom et al., 2022), it is worth carefully examining patients' views on the therapeutic activities used within Beyond Fertility to target the 3TM mechanisms of change. Patient focus group data indicates that some activities are more valuable than others. Strategies such as self-compassion, cognitive defusion, and mindfulness exercises were particularly valued. These strategies trigger acceptance (3TM mechanism of change) by helping patients connect with the present moment and their (negative) emotions in a non-judgmental way without any attempts to avoid or change these. Step-by-step guidance on how to explore, set and pursue valued life goals was also particularly valued. These therapeutic activities focus on exploring meaning-making and the pursuit of new life goals (3TM mechanisms of change). All these therapeutic processes fit within the CCBT framework, particularly ACT and self-compassion. Positive

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reappraisal coping and social connectedness exercises were less commented on by patients (neither positively nor negatively), suggesting benefits may be less obvious or valued.

Though not within the CCBT framework, positive reappraisal coping is associated with acceptance (Kivity et al., 2016). One session may not suffice for patients to perceive the benefits of practising this ability, as it requires time and continuous practice (Folkman, 1997; Kraaij et al., 2008; Ockhuijsen et al., 2013; Park, 2010). Patients may also not have had many chances to put into practice the socially learned abilities to recognise its potential benefits (Daniluk, 2001b; Volgsten et al., 2010) or may not consider it a priority during this time of individual/couple grief (Rowbottom, 2021). Exercises to promote relational quality and support were not qualitatively assessed after modifications, and further evaluation is needed.

Overall, results indicate that ACT- and self-compassion-based activities used to trigger the 3TM mechanisms were perceived as the most useful by patients (Harris, 2019; Hayes et al., 2006; Park, 2010), aligning with results from other studies within fertility care (e.g., Galhardo, Cunha, & Pinto-Gouveia, 2013; Hosseinpanahi et al., 2020; Njogu et al., 2023) and beyond (e.g., chronic illness, cancer experience, anxiety and depression; Carvalho et al., 2022; Coto-Lesmes et al., 2020; Fawson et al., 2023). What remains unclear is what constitutes the best structural organisation of activities to trigger the 3TM mechanism of change and the right dose to produce holistic and long-term lasting benefits during the early aftermath of EoT.

Implications for Practice and Research

What Constitutes a Successful End of Fertility Treatment? This doctoral thesis's findings contribute to challenging current views of what constitutes a successful end of fertility treatment. Within the reproductive field, it is clearly defined as achieving a live birth. This is

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visible in academic research (e.g., Heijnen et al., 2004) and reports from fertility regulatory bodies and professional societies (HFEA, 2021). The present international focus groups (Europe, South America) research support this view and indicates that this conceptualising of the end of treatment carries additional burdens. In particular: (i) an additional emotional burden for both patients and HCPs as it leads patients to undergo multiple cycles of treatment, which entails additional losses and failures (Abramov et al., 2022), (ii) higher patient resistance in adjusting down their expectations about treatment likely of success (Devroe et al., 2022), (iii) a poorer adjustment after unsuccessful cycles/EoT as patients are not encouraged and supported during treatment to contemplate a positive and fulfilling future that can go beyond achieving a live birth with treatment (Gameiro & Finnigan, 2017), and (iv) from the patients' perceptions (vs HCPs' perceptions), poorer quality evaluations of the clinic provided care (Daniluk, 2001a). Fertility research has shown there are many possible successful pathways beyond achieving a live birth with fertility treatment, such as adoption, fostering, finding meaning in supporting and advocating for the rights of fertility people, travelling, and career/professional development, among others (Daniluk, 2001b; Gameiro & Finnigan, 2017; Wischmann & Thorn, 2022). Aligned with psychosocial theories on how to adjust to undesired circumstances (e.g., models of grief, development regulation theories, ACT, 3TM), research has shown the benefits of helping patients during treatment to navigate through this loss by accepting their unfulfilled wish for children, being reassured they have done everything to achieve their biological parenthood goals, revisiting their motivations for biological reproduction and parenthood, and considering other forms of family-making outside those stemming from biological conception (Gameiro & Finnigan, 2017; Hayes et al., 2006; Heckhausen et al., 2010; Stroebe & Schut, 1999). These strategies help patients to feel more empowered about their parenthood decisions, optimise their

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reproductive plans to include other parenthood paths and restore their hope towards a future beyond treatment (Bluth, 2023; Peterson & Eifert, 2011; Su & Chen, 2006). Overall, the evidence seems to support a shift in the current narrative of what constitutes a successful end of treatment. This narrative moves the conceptualisation of successful treatment from achieving a live birth to alleviating the psychosocial suffering of an unfulfilled wish for children. This view is congruent with results from previous research showing that sustaining an unfulfilled desire for children is more strongly associated with long-term mental health than having children or having achieved a live birth with treatment (Gameiro et al., 2014). This implies framing success not only as achieving biological parenthood but also as facilitating the pursuit of alternative journeys, such as non-biological parenthood or a child-free lifestyle. This narrative needs to be conveyed by all HCPs from the moment patients enter the clinic, framed in relation to the benefits of achieving a live birth with treatment but also of alternative paths. It needs to use the right language (e.g., empathic and non-blaming, positive), be directed to women and men and be tailored to the patient's individual values and expectations (Bartels et al., 2010; Mertes et al., 2023).

Avenues for a Normative Change Regarding Routine Provision of EoT Psychosocial Care at Fertility Clinics. The set of doctoral studies is clear in showing that patients want a multidisciplinary and holistic provision of EoT psychosocial care during treatment and after its unsuccessful end. Findings dispel some of the concerns put forward that currently justify clinics not providing EoT preventive care, making it harder and harder for clinics not to be proactive in this domain. Integrating this care during treatment with early intervention care in the immediate aftermath of this event can be an acceptable and feasible way of supporting patients at this stage. Findings suggest that this care can also likely foster willingness to uptake support in the immediate aftermath of this event, which supports

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combining its provision with EoT early intervention care. How this support was designed in the present doctoral thesis via the Beyond Fertility intervention did not prove efficacious and does not fill the requirements to be integrated as routine practice in fertility clinics (Gameiro et al., 2015; HFEA, 2023a; NICE, 2017). However, results provided foundational knowledge that can inform the content, format and delivery format of clinic support initiatives. At this stage, clinics can make use of the research-informed and theory-based MyJourney web-based resources to support their patients during treatment, particularly at later treatment stages. These resources can be used according to patients' preferences and HCPs' own professional discretion. Making use of and signposting patients for the evidence-based support available to date that can be used to support patients after EoT should also be considered as a routine practice in clinics: www.myjourney.pt (Rowbottom et al., 2022).

Avenues for Continued Research

Need for More Volume of High-Quality Research on EoT Psychosocial Care. To maximise the benefits of limited resources in fertility clinics, proof of concept of integrating EoT preventive care with early intervention care is needed. Two studies conducted under the present doctoral thesis used online recruitment of patients, and all used convenience samples of HCPs, leading to self-selected samples. These samples limit the representativeness of the population of interest in terms of acceptability and feasibility of EoT psychosocial care and do not maximise the potential of findings to guide implementation in clinical settings, as important factors may not be considered (Rutherford, 2004). All psychosocial interventions developed to support patients adjusting to EoT so far, although tested using an RCT design, reported low statistical power and high attrition rates (Chapter 5; Kraaij et al., 2015; Rowbottom et al., 2022). Therefore, future high-quality and well-powered clinical designs, systematically conducted within the clinical setting, are

needed, where further acceptability, feasibility and efficacy of EoT preventive and early intervention care can be tested. Future testing should go beyond efficacy intervention evaluations about whether an intervention works in achieving the intended outcomes and focus on the causal investigation of what and how it works and in which circumstances (Jagosh, 2019; Pawson & Tilley, 1997; Skivington et al., 2021).

Mapping Multiplicity of Treatment Trajectories. Further research is needed to: (i) map the heterogeneity in patient treatment and parenthood trajectories from the moment patients arrive at the clinic to the moment they stop all their attempts to achieve their parenthood goals and (ii) explore how patients' deliberation (i.e., the process of arriving at a decision) and determination (i.e., integrating deliberation inputs and making a decision) process about continuing vs ending treatment and alternative plans evolves over time. This mapping is critical to identifying the best moment(s) to offer EoT preventive and early intervention care and provide a firmer ground on what information should be provided and when to optimise patient treatment decisions and (non)parenthood plans. With this foundational knowledge, intervention development and testing can also make faster progress.

Feasibility of Involving HCPs in EoT Psychosocial Care Provision. The present findings suggest that HCPs are willing to be involved in the provision of EoT psychosocial care. Continued research should progress in investigating the feasibility and efficacy of such practice. Future clinical trials can integrate all HCPs as participants and measure how they engage with the uptake of necessary training and intervention delivery. Training for staff to support the provision of EoT psychosocial care should be structured, and considering the present findings, it should give insight into what information should be delivered to patients and how it should be delivered. Tailoring frameworks to share bad news to the specific news

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of ending treatment can be considered a reasonable way to progress. Examples of such frameworks are the SPIKES framework (Baile et al., 2000; Buckman, 1992), which has proven effective in other intervention development to support HCPs having difficult conversations with their patients (Mahendiran et al., 2023) and can be specifically applied in fertility care (Leone et al., 2017).

Should EoT Preventive Care be Integrated Within Broader Treatment Planning? There is a movement within the field of reproductive medicine to consider a multi-cycle approach to fertility treatment. This means acknowledging the possibility of a cycle being unsuccessful and planning at the start of treatment for the need to undergo multiple treatment cycles (Harrison et al., 2022; Harrison et al., 2021). These approaches are already implicitly used when patients buy treatment packages (e.g., [Access Fertility](#)), but without consideration of how treatment is planned (e.g., preparing for the psychosocial challenges of repeated unsuccessful cycles, anticipating decisions that need to be made throughout treatment, alternative paths and support sources). If patients are more and more encouraged to consider their whole treatment pathway from the start, this will have implications for when EoT preventive care can be provided. For instance, it would make sense to introduce EoT preventive care in the continuity of multi-cycle planning. Bridging these two strands of research may be helpful to facilitate the EoT plan (i.e. when the last planned cycle ends unsuccessfully), decrease the decisional conflict about the number of cycles to undergo or when to end treatment (Harrison et al., 2023) and promote the pursuit of alternative (and parallel) pathways to or beyond parenthood. It can be expected that this multi-cycle/EoT plan can promote patients' psychosocial adjustment to unsuccessful cycles and ultimate EoT and optimise the achievement of their parenthood goals.

Mapping Support Provision Formats to Treatment Stage. Both face-to-face (in-person/online) and online self-help educational resources seem acceptable formats to deliver EoT preventive care (Chapter 5; Chapter 2: Sousa-Leite et al., 2023), but acceptability may vary according to treatment stage. The present findings showed that 69.8% of patients want to be supported immediately within the first two weeks after EoT. However, more effort needs to be put into offering care in formats that minimise difficult emotions and make engagement easier. Evidence shows that the period following EoT is highly reactive (Verhaak, Smeenk, Nahuis, et al., 2007), so it can be argued that for some patients, waiting for these reactions to subside to increase their acceptance and readiness to receive such support may be more beneficial, or that during this period only individual/couple support would be acceptable and group support would be advisable later in the process. While designing this support in an exclusive individual/couple format or offering it in both formats (individual/couple; group) according to the patient's preference and pace seems optimal, it is unknown whether this would be feasible considering the high workload and organisational barriers HCPs currently face in their daily practice at clinics (Boivin et al., 2017). Self-help support may also be considered, being particularly desired for those patients who are not comfortable with face-to-face support or do not have the time and resources to receive this latter support (Rowbottom et al., 2022). Future feasibility and efficacy RCTs can consider including multiple intervention arms with different intervention delivery formats.

Developing Support Interventions Across the Globe. The burden of infertility and childlessness has a global burden across the globe (Inhorn & Patrizio, 2015). One future consideration is adapting Beyond Fertility or developing new interventions to support people worldwide - which can be seen as an ethical duty of care (Starrs et al., 2018). This would include different settings where not achieving parenthood goals have different and many

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times much more severe implications for people, in particular for women (Cui, 2010; Gameiro et al., 2018; Greil et al., 2011), including violence, such as for some women in south-western sub-Saharan Africa, Ghana, Nigeria, Rwanda, Jordanian or Iran (Thoma et al., 2021). Considering these data and the fact that no EoT psychosocial support intervention exists for these populations (to the author's knowledge), addressing this need in care is crucial and urgent. To achieve cultural appropriateness, integrated strategies for cultural adaption of evidence-based interventions can be followed (Kreuter et al., 2003; Sidani et al., 2017). Of relevance is that interventions that focus on facilitating individual adjustment may not be adequate if the social and cultural context is hostile, as described.

General Strengths and Limitations

The present doctoral work is novel and targets an unaddressed need in fertility care. The work was based on the best available high-quality research and was patient-centred. The work followed the MRC framework, the most widely adopted, up-to-date, multidisciplinary, and theoretically informed guidance on how to systematically develop and evaluate complex interventions (Craig et al., 2008; Skivington et al., 2021). It used (multiple) methods aligned to the specific goals of each study, which mapped to the different phases of intervention development and evaluation. When suitable, other relevant evaluation (e.g., Bowen feasibility framework) and theoretical (e.g., HBM and TPM) frameworks were used to inform the evaluation design. The golden standard for efficacy evaluation, the RCT, was also used to evaluate the efficacy of Beyond Fertility. As recommended, this work was integrated into a broader context of stakeholders' engagement and co-production, with all relevant groups being brought to the table. Reporting followed widely used, successful, research-informed guidelines and recommendations (TIDieR, CONSORT). Most recruitment was systematic and conducted in clinical settings. When convenience samples were used, findings across

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settings and recruitment methods were overall consistent. Overall, the methodological approach of the thesis ensures the trustworthiness of the results reported, but some reasons for caution need to be considered.

The entire recruitment process took part during the COVID-19 and had to be adjusted due to clinic closure and changes in procedures (e.g., impacted the clinical routines at the time of the reopening), lower number of patients receiving treatment (CNPMA, 2023) and more reporting of higher levels of stress (Boivin et al., 2020). However, results were consistent over the four years of recruitment (2020-2023) across settings and using different recruitment methods, supporting the trustworthiness and reliability of the results.

A critical methodological limitation was the recruitment of men for the clinical trials being carried out via their female partners. This limited the reliability and generalisation of the results about the men's uptake of face-to-face psychosocial care for EoT. The recruitment was conducted this way, as in the Portuguese public clinic setting, the contact is done via the women. This raises ethical questions as it is well known that the fertility process has a high psychosocial burden in both women and men (Daniluk, 2001b; Johansson et al., 2010).

Another methodological limitation was the lack of diversity and heterogeneity in the study sample. Most participants were white, heterosexual, well-educated, employed, and childless women, as per most of the reproductive research. In comparison with other studies, the number of men participating in the present research was higher (1-44% vs 15-19%; Harrison et al., 2021; Rowbottom et al., 2022), and their views were overall similar to women's views. However, further work needs to be carried out with more cross-cultural samples. In particular, targeting patients with lower socioeconomic levels, as well as patients who undergo treatment as single women or who identify as LGBTQ+ community - who represent ~7% of the clinic patient population.

General Conclusion

The critical lesson learnt from the present doctoral thesis is that developing and evaluating psychosocial care to promote patients' adjustment to the end of unsuccessful fertility treatment is a current urgent need in the field of reproductive medicine.

Offering EoT psychosocial care while patients are still undergoing treatment to inform and prepare them for the possibility of EoT is accepted and demanded by all fertility stakeholders (patients, patient advocates and HCPs). This was referred to in the present thesis as EoT preventive care and was one of this work's fundamental and novel contributions to the field. Results showed that a normative change is needed to start offering this care as part of the routine care provided by all clinic fertility staff using a multidisciplinary approach. Multilanguage web-based educational resources were developed under the scope of this doctoral thesis to support clinics in this endeavour and are now freely available online for patients' and clinics' use.

Psychosocial care in the aftermath of EoT should also be provided as routine practice in fertility clinics. This was referred to in the present thesis as EoT early intervention care. Multi-method and multi-informant research showed that integrating EoT preventive with early intervention care delivered in the aftermath of EoT is acceptable and feasible to implement. Results provided foundational knowledge about the format, mode of delivery, content and timing of such support for future intervention development and evaluation.

Research and clinical efforts should now focus on (1) conducting high-quality research to evaluate the efficacy and effectiveness of EoT psychosocial care interventions, both encompassing EoT preventive care and/or early intervention care, and how such interventions work in a clinical setting, (2) raising awareness about the need to provide EoT

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preventive and/or early intervention care as routine practice in fertility clinics, (3) disseminating and signposting patients for the currently available support to this end, and (4) optimising, developing and evaluating current and further support resources.

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Appendices

Appendix A: Mixed-Methods Web-Based Survey Questions (English Version; Chapter 2)

Sociodemographic characteristics

Firstly, we would like to ask you some questions regarding your current life situation.

Age (in years):

Country of residence:

- Portugal
- United Kingdom
- Other, please specify:

Gender:

- Female
- Male
- Other, please specify:

Relationship status:

- Married or cohabiting
- In a relationship without cohabiting
- Single
- Separated, divorced, widower/widowed

Relationship duration:

 Years Months

Current occupational status (select as many options as apply to you):

- Employed (on your own or someone else)
- Unemployed
- Student

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- Retired
- Other, please specify:

Education (select the largest cycle of studies successfully completed):

- No education
- Primary school
- Secondary school
- Post-secondary school (for example: sixth form, college, trade or technical apprenticeship)
- University graduate (for example: BSc, BA)
- Postgraduate University (for example: MSc, PhD)

Fertility treatment history

We would like to ask you some questions about your history of fertility treatment: In Vitro Fertilisation (IVF) or Intracytoplasmic Injection (ICSI), and about your parenthood goals.

Which option describes your current situation regarding fertility treatment?

- Waiting list to initiate a cycle of IVF/ICSI
- Undergoing a cycle of IVF/ICSI
- Completed a cycle of IVF/ICSI in the past 6 months without achieving a pregnancy

How long have you been undergoing fertility treatment? (If you have already ended treatment and do not intend to undergo a new cycle, how long did you undergo fertility treatment?)

 Years Months

How many IVF/ICSI treatment cycles have you done (excluding the cycle you are waiting to initiate or are already undergoing)?

- 0
- 1
- 2
- 3
- +3

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Did you have children from previous IVF/ICSI cycles?

- No
- Yes

Do you have children (select as many options as apply to you)?

- No
- Yes, biological (i.e., with genetic linkage)
Yes, adopted
- Yes, stepchildren (i.e., children from a previous relationship of your partner)

How strong is your desire to have a child or another child? By desire we mean your wish for a child.

Please indicate on the response scale where [1] means no desire at all and [10] means a very strong desire.

- | | | | | | | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1: | | | | | | | | | | 10: |
| no desire | | | | | | | | | | very strong |
| at all | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | desire |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Do you consider other ways to achieve parenthood beyond fertility treatment (select as many options as apply to you)?

- No
- Yes, adoption
- Other, please specify:

What do you think is the chance of your fertility treatment being successful?

Note: If you have completed an IVF/ICSI cycle in the last 6 months and do not intend to do a new cycle in the future, please select the option: does not apply.

- Please write the percentage here from 0 to 100%:

- Does not apply

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What do you think is your chance of having a child or another child? This question does not refer exclusively to fertility treatment but includes other ways to have children (for example: spontaneous conception, adoption).

- Please write the percentage here from 0 to 100%:

How painful would it be if you could not have a child or another child with fertility treatment?

Please indicate on the response scale where [1] means not painful at all and [7] means a extremely painful.

Note: If you have completed an IVF/ICSI cycle in the last 6 months and do not intend to do a new cycle in the future, please select the option: does not apply.

1:						7:		
not painful						extremely	does	
at all	2	3	4	5	6	painful	not apply	
○	○	○	○	○	○	○	○	○

How painful would it be if you could not have a child or another child? This question does not refer exclusively to fertility treatment but includes other ways to have children (for example: spontaneous conception, adoption).

Please indicate on the response scale where [1] means not painful at all and [7] means extremely painful.

1:						7:	
not painful						extremely	
at all	2	3	4	5	6	painful	
○	○	○	○	○	○	○	

Willingness to be prepared for the possibility of unsuccessful fertility treatment

We would like to know your opinion about counselling patients in advance for the possibility of unsuccessful treatment, i.e., of ending all recommended treatment cycles without having the children you wish. The aim of this counselling is helping patients developing strategies to deal with the experience of their treatment being unsuccessful, in case of this happens, in order to facilitate their well-being and emotional and social future adjustment. As we previously said, some questions might be confrontative, as we are going to ask you to contemplate the possibility of an unsuccessful treatment. You can skip any question or withdraw from the study at any time. Thank you very much again for your participation.

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Important notes:

- **If you are no longer undergoing treatment, please think about the IVF/ICSI cycle you did in the last 6 months.**
- **When we refer to 'in advance', we mean the period since the first appointment at the fertility clinic until the end of all cycles of fertility treatment.**

Do you remember having been counselled in advance (i.e., during fertility treatment) about the possibility of treatment being unsuccessful?

- No
- Yes

With whom did you talk about this possibility and in what context?

Please describe what you were told about the possibility of your treatment being unsuccessful:

Please let us know what you would like to address in a counselling session about the possibility of treatment being unsuccessful:

With which health professional would you feel more comfortable to receive counselling about the possibility of treatment being unsuccessful (select as many options as apply to you)?

- General practitioner
- Gynaecologist/obstetrician
- Embryologist
- Nurse
- Counsellor or Psychologist or Psychiatrist
- Other, please specify:

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What do you think is the best time to counsel patients about the possibility of treatment being unsuccessful?

- Before initiating the first cycle of IVF/ICSI
- After the first cycle of IVF/ICSI, when it is not successful
- Before initiating the last cycle of IVF/ICSI
- Other, please specify:

Please explain the reason(s) why you chose this moment:

What do you think are valid reasons to counsel patients in advance about the possibility of treatment being unsuccessful (select as many options as apply to you)?

- If the chances of treatment being successful are very low (bad prognosis)
- If patients have doubts about doing more cycles of treatment
- If patients experience distress (for example: high levels of stress, anxiety, depression) If patients' relationship with their partner has been negatively affected
- If patients express difficulties accepting the possibility of treatment being unsuccessful
- Other(s), please specify:

For me, being counselled in advance about the possibility of treatment being unsuccessful, would be:

Please indicate on the response scale where [1] means extremely harmful and [7] means extremely beneficial.

- | | | | | | | |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------------|
| 1:
extremely
harmful | 2 | 3 | 4 | 5 | 6 | 7:
extremely
beneficial |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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For me, being counselled in advance about the possibility of treatment being unsuccessful, would be:

Please indicate on the response scale where [1] means extremely useless and [7] means extremely useful.

1: extremely useless	2	3	4	5	6	7: extremely useful
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Would you be willing to be counselled in advance about the possibility of treatment being unsuccessful?

- No
- Yes

Please explain the reasons for your choice:

Regarding the following statements, we would like to ask you how much they apply to you and your situation.

Please indicate how much you disagree or agree with each statement, on the response scale where [1] means strongly disagree and [7] means a strongly agree.

	1: strongly disagree	2: disagree	3: slightly disagree	4: neither disagree or agree	5: slightly agree	6: agree	7: strongly agree
Most people in my situation are counselled in advance about the possibility of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my partner would want us to be counselled in advance about the possibility of treatment being unsuccessful (only answer this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General rule, I want to do what my partner thinks is best (only answer this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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I think my family and friends would want me to be counselled in advance about the possibility of treatment being unsuccessful

General rule, I want to do what my family and friends think is best

I think health professionals at my fertility clinic would want me to be counselled in advance about the possibility of treatment being unsuccessful

General rule, I want to do what health professionals of my fertility clinic think is best

We would like to ask you how much you disagree or agree with each of the following three statements, on the response scale where [1] means strongly disagree and [7] means a strongly agree.

1: strongly disagree 2: disagree 3: slightly disagree 4: neither disagree or agree 5: slightly agree 6: agree 7: strongly agree

If I wanted to be counselled in advance about the possibility of treatment being unsuccessful, I have someone to turn to

Accessing counselling about the possibility of treatment being unsuccessful depends only on me

I am confident that I know how to access counselling about the possibility of treatment being unsuccessful

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For me, being counselled in advance about the possibility of treatment being unsuccessful, would be:

Please indicate on the response scale where [1] means extremely difficult and [7] means extremely easy.

1: extremely difficult	2	3	4	5	6	7: extremely easy
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What do you think could be the benefits of being counselled in advance about the possibility of treatment being unsuccessful?

Here are some benefits of being counselled in advance about the possibility of treatment being unsuccessful.

Please indicate how much you disagree or agree with each of the following statements, on the response scale where [1] means strongly disagree and [7] means a strongly agree.

1: strongly disagree	2: disagree	3: slightly disagree	4: neither disagree or agree	5: slightly agree	6: agree	7: strongly agree
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Having the opportunity to...

...discuss my fears and concerns about the possibility of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

...talk with my partner about the possibility of treatment being unsuccessful (only respond to this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

...be informed about how most people react in the short and long term when their treatment is unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

...discuss how to cope with difficult thoughts and emotions in the case of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
---	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

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...re-examine my hopes and motivations to become a parent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...grief about the dream of being a parent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...discuss how to deal with other people's reactions (for example: family, friends, co-workers), in the case of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...be informed about strategies that have been shown to be beneficial for most people to deal with unsuccessful treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...be informed about support and resources that are available to people who experience unsuccessful treatment (for example: support groups, psychological support)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...talk with other people who experienced unsuccessful treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...examine my personal resources to cope with unsuccessful treatment in the case of this happens (for example: personal characteristics, social support, spirituality)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...reflect on past efforts to have children, including all treatment cycles performed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...discuss the benefits and disadvantages of having undergone previous treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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...discuss the pros and cons of continuing *versus* ending treatment, even in the case of treatment being unsuccessful

...reflect on the meaning of parenthood

...reflect on how to live a happy life in the case of treatment being unsuccessful

...discuss alternative plans to achieve parenthood (for example: adoption)

...reflect on the pros and cons of having a childfree lifestyle

Other(s). Please, specify:

What do you think could make being counselled about the possibility of treatment being unsuccessful easier for you?

Being counselled in advance about the possibility of treatment being unsuccessful may take place in different ways.

Please indicate how useful it would be each of the following options. on the response scale where [1] means extremely useless and [7] means extremely useful.

1: extremely useless 2 3 4 5 6 7: extremely useful

Self-help resources (for example: informative brochures, interactive videos, list of therapeutic exercises to perform at home)

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Individual session with a health professional

Couple session with a health professional

Group session moderated by a health professional

Group session without being moderated by a health professional (for example: moderated by a peer)

Other(s). Please, specify:

What do you think would be the disadvantages of being counselled in advance about the possibility of treatment being unsuccessful?

Here are some disadvantages of being counselled in advance about the possibility of treatment being unsuccessful.

Please indicate how much you disagree or agree with each of the following statements, on the response scale where [1] means strongly disagree and [7] means a strongly agree.

	1: strongly disagree	2: disagree	3: slightly disagree	4: neither disagree or agree	5: slightly agree	6: agree	7: strongly agree
Patients may feel very uncomfortable or anxious talking about the possibility of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients may not be emotionally prepared to contemplate the possibility of treatment being unsuccessful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients may feel more anxious or sad during treatment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Patients may feel less hopeful or more discouraged during treatment

Patients may feel less confident to continue treatment, including to undergo a new cycle of IVF/ICSI

It could cause tension in patient's relationship with their partner (only answer this statement if you have a partner)

Patients may not feel comfortable talking to other people about issues they may consider private

Patients could be exposed to insensitive reactions or comments by health professionals

Patients may think that expressing concerns or negative emotions about treatment may prevent them from doing treatment

Patients may consider this counselling session useless because there is nothing they can do while they are still undergoing treatment

Patients would have to spend time that they do not have or do not want to give up

Other(s). Please, specify:

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Willingness to receive support after unsuccessful treatment

This is the final section of the survey.

Regardless of counselling patients in advance about the possibility of treatment being unsuccessful, **we would like to ask you a few questions about your views regarding the need of providing psychological support to patients, after treatment being unsuccessful** (i.e., none of the IVF/ICSI treatment cycles results in pregnancy). It might be difficult to reflect on the period after unsuccessful treatment. You can skip any question or withdraw from the study at any time. Thank you very much again for your participation.

Would you be interested in receiving psychological support in the case of your treatment being unsuccessful?

- No
- Yes

When do you think you may feel prepared to start receiving psychological support (after ending unsuccessful treatment)?

Please indicate in weeks or months after the end of the last treatment cycle or identify a time/event of reference.

How do you think you would like to receive this psychological support?

- Individual or couple sessions
- Group sessions with other people/couples at the same situation
- Both (individual or couple sessions and group sessions)
- Other(s) please specify:

In what format(s) do you think you would like to receive this psychological support (select as many options as apply to you)?

- Online
- Face to face, in the clinic where I did my fertility treatment
- Face to face, outside of the fertility clinic
- It is not important

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- Other(s) please specify:

Final section

Is there any other information or opinion on this topic you would like to share?

Appendix B: Themes Identified About Topics Addressed During EoT Preventive Care (n=112; Chapter 2)

Themes' detailed descriptions (n, %)	Illustrative quotes
<p>General and bespoke information about treatment low success rates (n=68, 61%): mainly of a single treatment cycle. Some participants were informed about their low prognosis due to sociodemographic (e.g., age) and medical (e.g., diminished ovarian reserve, quality of oocytes, endometriosis) circumstances.</p>	<p><i>'We were told there is no guarantee and that we had a less than 50% chance of the first cycle working'</i> (P224); <i>'Just that our chances were low'</i> (P183); <i>'We were told that given the general context (age, ovarian and sperm reserve, and autoimmune disease) the probability of successful treatment would be 20%, quite low (...)'</i> (P256); <i>'That the possibility of getting pregnant was less than 10% but that one good quality embryo would be enough'</i> (P10); <i>'They told me that nothing is guaranteed, and the odds would be 30-40%'</i> (P317).</p>
<p>Brief acknowledgement of the possibility of EoT (n=44, 39%): with the emphasis being put on achieving a positive outcome.</p>	<p><i>'It is not a 100% effective method'</i> (P24); <i>'Nothing specific. Just that I needed to consider that I might never be a parent'</i> (P32); <i>'It was just a brief mention about there being no guarantees that treatment would be successful'</i> (P203); <i>'I feel like the possibility of unsuccessful treatment was touched on but brushed over, and we were directed to be positive (...)'</i> (P175).</p>
<p>Discussion of implications of adverse treatment outcomes (n=29, 26%): participants had the opportunity to plan for multiple cycles, contemplate other options to reach parenthood: third-party donation, additional cycles in the private sector or adoption, or discuss possible medical adverse complications that may occur during treatment. Three participants were offered the possibility of being referred to psychosocial care.</p>	<p><i>'They said I would have three possibilities in the public [sector] and then if I didn't make it, I could go to the private [sector] or think about adoption'</i> (P16); <i>'The success/failure statistics were highlighted, the possible scenarios were indicated (from the embryo not 'adhere' to the ectopic pregnancy and miscarriage), we were clarified about the existing risk factors (...)'</i> (P199); <i>'(...) And they started approaching egg donation'</i> (P256); <i>'(...) It was also mentioned by our nurse in terms of the counselling that's available to us'</i> (P250).</p>

Note. Thematic analysis was done in aggregated data from with whom participants talked about the possibility of unsuccessful treatment and what they were told. EoT=end of unsuccessful fertility treatment; P=participant number.

Appendix C: Descriptives of Participants' Preferences Towards EoT Preventive Care
(Chapter 2)

	Total (N=342)
	n(%)
HCP with whom patients would feel more comfortable receiving EoT preventive care^a	
Counsellor/Pysch	268(78.59)
Consultant (GYN/OBS)	182(53.37)
Embryologist	89(26.10)
Nurse	87(25.51)
GP	46(13.49)
Others (e.g., any HCP expert in fertility; multidisciplinary)	9(2.64)
Usefulness of EoT preventive care formats $M(SD)$[interval range]^b	
Individual session	6.37(1.17)[1-7]
Couple session	6.34(1.24)[1-7]
Self-help resources	5.00(1.75)[1-7]
Moderated group session	4.79(1.80)[1-7]
Peer group session	3.68(1.90)[1-7]
Others (e.g., signposting for online sharing groups; informational sources) ^c	4.74(2.15)[1-7]
Valid reasons to receive EoT preventive care^a	
If chances of treatment being successful are very low (bad prognosis)	270(79.41)
If patients experience distress	250(73.53)
If patients express difficulties accepting the possibility of treatment being unsuccessful	242(71.18)
If patients have doubts about doing more cycles of treatment	181(53.24)
If patients' relationship has been negatively affected	150(44.12)

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Others (e.g., all fertility patients undergoing treatment)	48(14.12)
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Preferred time to receive EoT preventive care^a

Before initiating the first IVF/ICSI cycle	250(73.31)
--	------------

After the first IVF/ICSI cycle being unsuccessful	47(13.78)
---	-----------

Before initiating the last IVF/ICSI cycle	12(3.52)
---	----------

Other (e.g., throughout treatment)	32(9.38)
------------------------------------	----------

Note. *M*=mean; *SD*=standard deviation; EoT=end of unsuccessful fertility treatment;

HCP=healthcare professional; Psych=psychologist/psychiatrist;

GYN/OBS=gynaecologist/obstetrician; GP=general practitioner.

^aValid percentages were reported, some participants [range: 1-2] did not report on these variables.

^bForty seven [49-56] participants did not rate any of the format to receive preventive EoT care.

^cA total of 34 participants rated this option, and 12 specified alternative formats.

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Appendix D: Principal Axis Factor Analyses Performed on the List of Perceived Benefits of EoT Preventive Care - Pattern Matrix (Chapter 2)

	Total (<i>n</i> =342)	Not willing to receive EoT preventive care (<i>n</i> =23)	Willing to receive EoT preventive care (<i>n</i> =319)	Perceived benefits - promoting loss integration	Perceived benefits - building psychosocial resources and coping strategies
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	Factor loadings	Factor loadings
Reflect on the meaning of parenthood	5.37(1.57)	4.12(2.03)	5.46(1.51)	0.975	
Reflect on the pros and cons of having a childfree lifestyle	5.20(1.88)	3.53(2.18)	5.28(1.83)	0.792	
Reflect on past efforts to have children	5.82(1.38)	5.00(2.12)	5.87(1.32)	0.706	
Discuss the benefits and disadvantages of having undergone previous treatment	5.61(1.46)	4.94(2.22)	5.68(1.37)	0.702	
Reflect on how to live a happy life in the case of treatment being unsuccessful	5.92(1.38)	4.35(2.12)	6.00(1.28)	0.683	
Discuss alternative plans to achieve parenthood	5.54(1.63)	4.29(2.05)	5.61(1.59)	0.616	
Discuss the pros and cons of continuing vs ending treatment	6.09(1.13)	5.41(1.91)	6.13(1.05)	0.615	

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Re-examine my hopes and motivations to become a parent	5.83(1.32)	5.41(1.46)	5.87(1.29)	0.571	
Grief about the dream of being a parent	5.77(1.54)	5.06(1.85)	5.82(1.50)	0.364	
Be informed about support and resources that are available to people who experience unsuccessful treatment	6.32(0.95)	5.47(1.77)	6.37(0.86)		0.852
Discuss how to cope with difficult thoughts and emotions in the case of treatment being unsuccessful	6.44(0.91)	5.35(1.93)	6.50(0.78)		0.837
Be informed about strategies that have been shown to be beneficial for most people to deal with unsuccessful treatment	6.29(0.99)	5.41(1.84)	6.35(0.89)		0.823
Discuss my fears and concerns about the possibility of treatment being unsuccessful	6.34(0.79)	5.59(1.00)	6.38(0.76)		0.738
Be informed about how most people react in the short and long term when their treatment is unsuccessful	5.95(1.22)	4.88(1.80)	5.99(1.17)		0.536
Examine my personal resources to cope with unsuccessful treatment	6.05(1.02)	5.29(1.69)	6.10(0.96)	0.318	0.486

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Talk with my partner about the possibility of treatment being unsuccessful	6.13(0.94)	5.24(1.64)	6.20(0.84)		0.388
Talk with other people who experienced unsuccessful treatment	5.96(1.30)	4.82(2.10)	6.02(1.22)	0.343	0.360
Discuss how to deal with other people's reactions	5.75(1.38)	5.00(1.77)	5.80(1.35)	0.304	0.304
Eigenvalues (after rotation)				7.77	1.21
% of explained variance				43.17	6.73
Descriptive <i>M(SD)</i>				5.68(1.09) [1.33-7]	6.14(0.74) [2.11-7]
Internal reliability (Cronbach's α)				0.89	0.87

Note. *M*=mean; *SD*=standard deviation; EoT=end of unsuccessful fertility treatment.

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Appendix E: Principal Axis Factor Analyses Performed on the List of Perceived Barriers of EoT Preventive Care - Pattern Matrix (Chapter 2)

	Total (n=342)	Not willing to receive EoT preventive care (n=23)	Willing to receive EoT preventive care (n=319)	Perceived barriers - triggering emotional distress	Perceived barriers - having a negative impact on fertility care
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	Factor loadings	Factor loadings
Patients may feel less hopeful or more discouraged during treatment	4.72(1.71)	5.67(1.59)	4.69(1.70)	0.896	
Patients may feel more anxious or sad during treatment	4.88(1.69)	5.80(1.42)	4.90(1.65)	0.870	
Patients may feel less confident to continue treatment, including to undergo a new cycle of IVF/ICSI	4.39(1.73)	5.40(1.55)	4.38(1.71)	0.735	
Patients may not be emotionally prepared to contemplate the possibility of treatment being unsuccessful	4.76(1.75)	5.53(1.68)	4.74(1.73)	0.730	
Patients may feel very uncomfortable or anxious talking about the possibility of treatment being unsuccessful	4.46(1.78)	5.73(1.39)	4.44(1.75)	0.652	

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It could cause tension in patient's relationship with their partner	3.71(1.81)	4.20(2.31)	3.70(1.77)	0.390	0.378
Patients may consider this counselling session useless because there is nothing they can do while they are still undergoing treatment	3.50(1.75)	5.00(1.65)	3.46(1.71)		0.794
Patients may think that expressing concerns or negative emotions about treatment may prevent them from doing treatment	3.87(1.82)	4.40(1.64)	3.87(1.82)		0.729
Patients would have to spend time that they do not have or do not want to give up	3.36(1.69)	4.20(1.86)	3.37(1.67)		0.640
Patients could be exposed to insensitive reactions or comments by health professionals	4.44(1.91)	4.20(2.21)	4.47(1.90)		0.694
Patients may not feel comfortable talking to other people about issues they may consider private	4.20(1.80)	5.40(1.40)	4.20(1.77)		0.455
Eigenvalues (after rotation)				5.34	0.74
% of explained variance				48.54	6.76
Descriptive <i>M(SD)</i>				4.48(1.41)	3.87(1.38)
				[1-7]	[1-7]
Internal reliability (Cronbach's α)				0.89	0.83

Note. *M*=mean; *SD*=standard deviation; EoT=end of unsuccessful fertility treatment.

Appendix F: Focus Group Script (English Translation; Chapter 3)

Introduction

Welcome to this discussion session. My name is Mariana, and I am a Psychologist and a PhD student at the School of Psychology at Cardiff University. I have Dr Sofia Gameiro with us today from Cardiff University, one of the supervisors of this project. The discussion session we invited you to participate in is integrated into a PhD scholarship, funded by the Portuguese Foundation for Science and Technology [Fundação para a Ciência e a Tecnologia, FCT) and approved by the Ethics Committee of the Centro Hospitalar Universitário de São João. We would like to thank you all for your participation in this session. Your contribution is highly relevant to the aims of this PhD project, so thank you for being here today, at this time, most likely after a long day of work.

We are here today to have the opportunity to get to know your point of view, based on your life experience (for patients) OR as healthcare professionals (HCPs) in the fertility field (for HCPs), about a psychosocial intervention programme for patients who face the experience of their last treatment cycle of In Vitro Fertilisation or Intracytoplasmic Sperm Injection (IVF/ICSI) being unsuccessful. One of the ways that we can understand the feasibility of implementing this programme and that we can improve it is by discussing it with the people who live and deal with the stress of this treatment on a daily basis (for patients) OR HCPs like you, who have contact with these patients on a daily basis and are most familiar with the way these patients cope with the experience of unsuccessful treatment (for HCPs). This discussion group is comprised of people who are preparing for or undergoing their last cycle of IVF/ICSI or who have undergone it for less than six months without success (for patients) OR by HCPs of different specialities, which will allow us to have a broader understanding of this experience (for HCPs). Discussing this programme with you will give us a deeper and more real understanding of how to address treatment. During this discussion, I would like you to share your opinions, perceptions and suggestions regarding developing and implementing this psychosocial intervention programme.

The World Health Organization currently considers infertility a public health issue. Research shows that a considerable percentage of patients end treatment without achieving a pregnancy. We know that IVF/ICSI fertility treatment is highly stressful and that ending it without achieving a pregnancy triggers an intense and prolonged grieving process, which is associated with short- and long-term mental health problems and low well-being. Although several clinical guidelines stress the need for mental HCPs to provide structured and empirically validated psychosocial support to these patients after their treatment has not been successful, the truth is that there is no psychosocial intervention developed explicitly to this end.

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This was the reason why we are developing a psychosocial intervention based on scientific evidence, which aims to support patients who complete their last cycle of IVF/ICSI without achieving a pregnancy, promoting their positive adjustment. In particular, to reduce the symptoms of grief in the short and long term, to reduce the negative impact that fertility problems have on their life (at a personal, emotional and social level) and to promote the development of new perspectives of life, which should translate into better mental health, well-being, and life satisfaction.

This is a **brief programme** of just seven sessions. The first two sessions are individual or for the couple, and the last five sessions are in group. The first session occurs while patients prepare to initiate their last IVF/ICSI cycle; the second session takes place one to two weeks after patients have received a negative result for this cycle and the following five are weekly and start four to six weeks after this result. It is very important to highlight that the **first session is directed to all patients** who undergo the last IVF/ICSI treatment cycle, **but all the following ones are ONLY directed to those who face the experience of this LAST cycle being unsuccessful.**

We already have some questions prepared to help guide this discussion in a more organised way, but please feel free to ask other questions or add additional information that you consider important as we progress through this discussion.

We must keep everything we say without losing any information. Writing everything you say in full and in real-time would be impossible. For this reason, we asked if we could record this discussion. Please do not be concerned; this discussion is confidential; only the researchers of this project will hear the recording, and it will be destroyed at the end of the project. We guarantee you can stop and/or erase the recording anytime during the session. Does everyone agree that the discussion can be recorded?

We are here only to gather information. There are no right or wrong answers, and all opinions are equally welcome, even if they may be different or opposite, so we hope you feel comfortable sharing with us what you really think.

We ask that everything you hear here today be confidential and not shared outside this discussion group. This discussion will last approximately 90 to 120 minutes, but if you consider it necessary, we can take short breaks. We ask you not to interrupt others and for each one to speak clearly and in turn.

Does anyone have any questions before we start?

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Opening question (10 minutes)

Self-introduction: name and a short curiosity they would like to share about themselves (for patients) OR profession + briefly explain their contact with these patients from the moment they prepare to initiate their last IVF/ICSI cycle (for HCPs).

Specific questions

Intervention demand

Firstly I would like to address a practical issue that is quite important to implementing this programme...

1. Many patients face the experience of their last IVF/ICSI cycle being unsuccessful. How important do you consider it to be to support these patients in adjusting to this experience?

a. Prompts: reasons.

(Does anyone want to add anything else to this?)

Intervention practicality

Now, I would like to address a practical issue, quite important to the implementation of this programme...

2. What do you feel when you hear the name of this intervention: Beyond Fertility?

a. Prompts: do you consider the name appropriate, reasons, other friendly names.

3. Is it possible to identify the patients who are going to initiate their last IVF/ICSI cycle? (**only for HCPs**)

a. Prompts: in which moment is it possible to identify, how is it possible to identify - if they discuss with their patients about this being their last cycle, if so, when, what are the criteria - only related to the implicit criteria of the number of cycles reimbursed by the NHS.

(Does anyone want to add anything else to this?)

HCPs' needs (only for HCPs)

Regarding the needs that you feel in your clinical practice...

4. In your day-to-day work life, what do you feel are your greatest needs or difficulties when interacting with these patients and that you think this psychosocial intervention could help to solve or alleviate?

a. Prompts: think, for example, of situations in which you would like to have done more, but for several reasons, you could not, or you had to ask for help from another HCP, in particular, a mental HCP.

(Does anyone want to add anything else to this?)

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Patients' needs before initiating their last treatment cycle - 1st session (preventive care)

Now, I would like us to talk a little bit about the first session, in which patients are preparing to start their LAST IVF/ICSI cycle...

5. From your experience, what do you feel are/were your needs during the period you are/were preparing to initiate your last cycle of IVF/ICSI? (for patients) OR what do you feel are the needs of your patients during the period they are preparing to initiate their last cycle of IVF/ICSI, and in your opinion, should this intervention be addressed?
 - a. Prompts: think about personal and social needs, in strained moments you might have had at the clinic with the fertility staff, your partner, family or friends (for patients) (for patients) OR with your patients (for HCPs), what themes may have caused this strain, what issues would you like to address during this stage and with whom (for patients) OR what issues your patients usually want to address with you during this stage (for HCPs), what are your most common complaints or difficulties during this stage (for patients) OR of your patients during this stage (for HCPs).
6. Preparing patients in advance for the possibility of their last treatment cycle being unsuccessful is one of the aims of the first session of this programme. I would like to hear your opinions on this aim.
 - a. Prompts: do you consider it important and acceptable - reasons, what would be the best time to initiate this discussion, what do you think would be the best way to introduce this discussion, what kind of information do you think should be provided, what resources or strategies could be used, how could we make this preparation easier for patients.

(Does anyone want to add anything else to this?)

Patients' needs after their last treatment cycle being unsuccessful - 2nd to the 7th session (early intervention care)

Now, I would like us to talk a little bit about the sessions after the last IVF/ICSI cycle being unsuccessful. Do not forget that the first session after the unsuccessful end of treatment is STILL individual or for the couple, but THE FOLLOWING FIVE ARE IN GROUP...

7. I would like to understand what contact you usually have with your patients after their last treatment cycle being unsuccessful (**only for HCPs**)
 - a. Prompts: immediately after and in the long term, frequency of contact, reason for contact, contact that they think these patients should have or would like them to have and with which HCPs.

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8. From your experience, what do you feel are the greatest difficulties for patients after the last IVF/ICSI cycle being unsuccessful?
 - a. Prompts: think about needs you may feel on a personal and social level and that you would like to overcome (for patients), in tense moments that you may have at the clinic, with the fertility staff, your partner, family or friends (for patients) OR tense consultations that you sometimes have with your patients (for HCPs), what themes may have caused this strain, what issues you think should be addressed during this stage and with whom (for patients) OR what issues your patients would typically like to address with you during this stage (for HCPs), what are the most common complaints or difficulties during this stage.
9. Literature shows us that it is very important to help patients overcome the experience of their last IVF/ICSI treatment cycle being unsuccessful. I would like to hear your suggestions about the kind of support you feel would be useful to be provided in this programme and during this period (after the last IVF/ICSI cycle being unsuccessful).
 - a. Prompts: what are the most crucial aspects this intervention should address, what themes do you think should be addressed in this intervention, what strategies or resources could be used.
10. After the last treatment cycle being unsuccessful, our main therapeutic goals are: to promote acceptance towards the inability to have biological children, to reassess the efforts to achieve one's parenting goals in a more positive way, to define new meaningful life goals, and to promote greater social support. What is your opinion on these goals? (presented by means of the Beyond Fertility logic model)
 - a. Prompts: reasons, do you consider some of these goals not to be so relevant, in your opinion, is there any goal that you consider important and that has not been mentioned.
11. The last five sessions of the programme are in a group. What is your opinion about this format?
 - a. Prompts: reasons, in your experience, do you think this is the ideal format to conduct the sessions after the last treatment cycle being unsuccessful, what alternative formats do you consider could be more beneficial.

(Does anyone want to add anything else to this?)

Intervention implementation (barriers and facilitators)

Finally, I would like us to talk a little bit about the implementation of this psychosocial intervention programme in public hospitals or private clinics...

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12. If Beyond Fertility were introduced to you and made available during the period you are preparing to initiate your last IVF/ICSI cycle, would you consider engaging with the programme? (for patients) OR Would you be willing to promote this intervention programme in your hospital or clinic? (for HCPs)
 - a. Prompts: reasons, if not, which conditions would be required to be willing to engage/promote it.
13. If this psychosocial intervention was available, what could make it less attractive or hinder your engagement with it? (for patients) OR Which do you think would be the greatest barriers towards the implementation of this programme? (for HCPs)
 - a. Prompts: reasons, think, for example, about the experience you have had in contact with the clinic or hospital (for patients) OR terms of the clinic or hospital setting, the coordination between HCPs and the experience you have with the patients (for HCPs), how could we overcome these barriers.
14. How do you think we could facilitate your engagement with this psychosocial intervention programme throughout all seven sessions? (for patients) OR How do you think we could facilitate the patient's continued engagement with this psychosocial intervention programme (throughout the seven sessions)? (for HCPs)
 - a. Prompts: think, for example, of strategies or resources that have already been implemented and that have increased your motivation and commitment to other appointments (for patients) OR that have already been used with your patients and that have increased their motivation and commitment to the appointments (for HCPs).

Closing question

Is there any further information about what we have discussed today that you would like to share before we finish?

Appendix G: Definitions and Rationales for Each Therapeutic Target and Mediator (Psychosocial Mechanisms of Change) of the Beyond Fertility Intervention (Chapter 3)

Therapeutic target	Mediator	Definition and Rationale
<p>Enhance perceived control over treatment and its outcome, and engagement with early intervention care</p>	<p>Acceptance</p>	<p><u>Definition:</u> validating the experience of EoT and providing the rationale for the need for psychosocial care in the aftermath of EoT.</p> <p><u>Rationale:</u> informing patients about the possibility of EoT, what is expected to be experienced if it happens, and adaptive coping strategies that can contribute to managing patients’ expectations about the treatment outcome (Devroe et al., 2022), reducing the impact of EoT if it happens (Thomas et al., 2000; Waller et al., 2014) and promoting agency in adversity (Snyder, 2002; Su & Chen, 2006).</p> <p>After EoT, some patients do not realise they are experiencing grief or want to avoid grief (Fieldsend & Smith, 2020), and many do not seek or are not offered psychosocial care (Boivin et al., 1999; Boivin et al., 2022; Daniluk, 2001b; Volgsten et al., 2010). Validating the EoT experience and facilitating patients’ access to psychosocial care after EoT can foster positive perceptions of such care and promote patients’ willingness to access it (if needed).</p>
<p>Self-compassion</p>	<p>Acceptance</p>	<p><u>Definition:</u> self-compassion is an emotion regulation process of identifying, understanding and expressing emotions in an adaptive way in moments of pain, failure and stress. It is operationalised of three mutually interactive components: kindness (i.e., being warm and understanding in moments of pain and suffering), a sense of common humanity (i.e., recognising that suffering and imperfections are part of the shared human condition), and mindfulness (i.e., being open to one’s painful thoughts and emotions without</p>

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suppressing or avoiding them), which in combination promote a broader, clear and equanimity view of one's self and lives (Germer & Neff, 2013; Neff, 2003).

Rationale: fertility patients report lower levels of self-compassion compared to fertile controls and community samples (Galhardo, Cunha, Pinto-Gouveia, et al., 2013). Self-compassion is associated with acceptance (Neff & Tirch, 2013; Neff et al., 2005). Meta-analyses research on randomised controlled trials of self-compassion interventions or the association between self-compassion and psychopathology or well-being showed significant improvements in mental health and strong positive associations between self-compassion and mental health or well-being (Ferrari et al., 2019; MacBeth & Gumley, 2012; Zessin et al., 2015).

Cognitive defusion Acceptance

Definition: changing the literal and functional context in which negative thoughts happen by observing them without attempts to control or change their form or frequency. This creates a greater psychological distance between the individual and their thoughts, affording a greater choice of behaviour (Gillanders et al., 2014; Harris, 2019; Hayes & Smith, 2005).

Rationale: prospective research showed cognitive defusion promotes acceptance of negative thoughts by decreasing believability and emotional discomfort and increasing positive affect (Larsson et al., 2016; Masuda et al., 2004; Masuda et al., 2010). Research also showed that cognitive defusion is significantly associated with lower distress and depression levels (Bramwell & Richardson, 2018).

Sense of social
connectedness with
others Perceived social
support

Definition: perceptions of experiencing positive or meaningful social relationships with other people or groups and receiving support from them, and absence of social isolation (Wickramaratne et al., 2022; Wilkinson et al., 2019).

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		<p><u>Rationale:</u> social connectedness has been shown to be associated with improved mental health, in particular, lower levels of anxiety and depression (Weziak-Bialowolska et al., 2022; Wickramaratne et al., 2022) and improved well-being (Kim & Sul, 2023). After EoT, fertility patients feel isolated, marginalised, and misunderstood and perceive a lack of support from others, including family members and close friends (Daniluk, 2001b; Gameiro & Finnigan, 2017; Volgsten et al., 2010). Perceived social support can act as a protective factor of the emotional adjustment process due to a severe stressor, including in fertility care (Verhaak et al., 2005).</p> <p>Group therapy based on the ACT has proven efficacy in the fertility context (Galhardo, Cunha, & Pinto-Gouveia, 2013).</p>
Couples' (if applicable) communication and support ^a	Perceived relational support	<p><u>Definition:</u> how couples interact, accept and reconcile their differences and strengthen their relationship (Harris, 2009).</p> <p><u>Rationale:</u> the areas that can be affected during fertility treatment and after EoT are the couple's communication skills, perceived support from each other and sexual satisfaction. Low marital satisfaction is associated with lower mental health and well-being (Alipour et al., 2020). Validating these difficulties and acquiring communication and support skills can improve the quality of marital relationships and improve mental health and life satisfaction (Alipour et al., 2020; Harris, 2009; Vazhappilly & Reyes, 2017).</p>
Positive reappraisal	Meaning-making	<p><u>Definition:</u> cognitive strategy for re-evaluating a situation in a more positive way (Folkman, 1997).</p> <p><u>Rationale:</u> positive reappraisal coping has been shown to be beneficial in helping patients to cope with and find a sense of meaning when confronted with health-related stressful situations, including in the fertility context (for medical waiting periods during fertility treatment) and EoT (Kraaij et al., 2009; Kraaij et al., 2008; Ockhuijsen et al., 2013; Sears et al., 2003). These studies have shown that positive reappraisal</p>

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		coping is associated with several positive outcomes, such as enhancing positive mood and posttraumatic growth and reducing stress and negative intrusive thoughts.
Value clarification	Meaning-making	<p><u>Definition:</u> global desired qualities and chosen life directions that give people a sense of meaning and purpose in life on an ongoing basis (Harris, 2019; Hayes & Smith, 2005).</p> <p><u>Rationale:</u> clarifying values helps people make meaning of stressful life situations (Park, 2010). It provides the context for practising acceptance and defusion and is a precursor of goal setting and action plans, particularly during stressful situations (Harris, 2019; Hayes & Smith, 2005). Values interventions have demonstrated desired effects on numerous outcomes, such as anxiety and depression, positive affect and life satisfaction (Rahal & Gon, 2020). The use of metaphors and experiential exercises led fertility women to be less focused on their fertility problems and more able to engage in life (Galhardo, Cunha, & Pinto-Gouveia, 2013).</p>
Goal definition and implementation	Pursuit of new life goals	<p><u>Definition:</u> translating values into effective patterns of physical and psychological action by defining and implementing new achievable and fulfilment life goals in the short-, medium- and long-term based on one's values (Harris, 2019; Hayes & Smith, 2005).</p> <p><u>Rationale:</u> behavioural techniques (problem-solving, exposure, behavioural activation) have been shown to be effective for a range of psychological disorders in promoting mental health, in particular depression and anxiety (Harvey et al., 2004). Focusing on valued-goals also affects psychological well-being (Sheldon et al., 2004).</p>

Note. EoT=end of unsuccessful fertility treatment; ACT=Acceptance and Commitment Therapy.

^aThis therapeutic target and mediator was only added after the end of the study reported in Chapter 3, as a result of its findings.

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Appendix H: Focus Group Framework Matrix: One Row per Theme and Category, and One Column per Group (Patients; Psychologists; Fertility Specialists; Chapter 3)

	Patients (n=13)	Psychologists (n=3)	Fertility specialists (n=6)
THEME: High demand for psychosocial care across the whole treatment pathway			
Category: Fertility treatment is highly challenging			
Fertility treatment is highly challenging for patients, and its unsuccessful end triggers an intense grief process	<p>Patients reported a high desire to reach parenthood and, three patients added that both members of the couple had the same high desire.</p> <p>The fertility treatment process is physically and psychologically demanding (and financially expensive in the private sector), and its unsuccessful end triggers intense grief emotions and thoughts.</p> <p><i>'it has not been an easy process at all, quite the contrary, each treatment is increasingly difficult, psychologically it has been a drastic shock. I'll even, I'll just give a small example, in the last negative treatment I had, I felt so bad, so bad, that when I was going to the subway, I tripped on the escalators and fell and almost broke my knee.</i></p>	<p>One psychologist referred that during treatment, reaching parenthood is, for most patients, their single life goal.</p> <p>The period after EoT is an intense process of grief (with one psychologist stressing that for most patients, this grief process starts before EoT, as patients progress throughout it and face unsuccessful outcomes, and sometimes is about fertility and not parenthood) - patients tend to experience frustration, anger, hopelessness, denial, and guilt for not being able to conceive. Two psychologists referred that patients want to leave the clinic as soon as</p>	<p>One GYN/OBS referred that during treatment, reaching parenthood is, for most patients, their single life goal.</p> <p>Three fertility specialists agreed that patients who undergo multiple unsuccessful cycles adjust to the last cycle (and EoT) in a different way than those who only undergo one cycle, with one GYN/OBS referring that these patients start their grief process before EoT as they progress throughout it and face outcomes.</p> <p>However, one GYN/OBS highlighted that the last cycle is the most challenging one and in which patients have more significant emotional</p>

That's it, (...) but I think in these situations [unsuccessful cycle attempts] we [patients] are all in it together, aren't we!?' (Pa1)

Each cycle is perceived as more challenging - most patients need to cope with previous unsuccessful cycles and subsequent waiting lists. The waiting list period and the two waiting weeks for the beta hCG test result tend to be most stressful.

'That time [waiting list] was a torture because I didn't know what to do, I didn't know if, if I would receive treatment because they didn't guarantee either, right!? So, I got a little lost.' (Pa1)

Patients (primarily women) identified negative emotions and feelings experienced during treatment (which tend to intensify by approaching the last cycle and/or age limit to undergo treatment) and after EoT - anxiety, anguish, sadness, denial, confusion, guilt (for not being able to conceive), envy (friends when they reach parenthood), frustration, unconformity and shame, loneliness, despair,

possible after EoT due to the emotional burden treatment entails.

'the emotional storm they [patients] are in, because several times the emotional distress is brutal at that time [after unsuccessful treatment], and there is often a void, there is a big void about the future.' (Psy1)

'Even when there is no psychopathology, it's a grieving process they [patients] will need to undergo, isn't it!? And it's the end of a process, a process that sometimes was very long.' (Psy2)

difficulties and needs. Over treatment and after EoT, patients experience intense negative emotions - sadness, frustration, anger, lack of control, and revolt, and one GYN/OBS sometimes perceived some aggressiveness towards them. Two fertility specialists referred that most patients reach EoT with many questions about their fertility problems and unsuccessful outcomes and explain them. Two fertility specialists referred that some patients ask to postpone treatment cycles or discontinue treatment due to the emotional burden it entails or having ended their couple relationship.

'approaching the last treatment [cycle] or before the last treatment [cycle], which may or may not be unsuccessful, in the meantime it has already been, or may have already been 3 or 4 years, right!?' (Psy2)

lack of self-compassion, lack of control, revolt, frustration, and relief after EoT due to the end of the tension. Women also felt that the process impacted their self-perception, in particular, identity conflicts and lower self-esteem, four women related with the self-perception of being spoiled or expired, and three women perceived a negative body change. One man reported feeling unsupported and invisible in fertility care.

'This tension [during treatment] is so, it's so strong, it's so much more intense than what we can explain.' (Pa2)

'I don't know. I can tell you that I don't know what's going on with me. There are times I think I'm normal, and there are times I'm not normal and now, and, and I don't even know if it's because of that [unsuccessful treatment]. But I feel different (...) for instance, I was a woman who has never needed psychological care for anything and now [after unsuccessful treatment] I find myself in a riot.' (Pa2)

And there is an accumulated burden for the couple, accumulated suffering. So, I think when the couple approaches the last treatment [cycle], indeed, it is probably the time of greatest distress because time goes by.' (Fs1)

Five patients have also indicated that this process is characterised by several fears, for instance about: having a negative beta hCG test, the future of their relationship as a couple in the eventuality of EoT, inability to give a sibling to their child, and how pregnancy evolve in case of a positive beta hCG test.

'wow, completely, what is this [unsuccessful treatment] going to do to us, right!? to us as a couple. What is all this project going to do (Pa2: "of course").' (Pa3)

Despite almost all patients agreeing that women have the additional burden of dealing with the physical and hormonal component of treatment, four patients added that women were more willing to continue undergoing treatment than their counterparts.

'It will only be my last [cycle] if they [clinic] tell me: your body can't take it anymore.' (Pa4)

Due to this emotional burden, one couple has asked to postpone their treatment cycle.

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<p>Undergoing fertility treatment leads to significant mental health problems for a minority of patients</p>	<p>One woman referred that her anxiety symptoms become worse and more frequent over treatment. Another woman referred she has started to have panic attacks, and another had begun to take anxiolytics and antidepressants.</p>	<p>One psychologist reported that the hospital has already received suicidal attempts after EoT.</p>	<p>One GYN/OBS referred that some patients develop psychiatric disorders during treatment or exacerbate their symptomatology. One nurse stressed that the hospital has already received suicidal attempts after EoT.</p>
	<p><i>'I think during that waiting time [waiting list], I psychologically got fed up with crying. I got fed up with having anxiety crises, something that I have never had, I never had. At this moment, anxiety crises and panic attacks are part of my daily life and even, and until recently, I didn't know what it was.'</i> (Pa1)</p>		<p><i>'we've also had some attempted suicides post unsuccessful treatments (...) So things go up to this point.'</i> (Fs2)</p>
<p>Relational interactions are also challenging to manage for patients</p>	<p>Patients agreed that treatment is challenging for the couple, with one patient referring it did not negatively impact their couple relationship and two patients referring it did. Patients tended to restrict the number of people aware of their fertility path, particularly in the last treatment cycle. All patients agreed that managing others' insensitive comments and expectations towards parenthood and fertility</p>	<p>Two psychologists referred that most patients tend to restrict the number of people aware of their fertility path (some do not tell anyone), explaining that patients do not feel understood by others (family and friends) and that it is difficult to manage their insensitive comments. One psychologist referred that there are</p>	<p>Two fertility specialists referred that most patients are unaware of the high prevalence of fertility problems until they enter the waiting room. Two specialists referred that the couple relationship is often negatively impacted by treatment, with some couples having communicational issues and/or disagreement about the</p>

treatment (from family, friends, and work colleagues) is challenging and distressful, feeling misunderstood by them. Most women also added the high visibility they experience at work due to their frequent absences due to treatment and consequent need to justify. Four patients also claimed stigmas related to fertility problems and treatment and stressed raising awareness about fertility problems.

'Maybe this was exactly what I needed, to talk with different people, people who didn't have, didn't accompany me and, and some of them who went through and are going through the same experience as me. That's what I needed, and I think I feel a lot lighter.' (Pa2)

'Because sometimes our family circle or our friends aren't going through the same situation, and sometimes you want to talk, and they don't understand (Pa7: "it's true"). They downplay a lot what you're feeling, and, at that moment, you feel even angrier (Pa7: "it's true").' (Pa5)

still stigmas associated with fertility problems and treatment. One psychologist also highlighted that many patients have several work absences to undergo treatment.

'many of them [patients] have this thing, which is: even when they tell their family and friends, they say: -Oh, yeah, it's going to be this time, it's going to be all right, you'll see. And then they say: -yes, you know psychologist, but they don't understand anything of what we're feeling, do they!? I mean, they want to support us, they care a lot about us, but we can't explain to them what we are feeling because only those who go through this truly understand.' (Psy2)

treatment process. Two specialists also perceived some stigma associated with undergoing fertility treatment, particularly those patients who undergo treatment with donated gametes (i.e., afraid of being recognised in the clinic). One GYN/OBS highlighted that many patients have several work absences to undergo treatment.

'when they [patients] arrive to start the first treatment (...), they say: we didn't know there were so many people going through the same situation as us. We thought we were the only ones, that we were the only ones, but then we get here, and the room is full of people.' (Fs3)

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'And then returning to work is very difficult, is terrible [crying], chatting and facing people again is also complicated.' (Pa3)

Patients' adjustment to EoT is associated with individual and treatment-related factors: patients' individual characteristics, quality of their couple relationship, number of previous unsuccessful cycles, and receive in-depth scientific medical explanations for their fertility problems,

Patients perceived that their adjustment to an unsuccessful cycle result depends on their individual characteristics and resources, quality of and communication within their couple relationship, expectations towards the outcome, and in-depth medical explanations for their fertility problems, treatment choices, and unsuccessful outcomes.

'this is very important in, in the grieving process, at least we feel it is, why did this happen?' (Pa6)

'it was something [the communication of a negative Beta HCG result], it was something that we, that we felt and that was very tough, in particular in the first one [cycle] (Pa3: "yes, it was"), and it's because of all those expectations we bring, isn't it!?' (Pa6)

Patients' adjustment to EoT depends on their individual characteristics and resources, emotional stability, the quality of and communication within their couple relationship, and the number of previous unsuccessful cycles.

'The other aspect sometimes is having the perception that the couple is a vulnerable, fragile couple, who possibly have few resources. There are several risk factors from an emotional point of view, and sometimes a prior work before treatment would be beneficial for those couples.'

(Psy1)

Patients' adjustment to unsuccessful treatment cycles (including the necessary time to initiate another cycle) depends on the patients' individual characteristics and resources, emotional stability, the communication within their couple relationship, the number of previous unsuccessful cycles and treatment prognosis, expectations towards the outcome, quality of the HCP-patient relationship, and having in-depth scientific medical explanations for their fertility problems and unsuccessful treatment outcomes.

'If it [fertility treatment] doesn't go well, the fall, and of course if this is a first and last cycle even worse because they know it's the only possibility they have, from this

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<p>treatment choices, and unsuccessful outcomes.</p>	<p><i>point of view. Here the fall, and from a psychological point of view, can be dramatic.'</i> (Fs4)</p>		
<p>Patients tend to find their own coping strategies to manage treatment as time goes by. The first weeks after EoT are the most challenging ones for patients, but HCPs claimed that patients tend to adjust over a 1- to 2-years period.</p>	<p>Four patients referred that women and men have different coping strategies to deal with the treatment burden and EoT. Most patients referred that they started treatment with unrealistic high expectations but tended to downgrade them over time as they experienced unsuccessful cycles. Three patients referred feel more at ease with their fertility path over time, and almost all indicated they had found beneficial coping strategies to deal with it, as restricting the number of people who know about their treatment path, seeking pleasant activities and career successes, discussing their future as a couple in case of an unsuccessful cycle, and taking some time to focus on themselves. Three patients referred that it was beneficial to have the opportunity to share their experiences with other fertility patients, and</p>	<p>Patients start treatment with unrealistic high expectations but tend to downgrade them over time as they experience unsuccessful cycles. During this process, patients find beneficial coping strategies to manage the process - restricting the number of people who know about their treatment path or only sharing with know-other fertility patients, considering other paths beyond biological parenthood: childfree lifestyle, adoption, or donates gametes/embryos, and seeking online discussing groups. One psychologist referred the first weeks after EoT are the most challenging ones for</p>	<p>Patients start treatment with unrealistic high expectations but tend to downgrade them over time as they experience unsuccessful cycles. During this process, patients find their own coping strategies to manage the process - restricting the number of people who know about their treatment path and/or considering other paths in advance: childfree lifestyle, adoption, or donates gametes/embryos. Two specialists referred that after EoT, the first weeks are the most challenging ones for patients, but they tend to adjust over a one- to two-year period.</p> <p><i>'Indeed, after one year or they have already moved on, or they don't even want to hear about this anymore, because</i></p>

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	<p>four patients have started to consider different paths to achieve parenthood (adoption or donated gametes/embryos). Three patients referred to positive consequences as a result of their treatment path: have learned with the process and/or grow as individuals and couples.</p> <p><i>'This was a conversation and a very big fear (...) which was indeed this conversation we both had, very serious, what if, if we never make it, huh!? What's going to happen to us [as a couple], you know? And I think it's very important.'</i> (Pa3)</p> <p><i>'It is in the other slices that we find the strength to continue fighting after all these years: in family, work, achievement, contribution to society, all slices of the wheel of life, as they say, all these slices because that's what complements us.'</i> (Pa7)</p>	<p>patients, but they tend to adjust over a one- to two-year period.</p> <p><i>'But in my experience, whenever I talk to the couples in a sense they could seek, I mean, other couples with whom they could share, they do that, but through the technologies, the Internet, they look for discussion groups.'</i> (Psy1)</p> <p><i>'As a matter of fact, we notice this, couples who have someone they know who has gone through the same [treatment process], that couple turns out to be a great support and someone with whom they share a lot of this path, isn't it!?'</i> (Psy2)</p>	<p><i>they've already, already moved on into a different direction.'</i> (Fs1)</p>
<p>Category: COVID-19 pandemic made treatment even more challenging</p>	<p>The COVID-19 pandemic was an extra anxiety factor for patients. Five patients referred increased waiting for periods and uncertainty about access and time of future cycles.</p>	<p>One psychologist referred that due to the COVID-19 pandemic, all psychosocial groups in other health fields were on stand-by.</p>	<p>Due to the COVID-19 pandemic, the fertility clinic reduced the patients' physical presence to compulsory procedures, and some clinics started to give the pregnancy test result by</p>

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	<p><i>'and that's it, one more thing to make me anxious: the Covid-19.'</i> (Pa8)</p> <p><i>'I was supposed to do my last cycle in the month of May/June of 2020, but (...) due to covid, it was postponed for a month, two, three (...) until this month [January].'</i> (Pa1)</p>	<p><i>'In our hospital, for example, we had groups functioning, as I was previously saying with the pregnant women in obstetrics, and the groups are suspended for now.'</i> (Psy2)</p>	<p>phone. One GYN/OBS highlighted that some of these adopted new dynamics might be worth keeping in the future.</p> <p><i>'At this stage due to covid, this is not happening, right!? We are the ones who call to give the results, or the couple sends us the result first, and then we confirm the result, so to speak.'</i> (Fs3)</p>
<p>Category: High demand for psychosocial care at all stages of treatment, but particularly after EoT and in a group format</p>	<p>All patients stressed there is a high demand for psychosocial care. This support should be offered to all patients (both members of the couple) during all treatment process stages, with five patients highlighting it is particularly important at later stages of treatment.</p> <p><i>'my biggest trauma was when they gave me the negative result (...), and I think from that moment on I should have received support.'</i> (Pa1)</p> <p><i>'I received a big no, and I think that regardless how much strong I think I am, if I had psychological care, at least in the end...'</i> (Pa2)</p> <p><i>'I think the couple doesn't need to receive psychological care only when they know the</i></p>	<p>Psychologists stressed that psychosocial care is essential for fertility patients at all stages of treatment, in particular after EoT. All agreed that some patients are in more need of support, particularly those who have less emotional resources, are more disorganised as a couple, and/or resistant to receive it.</p> <p>Psychologists emphasised the importance of receiving such care in a group format, stressing several benefits: decreasing patients' feelings of loneliness and an opportunity for</p>	<p>Fertility specialists stressed that psychosocial care is essential for fertility patients at all stages of treatment, in particular after EoT. Five specialists referred that some patients are in more need of support, as those who are more disorganised as a couple, socially isolated, undergoing treatment with donated gametes/embryos, and/or show higher levels of psychological distress. Fertility specialists emphasised the importance of receiving such care in a group format. Three specialists</p>

negative test (...) there is already pressure before treatment, not just after it. And that [pressure] accumulates, and when you have a negative test [result], then the world falls on you.' (Pa5)

'I think it's also important, as you said, to provide support for men, which is a little forgotten very, very often (Pa2: "it's true").' (Pa9)

Patients emphasised the importance of receiving such care in a group format. Two patients stressed the importance of receiving it from mental healthcare professional experts in fertility. Several benefits of receiving psychosocial care in a group were identified: it would decrease patients' feelings of loneliness and be a space where patients could share their experiences with other fertility patients, listen to their views and experiences and learn from them.

'sharing with other women, trying to understand other couples, trying to understand if the fears are the same, if they aren't, what they did what they

them to share their experiences with other fertility patients who understand their experience. One psychologist stated that although their psychology department desire to organise these groups, no fertility group support options are available.

'Indeed, it's something that we at psychology in the clinic have been thinking about for many years [creating psychosocial care groups], if it makes sense if it doesn't, because we have support groups in other areas (...) and I think they [these other groups] work very well.' (Psy2)

'And in this regard, being able to be with couples who are going through the same, in particular during this stage of failure and grief, I think it might have, it has a powerful therapeutic aspect, hasn't it!?'
(Psy2)

highlighted its benefits: decreasing patients' feelings of loneliness and an opportunity for them to share their experiences with other fertility patients who understand their experience.

'I think it should be mandatory to have psychology integrated in the fertility department (...) because no matter how well they [patients] are supported at a scientific and technical level if they are not at a personal and emotional level, there will be a gap there.' (Fs5)

'Most importantly, when we finish this process [fertility treatment] and things do not go well, and we no longer have a connection [with patients], I think psychological care is essential.' (Fs5)

'I think group intervention could have the benefit of enabling couples to see that after all, they are not the only ones and that indeed there are many other couples who, who have gone through the same as

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didn't do, some strategies that can help us, I think it would be important.' (Pa3)

'Yes, I think sharing is important as well, and realising we are not alone, we are not the only ones going through the same situation. Yes, I fully agree.' (Pa13)

'I think it's positive to learn about others' perspectives and experiences. For instance, I would never have imagined your story could be possible (...), and I think this is very important, it opens our minds, opens our horizons, doesn't it!? And I also think it's good for us to have... to know there are more people with problems like ours, isn't it!?'
(Pa8)

them and will also have to find other strategies.' (Fs1)

Category: Opposite views expressed between patients and HCPs about accessibility of psychosocial care

Only one couple claimed they were referred for psychosocial care in the fertility clinic by the nurse after the female partner discussed the emotional burden the couple was going through. This couple referred they were dissatisfied with the support provided and discontinued it after one session: they felt the support was only offered because it was mandatory. They feel misunderstood, as the

All psychologists referred that psychosocial care is available to all fertility patients. Two psychologists indicated that their fertility clinics integrate compulsory sessions: in one clinic, all fertility patients who initiate fertility medical appointments and/or treatment with donated gametes/embryos are directed to a

All fertility specialists agreed that psychosocial care is always available - all patients could ask for it at any time - although they only refer to support patients at more risk for maladjustment, showing high levels of emotional distress and/or couple communication conflicts.
Notwithstanding, one GYN/OBS

support was not adjusted to their needs - composed solely of general information provision and behaviours imposition. All the other participants referred that they were not offered psychosocial care, not knowing which support they have available for them. One patient and the couple mentioned above who were receiving or received support self-referred outside the clinic. These patients indicated that it helps them manage their couple relationship, accept their negative emotions and feelings, and cope with their fertility path.

'I've been accompanied by a psychologist for a year and a half, by my self-recreation, because no one has ever signposted me, neither in private [clinics] nor here, and of course it's helping me a lot.' (Pa4)

'I think it would be important the [fertility] department have psychology integrated. I do not know, if they have it, they didn't tell me anything (...) as Pa4 said a while ago ["no one has ever signposted me, neither in private [clinics] nor

mandatory initial psychosocial evaluation session, and in another clinic, this process happens with all patients referred to initiate their first IVF/ICSI cycle and/or treatment with donated gametes/embryos. These two psychologists stressed that the option to turn to psychosocial care at any time is offered to all patients in these appointments, and continued support is offered to those who show significant emotional distress. At later stages of IVF/ICSI treatment, only patients who present significant emotional distress are referred to support by fertility specialists. During the last treatment cycle and after EoT, all psychologists claimed they have almost no contact with these patients.

During psychosocial care, psychologists focus on conveying realistic expectations towards the

directed that in their clinic, all patients referred to initiate their first IVF/ICSI cycle or treatment with donated gametes/embryos are referred to a compulsory psychosocial evaluation session.

'when the situation is clearly serious and requires the intervention of a specialist in the area, then yes, only a psychologist will be able to truly support the patient. Indeed, they should always be there, but when it is not possible, perhaps we try to do a little of what could be an essential help in this part.' (Fs5)

'When we notice there may be a need for psychological care, so of course, in that case, we take advantage of that, and this has already happened - referring to the psychologist so there can be a follow-up.'

(Fs4)

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<p><i>here”], no one asked me anything, no one asked me: do you need it?’ (Pa8)</i></p> <p><i>‘To whom can I turn to? What is the psychological care that I have available for me?’ (Pa1)</i></p> <p><i>‘So, I thought there was [care received in the clinic] imposition of behaviours, wasn’t it!? it has to be done in this way, it has to be done in this way, and maybe before it has to be done in this way, it has to be understood why we are doing it in the other way, isn’t it!?’ (Pa7)</i></p>	<p>treatment outcome, facilitating patients’ grief and adjustment process and/or facilitating couple mutual support and communication.</p> <p><i>‘we have some couples that will initiate the last cycle or after the last cycle that are accompanied in the psychology appointment. But roughly, I think it is something around 10%, 8%, something like that.’ (Psy2)</i></p> <p><i>‘Then, our intervention when the couples are preparing to initiate IVF/ICSI treatments, then usually the couples who come to us are always those who present significant emotional distress, which is somehow interfering with the treatments being carried out by the medical team.’ (Psy1)</i></p>
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Theme: High acceptability of preventive and early psychosocial care to promote patients’ positive adjustment to EoT

<p>Category:</p> <p>Ambivalence in preparing patients in</p>	<p>All patients referred they feel misinformed about the fertility process - their fertility doctor does not respond to their</p>	<p>Two psychologists indicated that patients are informed about the treatment success rates and prepared</p>	<p>During treatment, HCPs perceive they clarify patients about the treatment process.</p>
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<p>advance for the possibility of EoT</p>	<p>informational needs, provides lack of in-depth scientific explanations for their fertility problems and failed cycles, and patients feel they need to run after their doctor to receive information - which impacts patients' emotional adjustment during and after treatment. Indeed, three patients perceived their diagnosis was not in-depth studied and that fertility specialists use a trial-error method for each cycle.</p> <p><i>'it's a confidential service, very confidential (...) we got there and what we are going to do now and, and what we are going to do next. Some doubts remain between, between appointments, between, between [treatment] stages.'</i> (Pa10)</p> <p><i>'And being there, waiting without any information, is as if they were killing us a little, more and more.'</i> (Pa11)</p> <p><i>'No one can give us an answer about why this happens, why this does not happen. This is very important in, in the grieving process, at least we feel it is.'</i> (Pa6)</p>	<p>for the possibility of undergoing multiple cycles in the initial compulsory psychosocial session, but referred that patients tend to do not believe the information they convey at this initial stage.</p> <p><i>'I have, indeed, been confronted when I am with those couples who seek the psychology appointment again, they end up saying: -look, a lot of what you said in the first appointment we heard, but it didn't make much sense to us. We, we remembered everything you said when we were actually confronted with the first failure, with the second failure, with the third failure.'</i> (Psy1)</p> <p>All psychologists referred that it is important to convey realistic and balanced expectations towards the treatment outcome, and two psychologists claimed that it is important to prepare patients for the possibility of EoT - prepare patients</p>	<p>In practice, mixed approaches to manage patients' expectations towards the treatment outcome were reported. One GYN/OBS indicated that they tend to convey a sense of hope to their patients and try to focus on the positive outcomes, another tends to focus on the exact success rates, and one nurse reported they tend to convey low expectations to decrease patients' high expectations. Two fertility specialists stressed that patients tend not to believe in the low treatment success rates they communicate at the initial stages of treatment.</p> <p><i>'I always try to show them the worst-case scenario when they come out very positive [laughs]. I don't know if it's the best or worst strategy, but that's what I try to show. Most of the time: it will go wrong,</i></p>
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Four patients also perceived that the fertility medical doctor conveys unrealistic high expectations of the treatment outcome, and five patients highlighted and agreed that the fertility department setting also focuses on the positive side of treatment.

'The doctor when, when she came to me at the end, saying: -yeah, it was very good, we got 16 oocytes, wonderful. We were left with an expectation, huh, huge, huge (...), and sometimes it doesn't mean that, and I think we need someone who would also psychologically support us (...) so that we could be prepared for this as well, right!?'

(Pa1)

'We were, as the colleague also said earlier, an easy case, from that easy case we became a difficult case, for 9 years.' (Pa11)

'We got there [clinic], and at first we go full of dreams, and everything will be fine because we get there, and we see lots of pictures of babies that were born there, and it's all very beautiful and wonderful, and then we receive a NO.' (Pa3)

for what might happen during treatment, give them strategies to cope when and if EoT actually happens, work on their relationship as a couple (communication and support) and considering their future together, considering simultaneous alternative goals, and reassure patients that psychosocial care is always available for them. This preparation should be adjusted to the patient's individual emotional and cognitive resources, and one psychologist stressed the importance of not focusing solely on the negative aspects. One psychologist also referred that it is important to address fertility problems as a health problem to decrease patients' feelings of guilt and responsibility.

'But I think we have to adapt the information to the couple we have ahead,

10% here, 20% there, 30%, 80%, 90% is negative.' (Fs2)

'I do the opposite (...) I think if people come for a treatment and assume right away that they're going to have a failure, yes, of course, a treatment has between 30 and 40% of success, so it has 60% of failure, but 40% is not that low, is it!? And I think we can't be, I'm an optimistic person, by nature, so I think, I try to convey that optimism to patients.' (Fs1)

All fertility specialists referred that it is important to convey realistic and balanced expectations towards the treatment outcome (with two fertility specialists highlighting the importance of communicating the exact success rates), and prepare patients for the possibility of EoT - give patients strategies to cope when and if EoT actually happens, help them to find alternative fulfilment lifegoals beyond parenthood and recognise and focus

Six patients agreed that the way the fertility team communicates the negative beta hCG test result is insensitive and impacts patients' overall adjustment. Five patients stressed that training fertility staff on patient-doctor interpersonal relationships is highly needed.

'My greatest difficulty in my last negative treatment was the day I knew the result had been negative. The way they told me: look, your treatment was negative, now you go home, wait, and in a year we call you again. And that's it.' (Pa1)

'I think it would be really important to take this opinion of, of sensitising to the communication of the bad news, right!? Because sometimes this first, this first impacts, sometimes dictates everything, doesn't it!? (...) I believe this communication [of the negative beta hCG test result] in the last treatment [cycle] is terrible, and I believe it is very important for the professional who gives it to know how to convey it, in the best way, right!?' (Pa3)

Before initiating the last fertility treatment cycle, most patients would like to be prepared for the possibility of EoT (with five patients

right!? Listen to them first and also try to understand how they integrate this information.' (Psy2)

'I was thinking about maybe asking couples to give a speech about how they see themselves in two years or three years. The scenarios the couples see for themselves as a couple.' (Psy1)

Only one psychologist was unwilling to prepare patients for the possibility of EoT, advocating that it might increase patients' emotional distress - at this stage, it is important to acknowledge and normalise patients' emotions.

'So, therefore, they don't have to be happy, because it hasn't happened yet and they won't pretend something they don't feel, but they can't be crying as if it had already happened, because that's what emotionally destabilises them more at the moment. So, it's important to recognise the emotions and the anguish and the

on the positive things patients have in life. One GYN/OBS also highlighted the importance of addressing the social-related issues about having a child with donated gametes/embryos. Notwithstanding, fertility specialists highlighted the importance of maintaining patients' hope towards the treatment outcome.

'Therefore, the more realistic expectations we give the couple, the easier it will be to deal with the couple, in terms of the treatment results, and this is visible. In my personal experience, if we prepare them well and manage their expectations well, this couple will manage to deal with it even if they have a negative result. And this, and this role for us is crucial.' (Fs4)

'Although we can't in an appointment, assume that this is going to be a failure, right!? We have to assume that we are doing treatment, and therefore we have expectations that things can go ahead, but

adding it should be carried at later stages of treatment - after the second cycle being unsuccessful) in a realistic and balanced way, so not to impact their engagement with treatment. This support should prepare patients for what might happen during treatment, help them to manage their fears, anxiety, and expectations regarding its outcome and consider their future as a couple in case of EoT, should reassure patients that psychosocial care is always available for them (how and where they can have access to it), and be tailored to patients' individual characteristics and preferences (non-compulsory format). Three patients also referred the need to prepare patients for the pregnancy period in case of a positive beta hCG test result (i.e., common emotional reactions and adverse outcomes).

'a very big fear (...) what if, if we never make it, huh!? What's going to happen to us [as a couple], you know!? And I think it's very important for the

anticipatory anxiety of failure and accept that as normal, as legitimate.' (Psy3)

we also have to open a window for failure. And before they [patients] are confronted with failure, they must realise there are other things beyond that [parenthood]. So, then they don't focus only on that point, which isn't the only goal in their lives.'

(Fs1)

*couple to work on it as a couple. I am sorry, sorry
I'm already, I'm falling apart (Pa2: "me too")
[emotionally activated] (...) maybe it is important
for you and your partner to talk about it, you have
this fear, but he has it as well, isn't he?' (Pa3) - 'of
course.'* (Pa2)

*'address these fears but also expectations, isn't it!?
What Pa2 was saying just now, to give some
optimism, but a balanced optimism, because we
can't go, right!? as I went to my first treatment,
thinking: Wow, now this is going to be, and then a
bomb drops like that, and we're completely
barefoot and floorless.'* (Pa3)

*'I think we need to know where to go if our
treatment is negative, right!? For instance, my
treatment is negative, I can't, I don't know, I can't
do more treatments, I might even not come, not
have, not, not come to have children, who can I
contact? What psychological care do I have
available for me?'* (Pa1)

*'I agree with Pa5 and P10, we really need a lot of
support to manage our expectations.'* (Pa1)

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Only three patients were unwilling to be prepared for this possibility, as they think the information they had was enough, it is a moment for patients to be focused on the positives, it could be distressful for them, and/or there is no point in being prepared for something that might not happen.

*'I don't know if it would not be stressful, at that stage, before treatment, to be contemplating this possibility when the door is not yet closed' (Pa6). -
'No, I don't think so either. I don't think so, it's not time, it's time for us to have all our strength up, with our good mood, our optimism, our hope.'*

(Pa2)

<p>Category: Different perception between patients and HCPs about patients' willingness for psychosocial care after EoT</p>	<p>All patients were willing to receive psychosocial care at any stage of treatment. Patients agreed support should be offered immediately to two weeks after EoT, with two patients stressing it should not be provided too late after it and three indicating the time needed might depend on the patient's individual characteristics.</p>	<p>Two psychologists claimed that most patients are not willing to receive psychosocial care after EoT. Patients want to close the process and leave the clinic as soon as possible, as they feel overwhelmed, hopeless, and sometimes angry due to the intense emotional burden that treatment</p>	<p>One GYN/OBS referred that after EoT, when the GYN/OBS offers the possibility of receiving psychosocial care, patients tend to not accept it due to the intense emotional burden they are going through. In some cases, patients call the service later and ask for support (primarily women).</p>
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'Like any disease that manifests by itself, any symptom that manifests by itself, the more, the earlier it is approached by professionals, the better the perspective of resolution of the situation would be.' (Pa6)

'I think it's important, each one will feel the need to, to talk again and approach things in a different way, but it's also important to give it time to acknowledge things, isn't it!?' (Pa7)

entails. In some cases, patients call the service later and ask for support (primarily women).

'What happens, from my experience, is that most times patients are not willing to [psychosocial care after unsuccessful treatment], they are very frustrated, very angry, very discouraged.' (Psy1)

'Indeed, as the colleague said, when couples are not going to undergo any more treatment, usually they quit, they abandon us so to speak, so even if support would be offered, they are in a stage of some, some, saturation, and also disappointment and in the most immediate moment do not request this support.' (Psy3)

Overall, psychologists have more contact with the female partner, as the male partner is less willing to receive psychosocial care.

'We have two types of couples in the appointments, we have the couple who

'In the last appointment in which the test result is given, we sometimes see that people are a little disturbed, and we even ask: -look, you can book an [psychosocial] appointment outside. And sometimes we see the couple don't want to (...) But then sometimes, if we leave that option open, sometimes they call back later. Or so sometimes there is no acceptance from the couple, but then the woman ends up calling afterward.' (Fs1)

Overall, fertility doctors have more contact with the female partner, as the male partner is less willing to go to the appointments.

'As the medical doctor (Fs4) has already said, for some couples it's already difficult to have them [both members of the couple] in the [medical] appointment, isn't it!?' (Fs6)

Fertility specialists agreed that psychosocial care should not be offered immediately after EoT, as

	<p><i>always come together, and which are a minority, they are really a minority and I, and I remember almost all of them, so few they are (...) the tendency is for women to come alone.’ (Psy2)</i></p> <p>One psychologist referred that psychosocial care should not be offered immediately after EoT, as patients might not be emotionally prepared, and suggested a period of around one to two months after it. Notwithstanding, agreed that patients might feel unsupported if provided much later (up to 1 year).</p> <p><i>‘month and a half, I think so (...) otherwise they would feel helpless.’ (Psy1)</i></p>	<p><i>always come together, and which are a minority, they are really a minority and I, and I remember almost all of them, so few they are (...) the tendency is for women to come alone.’ (Psy2)</i></p> <p>One psychologist referred that psychosocial care should not be offered immediately after EoT, as patients might not be emotionally prepared, and suggested a period of around one to two months after it. Notwithstanding, agreed that patients might feel unsupported if provided much later (up to 1 year).</p> <p><i>‘month and a half, I think so (...) otherwise they would feel helpless.’ (Psy1)</i></p>	<p>patients might not be emotionally prepared, and suggested a period of around one to two months after it. Notwithstanding, two fertility specialists also agreed that patients might feel unsupported if provided much later (up to 1 year).</p> <p><i>‘A one- or two-year period, I am sorry, it seems too long (...) they [patients] might no longer need the psychological intervention.’ (Fs1)</i></p>
<p>Category: Promoting acceptance and pursuit of positive and new life goals after EoT</p>	<p>After EoT, patients indicated several needs they believe psychosocial care should address: helping patients to identify, express, and accept their negative emotions and feelings (for instance, frustration and women’s lack of self-esteem), and to manage social pressure</p>	<p>All psychologists indicated that support after EoT should facilitate patients’ grieving process: helping patients to identify alternative fulfilment life goals beyond biological parenthood, recognise and focus on</p>	<p>All fertility specialists indicated that support after EoT should facilitate patients’ grieving process: help patients to identify alternative fulfilment life goals and/or paths (e.g., treatment with donated</p>

and others' expectations and comments (from family, friends, work colleagues) towards parenthood and fertility treatment (needs experienced across the whole treatment path), helping patients to accept their inability to have biological children, acknowledge and value the positive things they have in life beyond parenthood, work on their future as a couple and/or find other alternative fulfilment projects and/or paths (e.g., adoption, childfree lifestyle) beyond biological parenthood.

One man also indicated his need for help to support their female partner in their grief process.

'I don't know what I'm feeling (...) [a support to] help us to interpret ourselves, about what we are feeling, on, on how to react (...) I think it would be very, very important.' (Pa2)

'We need to know, and we need to know how to deal with each other as a couple after this, because it's been a lifetime thinking that this will happen

the positive things they have in life and that have resulted from treatment, accept their inability to have biological children and/or manage difficult social interactions related with parenthood.

'Working on the desires, which desires are possible, so that the couple can see, from the point of view, which desires that woman can have about her life, which [desires] she can seek, or develop or discover, whether the woman or the man and in particular what makes sense for the couple.' (Psy1)

'When you [patients] arrived here, you had a life, where is it? So, there were many things, now you think this is the most important thing in your life and that without it nothing will work, but so far there have been many things that were once more important in your life and that cannot or should not be lost because of lack of investment.' (Psy3)

gametes/embryos, adoption, foster family, childfree lifestyle) beyond biological parenthood, recognise and focus on the positive things they have in life and that result from treatment, accept their inability to have biological children and/or manage social interactions related with parenthood.

'Indeed, the inability towards failure and the impotence of obtaining what they [patients] have sought us for and what others have and they will not have, and therefore, acceptance for me here I think is, is what many patients lack.' (Fs5)

'In the end, it's helping them to see what is good about them and the projects they can develop together.' (Fs1)

'I think this intervention has to show that in life people have to have several interests, because unfortunately people do not always succeed in all areas, but they [patients]) have to focus on family, friends, activities that people like to do, don't

sooner or later, and suddenly there's that, no, it's just the two of us.' (Pa2)

'I also point frustration management first, right!? It's a failed project, even though they tell us [it's not]. And I think psychological care could help us find other projects, right!?! Which none will replace [biological parenthood], but which could help, I don't know, try to help us find another life project, which does not involve motherhood. And, and so towards the bottom of the pyramid, but I also think it's important to help us to manage social pressure.' (Pa4)

'Teaching them to manage the issue of being with other couples, friends, and family, who have children and they don't, and no longer have the hope indeed, so live with the idea that after all, they won't have.' (Psy3)

One psychologist referred that in their clinic, there is an additional short-term medical appointment after EoT for patients to ask questions and clarify their process, which is perceived as beneficial to facilitate patients' grieving process.

'As the doctor said, that last contact with the doctor is very important, sometimes it's not so much the question of clarifying their doubts, isn't it!? But this question of being able to, able to close isn't it!? Being able to close the process somehow, I think it makes a lot of difference.' (Psy2)

they!?! at work, and so there's actually other things besides that.' (Fs1)

GYN/OBS referred they have a medical appointment to give the beta hCG test result and answer patients' questions and concerns. One GYN/OBS added that in their clinic, there is an additional short-term medical appointment after EoT for patients to ask questions and clarify their process. This appointment is well-accepted by patients and perceived by the GYN/OBS as beneficial to facilitate their grieving process. Indeed, patients have several questions after EoT, although sometimes it is difficult for GYN/OBS to have in-depth scientific explanations for their unsuccessful treatment.

'But I still think, as director of the [fertility] clinic, that this offer [short-term medical appointment after unsuccessful

treatment] is necessary (...) From what I can say from my personal experience is that, indeed, they [patients] leave the clinic in a much more comfortable and peaceful way, I have no doubts, over the years that I have accompanied these couples, this is crucial.' (Fs4)

Category: High fit between Beyond Fertility and expressed patients' and HCPs' needs

Patients referred that Beyond Fertility is an adequate name (with only one patient suggesting Beyond Infertility as an additional acceptable alternative). It conveys a sense of help and the idea of finding other things in patients' life beyond their fertility path. Overall, patients perceived that the Beyond Fertility logical model was holistic and tailored to their needs. Patients appreciated its format, including individual/couple and group sessions, particularly the later (considering its previously mentioned benefits), and six patients agreed that including both formats would allow working on different goals.

Psychologists referred that Beyond Fertility is an adequate name, conveys a sense of a global approach and the idea of finding and pursuing a new lifestyle beyond patients' fertility path. Overall, psychologists perceived that its logical model was holistic and integrated all the required processes and outcomes. They appreciated its format, including both individual/couple and group sessions, particularly the latter, considering its previously mentioned benefits.
'Yes, even more, because parenting is not infertility, isn't it!? So here, here, the grief

Fertility specialists referred that Beyond Fertility is an adequate name, conveys a sense of finding other things beyond parenthood. Overall, fertility specialists perceived its logical model was holistic and integrated all the required processes and outcomes. They appreciated its format, including both individual/couple and group sessions, particularly the latter, considering its previously mentioned benefits.
'Indeed, the balance is achieved precisely with these four (Beyond Fertility mechanisms of change) [laughs]. If all are

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<p><i>‘Yes, the possibility of a help, we don't know very well what this help will be, we don't know very well how it will be, how it will help us, but maybe I, I look at this help with a little of hope, in the sense that I can understand what's going on with me.’</i></p> <p style="text-align: center;">(Pa2)</p> <p><i>‘To me it almost suggests thinking about strategies or things in our life, discovering things in our life beyond this problem, things that can help us to overcome this because we are not just a woman with [fertility] problems, or a couple [with fertility problems], right!?’</i> (Pa3)</p> <p><i>‘I agree with Pa6, I think both the individual and the group [sessions] are important, because they have different goals, I think, for sure, don't they!?’</i></p> <p style="text-align: center;">(Pa3)</p>	<p><i>is the grief towards fertility, not parenthood, right!? Because parenthood can be built beyond fertility, right!?’</i> (Psy2)</p> <p><i>‘Regarding the name, it seems fine to me because somehow it is comprehensive and introduces the issue of infertility and the issue beyond fertility and allows you to encompass a lot and, therefore, allows for several approaches and several perspectives.’</i> (Psy1)</p> <p><i>‘I think the group intervention, I think it can make a lot of sense.’</i> (Psy1)</p>	<p><i>achieved, we get there. Effectively achieving the balance is what is most difficult. In my opinion, these are the essential ones, and this is the way.’</i> (Fs5)</p> <p><i>‘Yes, it seems to me these four areas cover all that, in the end, all the support we want to give the couples at this stage, right!?’</i> (Fs6)</p>
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Theme: Challenges in implementing EoT preventive and early psychosocial care at fertility clinics

Category: High willingness to engage with Beyond Fertility, but HCPs have	All patients were willing to engage with Beyond Fertility. Four patients highlighted that patients’ willingness to receive support might depend on their individual characteristics, particularly for the group sessions. Indeed,	All psychologists were willing to promote Beyond Fertility. Psychologists agreed that patients’ willingness to engage with Beyond Fertility might depend on their	All fertility specialists were willing to promote Beyond Fertility. All agreed that patients’ willingness to engage with Beyond Fertility would depend on patients’ individual characteristics.
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<p>concerns about patients' engagement</p>	<p>two patients referred that their male partner would be less willing to engage with Beyond Fertility, as they are more reserved and/or believe they have their own strategies to cope with the treatment burden.</p>	<p>individual characteristics, referring that woman might engage, still it would be challenging to have the male partner engaged. One psychologist stressed that based on their experience, most fertility couples would not be willing to receive psychosocial care in a group format.</p>	<p>Four fertility specialists referred that some patients might not feel at ease sharing their personal experiences in the group, and one GYN/OBS highlighted that it might be challenging to maintain patients' engagement over time (in particular the male partner).</p>
	<p>Everyone: <i>'Yes (without a doubt/completely) [willing to engage with Beyond Fertility].'</i></p> <p><i>'I, I think, I think all couples would somehow be receptive to a professional approach, so from psychology, to understand if they really, if they need to have a support or not.'</i> (Pa6)</p> <p><i>'But maybe other people think differently and don't feel comfortable being among strangers.'</i> (Pa12)</p>	<p><i>'Couples' adherence to group interventions in XXX [their fertility clinic] I never had much acceptance, I have been asking couples that, I use to ask them, I don't know if it's a cultural issue (...)</i></p> <p><i>couples do not feel very comfortable with the situation of the group intervention.'</i></p> <p>(Psy1)</p> <p><i>'Another thing is to share with a couple who is going through the same experience, and I think that most of them will not be all, but most of them this aspect of sharing with someone who is going through the same process is therapeutic and is beneficial.'</i> (Psy2)</p>	<p><i>'But this is such an intimate matter that sometimes people may not want to be sharing these intimacies with strangers.'</i></p> <p>(Fs1)</p> <p><i>'And, and so it is, there are actually couples who are very introspective, very closed and who are definitely going to refuse group therapy so to speak (...) but each case is unique.'</i> (Fs3)</p> <p><i>'We're going to have some difficulty in getting couples to keep up with all the sessions.'</i> (Fs6)</p>

'We can even have women engaging. It is more difficult to involve the couple, the male element to come. Even in this component of the group, of sharing, of being with other people, we will have female elements that will engage well, and then we will have males that will not.'

(Psy2)

<p>Category: Patients' barriers: impact on daily work routine and financial costs</p>	<p>In-person psychosocial sessions imply work absences (which patients have several due to the treatment medical procedures), travel costs and time (in particular for those from distant locations), need to present justifications at work, and associated visibility and stigma. Indeed, one patient also referred that even if they had been offered psychosocial care, they would have only engaged if they were scheduled for the same day of a medical appointment. The patient receiving psychosocial care in the private sector referred it is financially costing.</p>	<p>In-person psychosocial sessions imply work absences for patients (which they already have several due to the treatment medical procedures), need to present justifications at work, and travel costs (in particular for those from distant locations). The time of the appointments in the clinic is not convenient for patients (although one psychologist has referred that for those patients who are from distant locations, they try to schedule support on days of the patient's medical appointments). Receiving psychosocial</p>	<p>In-person psychosocial sessions imply work absences for patients (which they already have several due to the treatment medical procedures) and travel costs (in particular for those from distant locations). The appointments time in the clinic is not convenient for patients (with one GYN/OBS stressing that this does not happen in the private sector). However, undergoing fertility treatment in the private sector is financially costing for patients. One nurse referred that having in-person</p>
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'But there are couples, I've met couples from XXX [from the Portuguese archipelagos]. They don't come to XXX [fertility clinic] for a [psychosocial] appointment, I would say.' (Pa7)

'It's just that I should not feel shame, should I!? But that's what I feel sometimes, honestly. Apart from feeling very exposed. One thing is to say: look, I will be absent [from work], I have a medical appointment. And they don't even ask me [why] (...) but the documentation goes through several hands, and the fact that it has reproductive medicine there.' (Pa4) *- 'Even more if it says psychology of reproductive medicine.'* (Pa8)

care in the private sector is financially costing for patients. Two psychologists agreed that having in-person sessions in the clinical setting after EoT is not beneficial for patients, as it might trigger negative emotions and thoughts. One psychologist referred that some patients might not have access to technological resources to receive online support.

'But when they are discharged, when the process ends, right!? It implies coming [patients] to our appointment on purpose, and sometimes we have couples who clearly don't come because of that (...) they lose many hours to come, lose the whole day of work between coming and going, right!?' (Psy2)

'It's almost an ambivalence (...) being again in a context that everything reminds them the treatments and the process they undergone, and they often want to overcome and want to forget.' (Psy1)

sessions in the clinical setting after EoT is not beneficial for patients, as it might trigger negative emotions and thoughts. One GYN/OBS also referred that some patients might not have access to technological resources to receive online support.

'Because there are many [couples] who, after going through the whole process, find it difficult to enter the clinic. We have this idea, and they also convey that to us.' (Fs3)

'Sometimes it's not even because they don't consider it [psychosocial care] important, it is due to work issues, they can't skip work, one [member of the couple] can but the other one can't, so this is getting more and more difficult, isn't it!?'

And they sometimes feel that this is necessary, but it's complicated, even more because of the time we'll need to schedule them, isn't it!?' (Fs4)

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<p>Category: Clinical barriers: complexity in identifying eligible patients and lack of human resources</p>	<p>In general, the NHS reimburses three cycles of IVF/ICSI. Notwithstanding, the NHS has some additional criteria, for instance, the age limit of 40 years and the Body Mass Index (BMI). Fertility treatment is prolonged in time primarily due to the long waiting lists (up to several years) with uncertainty about access and time of future cycles. Some patients undergo treatment cycles in the private sector during the waiting periods. Two patients described the waiting room as a funeral.</p>	<p>The NHS reimburses three cycles of IVF/ICSI, although it has some additional criteria - some patients are only offered one or two cycles (e.g., due to age). Fertility treatment is prolonged in time due to the long waiting lists (up to two years) - some patients undergo treatment cycles in the private sector during these periods. After EoT, those patients who are eligible for are offered additional cycles with donated gametes or embryos (the number of cycles reimbursed by the NHS cycles is not yet well-defined), but these cycles have several circumstantial constraints (reduced number of clinics offering it and/or being recently offered, prolonged in time and reduced number of donors). Their fertility clinics receive patients from inland and distant regions, as few</p>	<p>The NHS reimburses a limited number of cycles of IVF/ICSI and has some additional criteria (for instance, the age limit of 40 years), so some patients may be only offered one cycle. One GYN/OBS referred that the hospital does not offer additional cycles when patients have a severe bad prognosis. Fertility treatment is prolonged in time due to the long waiting lists (up to one year). After EoT, some patients may undergo additional cycles in the private sector, and those who are eligible are offered additional cycles with donated gametes or embryos, although this latter has several circumstantial constraints (e.g., prolonged in time).</p>
	<p><i>'It's being like a time bomb at the bottom, it's about having to say it like this: -okay, we will reach, we reach 40 [years old], right!? and that's it, there's the end.'</i> (Pa13)</p>		
	<p><i>'I have been waiting for 3 years, and it looks like 30 years.'</i> (Pa5)</p>		
	<p><i>'I faced three waiting lists, three!'</i> (Pa12)</p>		
	<p><i>'I've been on the waiting list for 2 years, I was called now, because I turned 40 [years old], but I've already had many treatments in the private [sector] (...) there are already 6 attempts.'</i> (Pa4)</p>		<p><i>'This is already a totally different level, this is, it can also be a grieving about the possibility of having children with their own gametes, so this is still a last cycle,</i></p>

'The waiting room sometimes looks like a wake, doesn't it!? We are all there, there, it seems that we are waiting, watching over someone. I, I often associate that room with a wake.' (Pa7)

public clinics offer second-line treatment. There is an increasing number of patients, lack of HCPs, in particular psychologists - only one psychologist for the whole fertility department, additionally supporting other health departments - lack of time, and lack of physical spaces in the department. One psychologist also mentioned bureaucracy constraints to implement a psychosocial intervention in the clinic.

'And at that time [after unsuccessful fertility treatment with own gametes], the couple is no longer in the last treatment mode, to open up a little bit, in the end, another window of hope, another window of hope that maybe they can achieve it after all [treatment with donated gametes or embryos].' (Psy3)

'It's the time, at this moment I think it is, at least I speak for myself, it's the time issue, because I'm not only [working] in

isn't it!? that's not to say that it's impossible for them to become parents, right!? So, this is still a last cycle, buy it may or may not be the last one, because they [patients] may want to opt for a donation later on.' (Fs1)

'But then (after unsuccessful treatment) we can offer alternative options, and therefore the alternatives can go through, as already mentioned here, gametes or embryos donation.' (Fs1)

The hospital receives patients from all parts of the country, as few public hospitals offer second-line treatments. Two GYN/OBS referred that in their clinic, from the moment patients initiate their treatment, the monitoring process by the fertility GYN/OBS is carried out on a rotative schedule. The GYN/OBS and nurses are the HCPs with more contact with patients, and embryologists have less. There is an increasing number of

the fertility department, so not only in the fertility care appointment, so I have to respond to gynaecology, to the valences of gynaecology, to the other valences of gynaecology and, therefore, I am not entirely in the fertility department, I am also in other valences that also consume a lot of my time.' (Psy1)

patients, lack of HCPs - in particular psychologists - as all support several health departments, lack of time, difficulty in managing dynamics within the health specialities.

'This is all related to the lack of, of human resources and the, the scheduling time, because the number of doctors decreases, the number of psychologists decreases, but patients do not decrease, on the contrary, they increase, infertility is increasing more and more, they [patients] arrive later and later on, their prognoses are worse, aren't they!?' (Fs4)

Theme: Suggestions to improve acceptability and feasibility of Beyond Fertility

<p>Category: Sponsoring and signposting: the whole fertility team should be involved</p>	<p>All patients agreed the nurses (preferably, with whom they feel a closer relationship) or the fertility doctor could introduce Beyond Fertility and the possibility of being later contacted by the psychologist, as patients have already established a relationship with these fertility specialists. All patients were</p>	<p>Two psychologists agreed the fertility doctor could introduce Beyond Fertility and the possibility of being later contacted by the psychologist, as patients have already established a relationship with these fertility specialists. They also referred to the</p>	<p>Two specialists agreed that the fertility GYN/OBS could introduce Beyond Fertility and the possibility of being later contacted by the psychologist. Still, they believed Beyond Fertility should not be presented as an intervention for those</p>
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willing to be directly contacted by the psychologist, but the majority agreed that this prior in-person referral would be important to promote patients' engagement with the intervention. Two patients also suggested that the Beyond Fertility intervention could be included in the paper medical information patients receive at the beginning of their treatment, and three patients also suggested being introduced in the clinic by the psychologist.

'I think that it should be presented to everyone and then be volunteer, voluntarily or through the contact you have with, mainly with the nurses, isn't it!? At least I feel there is a link, a stronger connection with the nurses.' (Pa7) -*'I agree with, with Pa7. I think the nurses end up giving us more psychological care.'* (Pa1)

'We've been there[in the clinic] for so long between, between [appointments], we're called for, for an appointment with, for a, for an ultrasound, for an appointment with the doctor, for, for the care of the nurses, because, why not we

importance of giving patients the contact of the psychologist for them to turn to at any point.

'Because for all intents and purposes it was the doctor who accompanied them, it was the doctor who was always there during their path and, therefore, I think it is also a way for the team and the doctor to be able to say: ok, for us the work is done, but there is still more that you can use, and we offer you this.' (Psy1)

patients who will face an EoT but as a support to help them cope with the burden that the last treatment cycle entails.

'So this program has to be presented not as a program for couples who are going to have a failure, otherwise it seems like we're already labelling them (...) We can offer them the possibility [Beyond Fertility], because we know that they have already undergone two treatments, and this is a treatment that involves great anxiety and perhaps because it is the last treatment that is possible to undergo, it generates more [anxiety] for them, and perhaps it would be important for them to have a psychology appointment.' (Fs1)

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be also called during these periods at the beginning of the process for an appointment with the psychologist!?' (Pa7: "I think so too"). For the psychologist to have, to have a closer relationship with the doctors and the, and the technicians of, the nurses, the ultrasound technicians.' (Pa10)

'Psychological appointments are important. And, and I think there is not everyone who, by phone call, will agree to engage with it, this psychological care program, maybe personally has more impact, I would say.' (Pa10)

<p>Category: Logistic implementation: scheduling the Beyond Fertility in-person sessions on days of medical appointments, tailoring the number and format of the sessions to patients' needs, include online</p>	<p>Conducting the sessions online and outside of working hours would be the most perceived beneficial format to conduct Beyond Fertility to overcome patients' expressed barriers, with only one patient referring they would prefer in-person sessions. If conducted in-person, patients would like to have the first session scheduled on the same day of their medical appointments.</p> <p><i>'Because in that way (online and outside of working hours) nobody knows where I am, I don't have to miss work, I don't have to travel, I don't</i></p>	<p>Psychologists referred that conducting the psychosocial sessions in an online format and outside of working hours would facilitate patients' engagement with Beyond Fertility but agreed that conducting it outside of working hours would imply mental healthcare professionals to work outside of working hours. If conducted in-person, one psychologist stressed that having car-parking and the sessions</p>	<p>Fertility specialists referred that conducting the psychosocial sessions in an online format and outside of working hours would facilitate patients' engagement with Beyond Fertility due to their constraints, but two fertility specialists agreed that conducting psychosocial sessions outside of working hours would imply mental healthcare professionals to work outside of working hours. One</p>
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<p>and outside of working hours delivery</p>	<p><i>have work piled up... All this weighs, doesn't it!?' (Pa4)</i></p> <p><i>'Yes, but I think, I think so, or at least it creates greater flexibility [sessions in an online format], at least in my case, if it were otherwise, I would not be able to participate.'</i> (Pa2)</p> <p>Patients agreed that the number and format of the Beyond Fertility sessions should be tailored to patients' needs, as patients might need more individual/couple sessions before the group sessions. One couple suggested having a final individual/couple session to evaluate patients' overall process.</p> <p><i>'I think the psychologist should, should, in the first individual session, evaluate if this would be enough for that particular couple.'</i> (Pa2)</p> <p>Four patients suggested conducting the sessions after EoT, every week or two weeks, and three agreed every month would be too much time between sessions. In addition, three patients referred it would not be</p>	<p>scheduled on the same day of the patient's medical appointment would facilitate their engagement. Regarding the number of sessions, one psychologist referred that patients could benefit from more than one individual/couple session before initiating the last cycle. After EoT, one psychologist referred that conducting the sessions outside the hospital could facilitate patients' engagement. One psychologist also highlighted the importance of having a structured and goal-oriented protocol for the group sessions.</p> <p><i>'We always try to schedule psychology on the day they [patients] come to the hospital for other appointments, right!? In a way to facilitate [patients' engagement].'</i> (Psy2)</p> <p><i>'Therefore, I have a period of time to [schedule] appointments, I start working</i></p>	<p>GYN/OBS referred that conducting the sessions in an online format also implies reduced resources from the hospital (i.e., less use of physical spaces and reduced number of professionals and patients in the hospital).</p> <p><i>'The fact that there are many sessions, if they are in-person, I don't know if couples will easily accept them. I think doing the group sessions outside of working hours, via Zoom, will increase acceptance. Because one thing is going to two in-person appointments, another thing is going to seven appointments, and I don't know if couples are very receptive to that.'</i> (Fs1) -<i>'Yes, yes (...) I think the use of technologies here can be an asset'</i> (Psy1).</p> <p><i>'Virtual means seems to me, even for the management of the space, the department, and the presence of all [in the clinic], it seems to me a way to, to be considered.'</i> (Fs6)</p>
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important whether psychosocial care after EoT is provided in or outside the clinic.

at 8:00 am, and therefore it goes until 3:30 pm. And so, the afternoon period, from which many times couples could benefit from some support [is not possible].’ (Psy1)

‘I think so, I think so, not so violent [receiving support outside the clinic], because it's returning again to a place that went wrong, that didn't give them what they wished.’ (Psy1)

The format (individual/couples; group) and the number of psychosocial sessions should be tailored to patients’ individual characteristics, as patients might need more individual/couple sessions before the group sessions. One nurse highlighted the need for more than one individual/couple session before patients initiate their last cycle. After EoT, two fertility specialists referred that conducting the sessions outside the hospital could facilitate patients’ engagement, with one GYN/OBS referring the opposite, claiming that the hospital could be more straightforward as patients are already familiarised with the context.

‘I think, I think there could be an alternative here, of actually choosing between group sessions or individual sessions (...) each time it is more and more

proven that the treatment has to be adapted to each couple, in the field of psychology this is still so much more [important], isn't it!? I think this possibility should be given, this alternative for the couple to choose.' (Fs4)

'I mean, it's like that, it's after work for couples, but in fact for the person, for the people delivering the intervention end up working outside of working hours.' (Fs1)

Note. EoT=end of unsuccessful fertility treatment; HCPs=healthcare professionals; Pa=patients; Psy=psychologist; Fs=fertility specialist; GYN/OB=obstetrician and gynaecologist.

**Appendix I: Questionnaires Used to Evaluate Beyond Fertility in Promoting Patients’
Psychosocial Adjustment to EoT (English Translation; Chapter 4)**

Section A: Personal context

Socio-demographic characteristics

Firstly, we would like to ask you some questions regarding your current life situation.

Age (in years):

Nationality:

- Portuguese
- Other, please specify:

Gender:

- Female
- Male
- Other, please specify:

Relationship status:

- Married
- In a relationship with cohabiting
- In a relationship without cohabiting
- Single
- Separated, divorced, widower/widowed

Partner’s gender (if applicable):

- Female
- Male
- Other, please specify:

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Relationship duration (if applicable):

Years Months

Partner's age (in years, if applicable):

Which one or ones of the following options do you consider best describe your belonging and/or origin? (only participants from one fertility centre answered this question)

- White / White Portuguese / of European origin
- Black / Black Portuguese / of African descent / of African origin
- Asian / Portuguese of Asian origin / of Asian origin
- Gypsy / Portuguese Gypsy / Roma / of Gypsy origin
- Other group, please specify:

- Mixed origin, please specify:

- I don't know

Religion (only participants from one fertility centre answered this question)

- No religion
- Catholic
- Protestant
- Jewish
- Muslim
- Other, please specify:

Education (select the largest cycle of studies successfully completed):

- No education
- Primary school
- Secondary school
- Bachelor's or master's degree

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- Doctoral degree

Current occupational status (select as many options as apply to you):

- Employed (on your own or someone else)
- Unemployed
- Student
- Retired
- Other, please specify:

Place of residence

- City, please specify

- Village, please specify:

During the last 12 months, how often have you had difficulties paying your bills?

- Never
- Rarely
- Sometimes
- Very often
- I do not know

During the last 12 months, how often have you not had enough money to buy food, clothing, or other things that your family needed?

- Never
- Rarely
- Sometimes
- Very often
- I do not know

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How do you consider your current physical health?

- Excellent
- Good
- Fair
- Poor

Do you have any chronic physical/psychological illness requiring treatment/hospitalization?

- No
- Yes, please specify:

Number of biological children (that is, with genetic linkage)?

- 0
- 1
- 2
- +2

Number of adopted children?

- 0
- 1
- 2
- +2

Number of adopted stepchildren (that is, children from a previous relationship of your partner)?

- 0
- 1
- 2
- +2

Are you a foster family (that is, a family entrusted temporarily with the care of children/youth at risk)?

- No
- Yes

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Household composition (that is, with whom you live):

- With my partner
- With my partner and child(ren) (biological, adopted, stepchildren)
- Alone (without family and without partner)
- Only with child(ren) (biological, adopted, stepchildren)
- With family (excluding partner and child(ren))
- With family and partner and/or child(ren)
- Institutionalised
- Other, please specify:

Fertility history and psychosocial care received

Next, we would like to ask you some questions regarding the In Vitro Fertilization or Intracytoplasmic Sperm Injection (IVF/ICSI) treatment that you will be starting soon.

At what age did you start trying to conceive naturally with your partner (in years)?

- Age (in years):

- I never tried
- I don't remember

At what age did you first seek medical assistance (in years)?

- Age (in years):

- I don't remember

How long have you been undergoing fertility treatment?

 Years Months

Previous treatment (please select all treatments you have undergone):

- Medication
- Surgery

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- Artificial Insemination (AI). How many treatment cycles have you undergone?

- In Vitro Fertilisation (IVF). How many treatment cycles have you undergone?

- Intracytoplasmic Sperm Injection (ICSI). How many treatment cycles have you undergone?

Did you have children from the previous treatment undergone?

- No. Please explain the reason(s) why the previous treatment(s) was/were not successful:

- Yes. How many?

Regarding the upcoming IVF/ICSI cycle, how will you proceed (for those who have a partner)

- With sperm and oocytes from the couple
- With sperm from the couple and oocytes donation
- With oocytes from the couple and sperm donation
- With sperm and oocytes donation

Regarding the upcoming IVF/ICSI cycle, how will you proceed (for those who did not report having a partner):

- With own oocytes and sperm donation
- With sperm and oocytes donation

According to your doctor, what is your probability or your partner's probability of becoming pregnant if you undergo this IVF/ICSI cycle?

- Please write the percentage here from 0-100%:

- My doctor did not tell me
- I do not know / I do not remember

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Personally, what do you believe is your probability or your partner's probability of becoming pregnant if you undergo this IVF/ICSI cycle?

- Please write the percentage here from 0-100%:

How do you rate the medical care you have been receiving?

- Excellent
- Very good
- Good
- Satisfactory
- Unsatisfactory
- Poor

Throughout your life, have you sought/received psychological support?

- No
- Yes

For how long did you receive psychological support?

 Years Months

Have you sought/received psychological support in the past for fertility-related issues?

- No
- Yes. What was your age when you sought this support (in years)?

For how long did you receive this psychological support?

 Years Months

Do you consider this support helped you?

- No
- Yes

Appendices

Representations about the importance of parenthood - Need for parenthood (NP) and Rejection of child-free lifestyle (RFL) subscales of the Fertility Problem Inventory [FPI; Newton et al. (1999); Portuguese validation: Moura-Ramos et al. (2012)]

The following statements express different opinions about fertility problems. Please indicate the degree to which you agree or disagree with each statement. If you have a child, respond according to how you feel at this moment, **after** having had the child.

	1: strongly disagree	2: moderately disagree	3: slightly disagree	4: slightly agree	5: moderately agree	6: strongly agree
Couples without a child are just as happy as those with children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pregnancy and childbirth are the two most important events in a couple's relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, being a parent is a more important goal than having a satisfying career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My marriage needs a child (or another child) (only respond to this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's hard to feel like a true adult until you have a child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A future without a child (or another child) would frighten me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could see a number of advantages if we didn't have a child (or another child)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel empty because of our fertility problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could visualize a happy life together, without a child (or another child) (only respond to this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Having a child (or another child) is not the major focus of my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times, I seriously wonder if I want a child (or another child)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not having a child (or another child) would allow me time to do other satisfying things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have often felt that I was born to be a parent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child (or another child) is not necessary for my happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As long as I can remember, I've wanted to be a parent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We could have a long, happy relationship without a child (or another child) (only respond to this statement if you have a partner)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a certain freedom without children that appeals to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will do just about anything to have a child (or another child)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section B: Psychosocial processes (mechanisms of change)

Acceptance - Acceptance cognitions subscale of the SCREEN-IVF [Verhaak et al. (2010); Portuguese validation: Lopes et al. (2014)]

The next items are statements from people with fertility problems. We ask you to indicate to what extent you agree with the statements selecting the number that most closely matches with what you think about the statement. Do not think too deeply, **your first impression** is usually best.

	1: do not agree	2: agree a little bit	3: agree	4: strongly agree
I can deal with the consequences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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of my fertility problems

I have learned to live with my fertility problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have learned to accept my fertility problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can accept my fertility problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I can cope with my fertility problems, even if they are not solved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can cope well with my fertility problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Perceived social support - Social Support subscale of the SCREEN-IVF [Verhaak et al. (2010); Portuguese validation: Lopes et al. (2014)]

These statements are about your social relationships. Read carefully and select the number of items that most closely match with how you feel about your social relationships. The questions refer to how you felt about your social relationships **the last six months**.

	1: nearly never	2: sometimes	3: regularly	4: often
When I feel tense or nervous, there is someone to help me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I experience some nice things, there is someone with whom to talk about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am in pain there is someone to comfort me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am sad there is someone with whom to talk about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I need help with a job I cannot carry out alone there is someone to help me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Meaning-making - Posttraumatic Growth Inventory [PTGI-SF; Cann et al. (2010); Portuguese validation: Lamela et al. (2014)]

Read each statement carefully and indicate to what extent you feel you have changed as a result of fertility treatment. For each of the statements, indicate the degree to which this change has occurred in your life as a result of fertility treatment.

	1: I did not experience this change as a result of fertility treatment	2: I experienced this change to a very small degree as a result of fertility treatment	3: I experienced this change to a small degree as a result of fertility treatment	4: I experienced this change to a moderate degree as a result of fertility treatment	5: I experienced this change to a great degree as a result of fertility treatment	6: I experienced this change to a very great degree as a result of fertility treatment
I changed my priorities about what is important in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a greater appreciation for the value of my own life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do better things with my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a better understanding of spiritual matters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a greater sense of closeness with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I established a new path for my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know better that I can handle difficulties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a stronger religious faith	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I discovered that I'm stronger than I thought I was	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I learned a great deal about how wonderful people are	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Pursuit of new life goals - Goal Reengagement (GR) Scale of the Goal Adjustment Scale (GAS; Wrosch et al., 2003)

During their lives, people cannot always attain what they want and are sometimes forced to stop pursuing the goals they have set. We are interested in understanding how you have been reacting to the difficulty of having a biological child. Please indicate the extent to which you agree or disagree with each of the following statements, **as it usually applies to you.**

1: strongly disagree	2: disagree	3: neutral	4: agree	5: strongly agree
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If I have to stop pursuing an important goal in my life...

...I convince myself that I have other meaningful goals to pursue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I start working on other new goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I think about other new goals to pursue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I seek other meaningful goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I tell myself that I have a number of other new goals to draw upon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...I put effort toward other meaningful goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section C: Outcomes - Psychosocial adjustment

Mental health - Mental Health Inventory [MHI-5; Berwick et al. (1991); Portuguese validation: Pais-Ribeiro (2001)]

Next, you will find a set of questions about **how you feel in your day-to-day life**. Please answer each statement indicating the number that best describes how things have been for you.

1: all of the time	2: most of the time	3: a good bit of the time	4: some of the time	5: a little of the time	6: none of the time
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During the past month, how much of the time were you a happy person?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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How much of the time, during the past month, have you felt calm and peaceful?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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How much of the time, during the past month, have you been a very nervous person?

How much of the time, during the past month, have you felt downhearted and blue?

How much of the time, during the past month, have you felt so down in the dumps that nothing could cheer you up?

Well-being

Satisfaction With Life Scale [SWLS; Diener et al. (1985); Portuguese validation: Neto (1993)]

Below are five statements that you may agree or disagree with. Using the **1 to 7 scale below**, indicate your agreement with each item. Please be open and honest in your responding.

	1: strongly disagree	2: disagree	3: slightly disagree	4: neither agree nor disagree	5: slightly agree	6: agree	7: strongly agree
In most ways my life is close to my ideal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have gotten the important things I want in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Flourishing Scale [FS; Diener et al. (2009); Portuguese validation: Silva and Caetano (2011)]

Next, there are some statements with which you can disagree or agree. Please the extent to which you agree or disagree with each of the following statements.

	1: strongly disagree	2: disagree	3: slightly disagree	4: neither agree nor disagree	5: slightly agree	6: agree	7: strongly agree
I lead a purposeful and meaningful life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My social relationships are supportive and rewarding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am engaged and interested in my daily activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I actively contribute to the happiness and well-being of others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am competent and capable in the activities that are important to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a good person and live a good life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am optimistic about my future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People respect me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Quality of life - Core module of the Fertility Quality of Life [FertiQoL; Boivin et al., (2011);

Portuguese validation: Melo et al. (2011)]

For each question, indicate the response that most closely reflects how you think and feel. Relate your answers to your current thoughts and feelings. Some questions may relate to your private life, but they are necessary to adequately measure all aspects of your life.

For each question, select the response that is closest to your **current thoughts and feelings**.

	0: completely	1: a great deal	2: moderately	3: not much	4: not at all
Are your attention and concentration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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impaired by thoughts of infertility?

Do you think you cannot move ahead with other life goals and plans because of fertility problems?

Do you feel drained or worn out because of fertility problems?

Do you feel able to cope with your fertility problems?

For each question, select the response that is closest to your **current thoughts and feelings**.

0: very dissatisfied 1: dissatisfied 2: neither satisfied nor dissatisfied 3: satisfied 4: very satisfied

Are you satisfied with the support you receive from friends with regard to your fertility problems?

Are you satisfied with your sexual relationship even though you have fertility problems? (only respond to this statement if you have a partner)

For each question, select the response that is closest to your **current thoughts and feelings**.

0: always 1: very often 2: quite often 3: seldom 4: never

Do your fertility problems cause feelings of jealousy and resentment?

Do you experience grief and/or feelings of loss about not being able to have a child (or more children)?

Do you fluctuate between hope and despair because of fertility problems?

Are you socially isolated because of fertility problems?

Are you and your partner affectionate with each other even though you have fertility

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problems? (only respond to this statement if you have a partner)

Do your fertility problems interfere with your day-to-day work or obligations?

Do you feel uncomfortable attending social situations like holidays and celebrations because of your fertility problems?

Do you feel your family can understand what you are going through?

For each question, select the response that is closest to your **current thoughts and feelings**

0: an extreme amount 1: very much 2: a moderate amount 3: a little 4: not at all

Have fertility problems strengthened your commitment to your partner? (only respond to this statement if you have a partner)

Do you feel sad and depressed about your fertility problems?

Do your fertility problems make you inferior to people with children?

Are you bothered by fatigue because of fertility problems?

Have fertility problems had a negative impact on your relationship with your partner? (only respond to this statement if you have a partner)

Do you find it difficult to talk to your partner about your feelings related to infertility? (only respond to this statement if you have a partner)

Are you content with your relationship even though you have fertility problems? (only respond to this statement if you have a partner)

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Do you feel social pressure on you to have (or have more) children?

Do your fertility problems make you angry?

Do you feel pain and physical discomfort because of your fertility problems?

Additional questions

Next, we would like to ask you a question regarding the In Vitro Fertilization or Intracytoplasmic Sperm Injection (IVF/ICSI) treatment you underwent:

How do you rate the medical care you received? (Only assessed at T2 in Chapter 5 - RCT Trial)

- Excellent
- Very good
- Good
- Satisfactory
- Less satisfactory
- Poor

Will you start a new cycle of IVF/ICSI treatment in the next two months? (Only assessed at T2 in Chapter 5 - RCT Trial)

- No
- Yes

Have you started a new cycle of IVF/ICSI treatment in the last three months, or will you start a new cycle in the next two months? (Only assessed at T3 and T4 in Chapter 5 - RCT Trial)

- No
- Yes

Appendix J: Focus Group Script (English Translation; Chapter 4)

Introduction

We would like to express our gratitude for your participation in this discussion session. Your contribution is highly relevant to the aims of this doctoral project, and so we thank you for being here today. The purpose of this discussion is to have the opportunity to know your perceptions (i.e., suggestions and opinions) regarding the Beyond Fertility intervention to gain a better understanding of the feasibility of implementing and improving it.

We have some questions prepared in advance to help guide this discussion in a more organised manner, but please feel free to ask other questions or add additional information that you consider important as we progress in this discussion.

It is important that we remember everything we say without losing any information, making it impossible to write everything down in full in real-time. For this reason, we ask you to record this discussion. This discussion is confidential, and only the project researchers will listen to the recording, which will be destroyed at the end of the study. We emphasise that you can stop and/or delete the recording anytime during the session. Does EVERYONE agree to record the discussion?

We are here solely to gather information. There are no right or wrong answers, and all opinions are equally welcome, even if they may be different or opposing, so we hope you feel comfortable sharing with us what you truly think.

We ask that everything you hear here today remains confidential and is not shared outside of this discussion group. This discussion will last approximately 90 to 120 minutes, but if you deem it necessary, we can take short breaks. Please refrain from interrupting, and let each person speak clearly and in their turn.

Does anyone have any questions before we begin?

Specific questions

Intervention demand

1. How would you describe your experience with Beyond Fertility?

Intervention acceptability

2. Do you think participating in this intervention was beneficial for you?
 - a. Prompts: if yes/no: reasons, in what ways do you believe it helped you (personally/cognitively and relationally)?

(Does anyone want to add anything else to this?)

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Patients' perceived appropriateness of the 1st session of Beyond Fertility (preventive care)

Now, I would like us to talk a little bit about the first session, in which patients are preparing to start their LAST IVF/ICSI cycle...

3. Regarding the first session before starting your last treatment cycle, in what ways do you think this session helped you when you experienced the end of your unsuccessful treatment?
 - a. Prompts: usefulness and importance of the session, the relevance of the topics discussed, additional aspects you wish had been addressed, how you think this session prepared you for the unsuccessful end of treatment, brochure about Beyond Fertility.

(Does anyone want to add anything else to this?)

Patients' perceived appropriateness of the 2nd to 7th session of Beyond Fertility (early intervention care)

Now, I would like us to talk a little bit about the sessions after the treatment cycle ended (only directed to those who received the sessions)

4. Regarding the individual/couple session after the treatment ends, focusing on the importance of self-compassion, what did you think of the contents and strategies covered in this session?
 - a. Prompts: use of the self-compassion diary - provided for home use, design and ease of use, additional aspects participants would like to have seen addressed.
5. Concerning the group sessions after the treatment ended, what did you think of the contents and strategies covered in these sessions?
 - a. Prompts: usefulness of the sessions, relevance of the topics discussed, additional aspects participants would like to have seen addressed, appropriateness of therapeutic strategies used in the sessions (including mindfulness exercises).
6. Regarding the group sessions, what did you think of the materials provided for home use?
 - a. Prompts: use, design and ease of use, duration.
7. Do you consider that one individual/couple session after unsuccessful end of treatment and before starting the group sessions was sufficient?
 - a. Prompts: reasons; if not, alternative.

(Does anyone want to add anything else to this?)

(Does anyone want to add anything else to this?)

Intervention practicality

Now, I would like us to talk a little bit about the practical issues of Beyond Fertility...

8. What do you think of the way you were invited to Beyond Fertility?

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- a. Prompts: reasons, perceived barriers, suggestions, alternative contact method.
9. What do you think of the time between each session?
- a. Prompts: session before the start of treatment, session after EoT, group sessions.
10. What do you think of the format of Beyond Fertility (online vs. in-person, individual/couple vs. group)?
- a. Prompts: constraints, advantages, number of sessions, alternative format.
11. What do you think of the questionnaires we asked you to fill out throughout this process?
- a. Prompts: perceived barriers, duration, difficulty, format: online vs. paper.

(Does anyone want to add anything else to this?)

Intervention implementation (barriers and facilitators)

Now, I would like to address practical issues to the implementation of Beyond Fertility...

12. What do you think may have hindered your engagement in Beyond Fertility?
- a. Prompts: personal constraints (e.g., lack of motivation); practical constraints (lack of time).
13. Any suggestions you would like to see reflected in Beyond Fertility that could somehow increase your engagement?
- a. Prompts: alternative strategies and sessions; alternative dynamics (e.g., group continuity as an online support group without the therapist).

Closing question

14. Is there any further information about what we have discussed today that you would like to share before we finish?

Appendix K: Themes Relating to Acceptability Topics About What Were Patients’ Most Appreciated Aspects of Each Session of the Beyond Fertility Intervention and the Least Appreciated Ones (n=57 Anonymous Answers; Chapter 4)

Theme, description	Illustrative quotes
<p>Positive evaluations about Beyond Fertility’s aims. Patients expressed very positive reactions towards Beyond Fertility session 1 (i.e., preventive care). Patients appreciated being informed about what most patients experience during the last treatment cycle and what they could expect if it ended unsuccessfully. Although this was the perception of most patients, one patient stressed this session was too focused on the negative side of treatment, which, in their view, was inappropriate as patients should be hopeful at this stage. Another patient stressed that discussing past and future negative emotions could be challenging and trigger distress in patients. Regarding the sessions after EoT (i.e., early intervention care), patients particularly valued working on self-compassion, defining and pursuing valued life goals, and exercising mindfulness. Only one patient referred they did not appreciate the range of tools provided in session four, but no further information was provided.</p>	<p><i>‘Without any doubt, the full clarification’; ‘Although we understand that the aim was to raise awareness that the process may not go well, as we are at the beginning of the IVF process, with all possibilities still open, we feel that too much has been said about the possibility of ending it unsuccessfully’; ‘Perhaps remembering past feelings and those that will come is always challenging to talk’; ‘Strategies and tools to use in everyday life’; ‘The themes discussed’; ‘Deepening self-compassion’; ‘Understanding how, through our emotions, we can set goals to have a full and happy life beyond motherhood’; ‘The tools given by the psychologist to help us define new life goals according to the values we desire beyond parenthood’; ‘Availability of tools for relaxation and guidance’.</i></p>
<p>Positive evaluations about Beyond Fertility’s format. Patients expressed very positive reactions towards receiving preventive and early intervention care. They valued preventive care as they appreciated being able to talk about their feelings and expectations in a moment filled with uncertainty. They also valued early intervention care as it is a time when they feel very helpless, alone and without</p>	<p><i>‘Being given the opportunity to express how we feel’; ‘Openness to talk about the situation in question without any restrictions’; ‘Being able to talk (vent)’; ‘I liked sharing what I was feeling and the difficulties I was going through’; ‘Sharing our experiences with others’; ‘Sharing and realising we are not alone’.</i></p>

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support resources. Patients also expressed positive reactions towards Beyond Fertility mixing individual/couple with group support. From patients' views, the individual/couple format provided them with a private one-to-one space to freely share their emotions, fears, and concerns, and the group format allowed them to listen and share their experiences with others going through the same journey.

Beyond Fertility helped patients to prepare for EoT and supported them in this transition. Patients considered that preventive care helped them better understand and feel more prepared for the treatment cycle and possible adverse outcomes. Patients also felt validated and understood by the psychologist, realising their emotions, fears and concerns were expected. Regarding early intervention care, patients considered these sessions to provide them with strategies that enabled them to better cope with EoT and helped them contemplate and pursue other paths beyond parenthood.

Empathy of the psychologist. Patients expressed specific positive comments about the psychologist. They considered the psychologist to be very empathic and responsive. Patients felt comfortable sharing their emotions, fears, and concerns in the sessions, as they perceived the psychologist could understand the journey they were going through. Indeed, patients stressed it was beneficial to have someone from the outside who was an expert in psychosocial fertility care.

No disadvantages to the sessions. Most patients expressed they could not see any aspects they did not appreciate or appreciated less.

'Being able to clarify doubts that I was afraid to ask, but I felt comfortable in asking them'; 'Provided us with an excellent open conversation'; 'Allowed us to realise there are several stages of acceptance or even grief'; 'Made us think we are no different, that the fears and anxieties we feel are common to couples going through the same thing'; 'Made us understand we are not alone'; 'Showed us there is a whole world beyond the pain'; 'Gave us strategies to cope with infertility'; 'Made us see more clearly the path to follow'.

'The friendliness, attention and knowledge demonstrated by the psychologist'; 'Friendliness [of the psychologist], how the psychologist made us feel at ease from the beginning of the session, and their professionalism'; 'The understanding and compassion of the psychologist'; 'Having someone outside family'.

'I don't have anything that I didn't appreciate. Psychological support is essential!'; 'I don't feel like there were any less good aspects'.

Appendix L: Themes Relating to the Process Evaluation Data of the Focus Groups (n=6; Chapter 4)

Themes and sub-themes description	Illustrative quotes
INTERVENTION	
THEME: (Acceptability and Demand) Patients considered Beyond Fertility needed and beneficial, meeting a perceived high demand for support	
<p>Category: Demand for holistic and patient-centred support during and, in particular, after EoT. Fertility treatment is an emotional, relational, and socially burdensome experience. Patients feel overwhelmed with negative emotions and thoughts and perceive they lack information about their treatment process and support from their clinic and peers during and particularly after its end.</p>	<p><i>'The whole [treatment] process is highly challenging'</i> (Pa4, woman, received session1); <i>'All the negative thoughts, frustrations, lack of control, guilt we feel'</i> (Pa1, woman, received all sessions); <i>'I always felt dumped during the process [in the clinic] (...) We've never had mental health care, and I think it's fundamental for the couple'</i> (Pa1); <i>'The not knowing of what the next step was and not having that information or that space and time to ask caused me anxiety during the whole process'</i> (Pa4); <i>'Nobody talks, nobody. We are in the [waiting] room, aren't we!? With so 20 couples or more and no one speaks with each other'</i> (Pa1); <i>'We don't have many people to share [their emotions and experiences]'</i> (Pa6, man, received session1).</p>
<p>Category: Very positive reactions were expressed towards Beyond Fertility. Patients considered Beyond Fertility an essential help during the treatment process. Beyond Fertility provided them with a safe place where they felt at ease to share their emotions, fears, and concerns, supported and understood. Patients were grateful for engaging with Beyond Fertility and considered it should be implemented as routine practice in fertility clinics. Patients also</p>	<p><i>'We feel grateful for the sessions'</i> (Pa5, men, received all sessions); <i>'It [Beyond Fertility] helped us a lot (...) it was a shame to only have it in the last treatment'</i> (Pa3, woman, received session 1); <i>'A safe space where we can express our doubts, our anxieties, our fears, our apprehensions (...) that sometimes we might think are not normal and are perfectly normal, and it's perfectly normal to feel that way, and I think this is extremely important'</i> (Pa4); <i>'I think the psychologist was tireless, in the way that she treated us and in the care she provided us,</i></p>

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expressed very positive reactions towards the psychologist. They felt they had someone they could turn to, stressing that being an expert in psychosocial fertility care was extremely valuable.

without a doubt that was important during the process' (Pa4); 'I also think it was important that we get together and share these issues, talking about these issues with other couples, it also helps' (Pa5); 'I wish it [Beyond Fertility] can actually be implemented in the clinics, because I've been in two [clinics], and I think there's a big lack of support' (Pa1).

Category: Beyond Fertility helped patients to accept and cope with their fertility journey and unfulfilled wish for children. Patients perceived Beyond Fertility eased the psychosocial impact of EoT. Overall, patients considered Beyond Fertility validated and normalised their fears and concerns. They perceived that preventive care gave them a more comprehensive view of treatment and made them feel supported during this process. Those who received the early intervention care believed these latter sessions decreased their feelings of loneliness and helped them better accept their fertility journey and find alternative ways to look at it. Patients reported that Beyond Fertility gave them a new hopeful outlook towards the future, providing them with a range of coping strategies they perceived they could use beyond the sessions and apply in other challenging life situations.

'It was reassuring throughout the process' (Pa4); 'How to cope not to let these feelings get in the way of our decisions to move forward' (Pa5); 'For me, these sessions were important to devalue the feeling of guilt a bit (...) the negative thoughts that we were having throughout this process, the difficult memories and how to let go of these negative thoughts, the frustrations, the powerlessness, the guilt, all of that (...) the relationship with the partner, how we interacted in relation to the fertility process, I think it was also important' (Pa1); 'It was important for us. It was also enlightening, and it was good for us. It [Beyond Fertility] gives us important tools' (Pa5); 'As the Pa5 said a moment ago, I think the process was lighter because we could see that other couples were going through the same thing as us and we were not aliens' (Pa1); 'As Pa4 was saying, [Beyond Fertility] give us tools, made us see ahead' (Pa1).

THEME: (Implementation and practicalities) Beyond Fertility's activities, format and mode of delivery were perceived as appropriate, although a larger group would have been beneficial.

Category: Beyond Fertility's activities were appropriate and valuable. Patients considered the aims of each session to be

'Topics addressed were helpful' (Pa1); 'We were always sent the materials and even in the end we were sent them all once again, which is great for us (...) The

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appropriate. Patients perceived the materials helped them to better understand what was discussed in the sessions. Due to the daily rush, patients reported they did not have the time to work on the additional materials provided at the end of the sessions but perceived these materials were a resource they had to turn to whenever they felt they needed to or when confronted with future challenging situations (even in other life domains). Patients particularly valued the defusion strategies, the self-compassion exercises, and the step-by-step guidance on how to set and pursue valued life goals.

Category: Beyond Fertility's format and mode of delivery were flexible and adequate. Patients found the individual/couple format ideal, as it helped them build confidence in the psychologist, gave them the opportunity to discuss more personal topics, and made them feel more at ease in the group. Regarding this latter format, patients expressed very positive reactions, considering it crucial in the process. Patients valued conducting the sessions online and outside of working hours due to geographic and work constraints. Scheduling the group sessions every two weeks allowed the group to find a suitable time for everyone and gave patients more time to acknowledge what was addressed in the session.

Category: Having a larger group would have been valuable for patients. Maintaining the same group throughout the process

materials were the appropriate ones for sure, but sometimes it is difficult to find the time to dedicate to this' (Pa5); 'It was the same with us, with the day-to-day rush' (Pa1). 'Some of them [therapeutic exercises] I didn't do, but when I did, it made us think about things, not just gloss over everything' (Pa1); 'Some tools that call my attention, for example, self-compassion, knowing how to value ourselves and knowing how to love ourselves, right!?' (Pa5); 'And the definition of future goals that can fulfil us, which I think, as Pa4 said that fertility is not everything, that there are other values, other goals that we have to set and that we have to pursue, that can also fulfil these needs of affection, of giving' (Pa5).

'Having individual sessions before joining the group let patients feel more at ease, by gradually start talking about these issues individually' (Pa5); 'Having sessions every week is too frequent, due to time constraints (...) it gave us time to think, and having a weekend in between (...) gave us time for the next session' (Pa1); 'I believe it is advantageous [online format] because there aren't as many constraints. It's easier to coordinate, both in terms of schedules and locations, where we can be. It's easier for everyone, I think.' (Pa1).

'During the group phase, I found it important that we always kept the same people from the beginning to the end; that was important (...) helped build trust,

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fostered bonding and trust within the group, but patients perceived they would have benefited more from a larger group.

and people felt confident speaking' (Pa5); 'Perhaps having more people could help enrich the group. I understand there were probably constraints, but it's just one aspect that could be improved' (Pa5).

EVALUATION PROTOCOL

THEME: (Implementation and practicalities) Recruitment strategy was empathic, informative, and appropriate. Although the online assessments were time-consuming, patients considered them comprehensive and easily accessible.

Category: Recruitment strategy was considered appropriate.

Patients considered they were empathically invited to participate and adequately informed about the study procedures. They considered they were given the proper time to decide about their participation. No further suggestions were reported.

'I think it was very well done. The psychologist contacted us first, asked if we were interested. We saw what the project was. I think it's in the right way' (Pa1); 'I also agree with Pa1. We were first contacted by phone, and the entire project was explained to us, and then the information was sent in writing, which allowed us to read it again. I think it was quite appropriate. I really liked it' (Pa4); 'I don't think there's another way to do it' (Pa6).

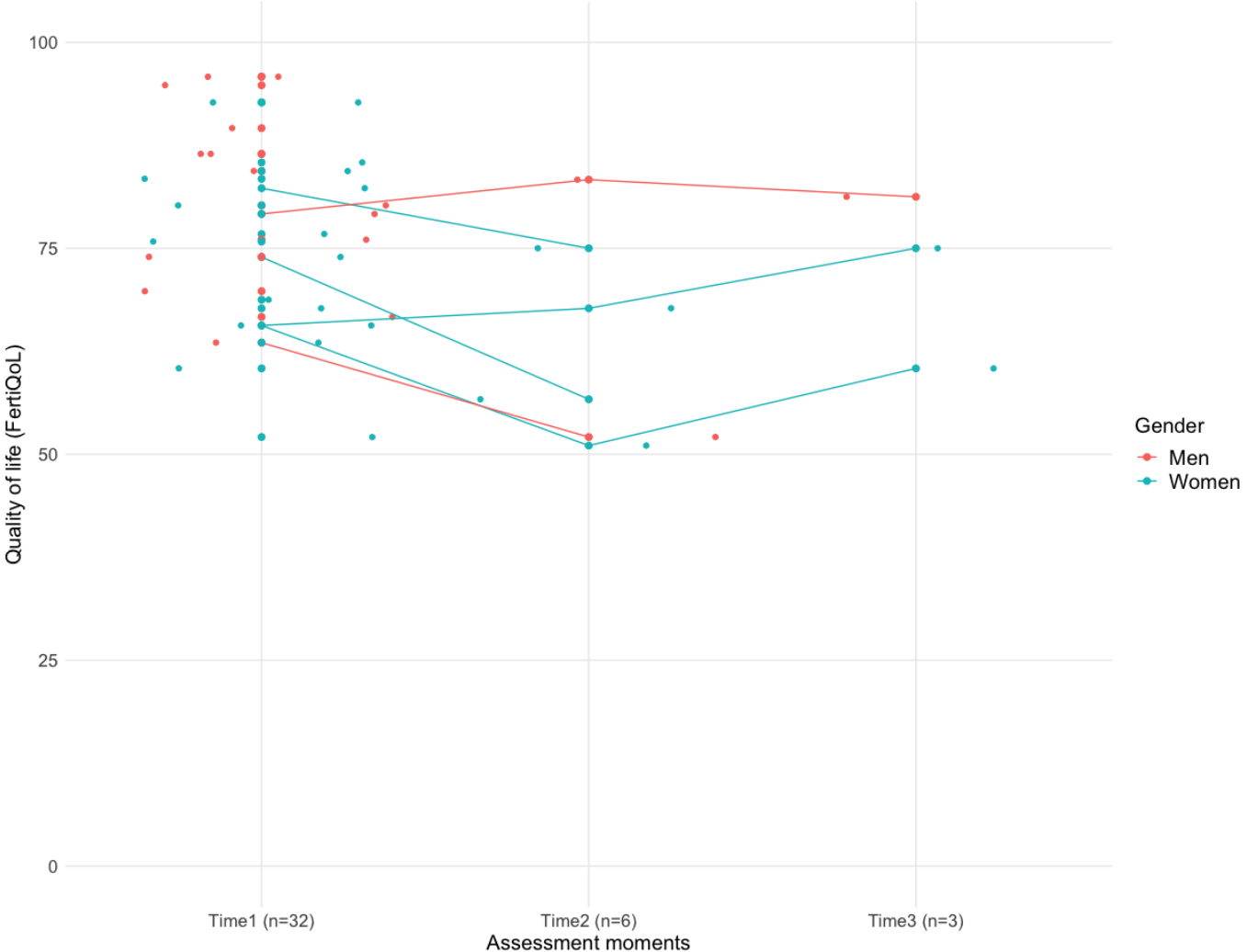
Category: Online assessments were time-consuming, but this was not perceived as a downside. Patients considered the online assessments facilitated their participation due to accessibility. They also considered the questionnaires comprehensive, and although they were time-consuming, they considered it would not be a factor that prevented patients from participating.

'With regard to the surveys, I don't see any problem. If it's online, it's easy to fill out, it's easy to send, they were quite understandable, it was easy to understand and respond' (Pa5); 'Sometimes they were a bit long, but that's it, they were manageable, it was only necessary to dedicate some time to it. I suppose it's necessary, so it's part of the process' (Pa5); 'I agree with Pa5' (Pa4).

Note. EoT=end of unsuccessful fertility treatment.

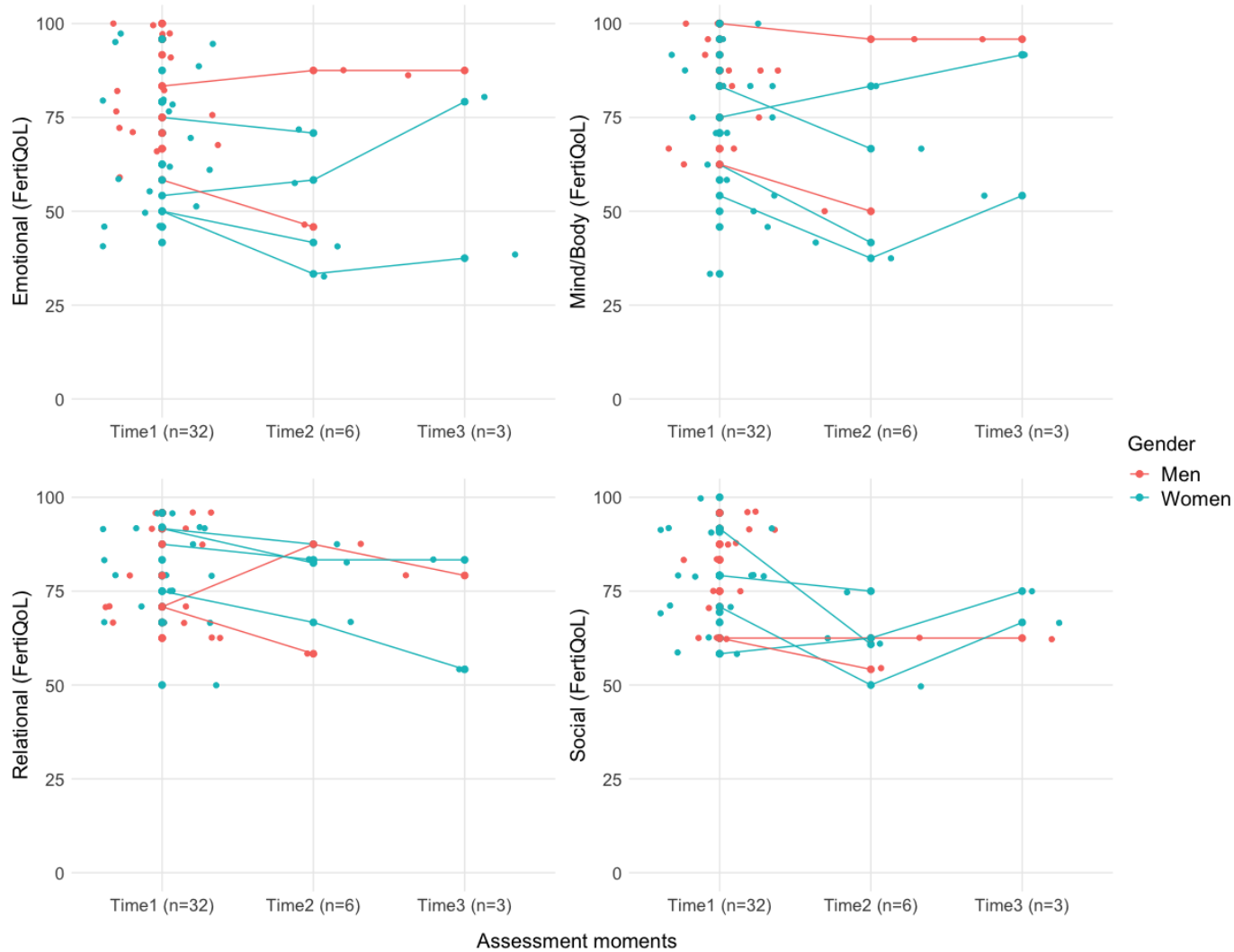
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Appendix M: Individual Total Scores and Trajectories on the Study Primary Outcome Quality of Life at T1 (Baseline), T2 (Post-Exposure to the Individual/Couple Sessions) and T3 (Post-Exposure to the Group Sessions) per Gender (Men, Women). Lines Connect the Participants Who Completed Both T1 and T2, and Those Who Completed T1, T2 and T3 (Chapter 4)



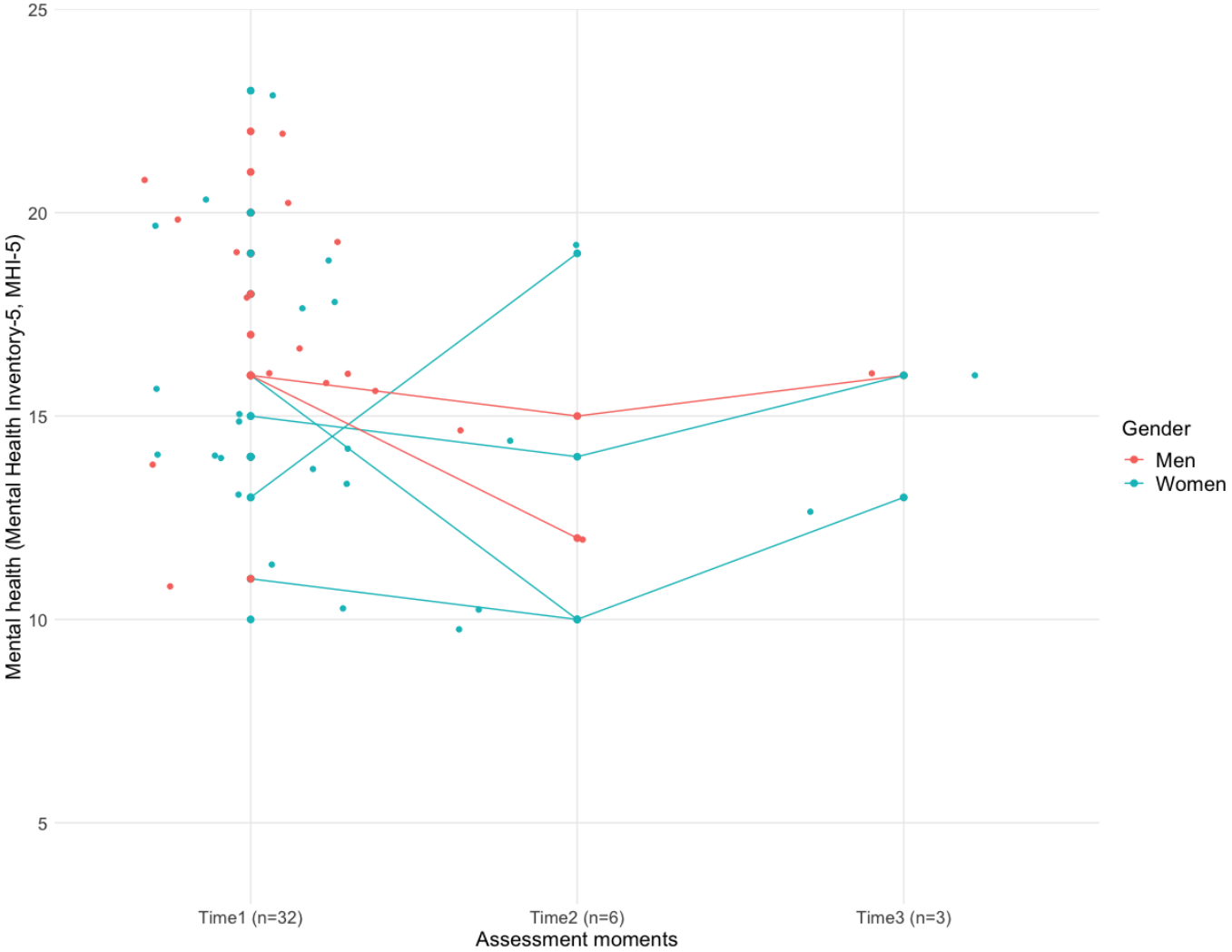
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Appendix N: Individual Total Scores and Trajectories on the Dimensions of the Study Primary Outcome Quality of Life at T1 (Baseline), T2 (Post-Exposure to the Individual/Couple Sessions) and T3 (Post-Exposure to the Group Sessions) per Gender (Men, Women). Lines Connect the Participants Who Completed Both T1 and T2, and Those Who Completed T1, T2 and T3 (Chapter 4)



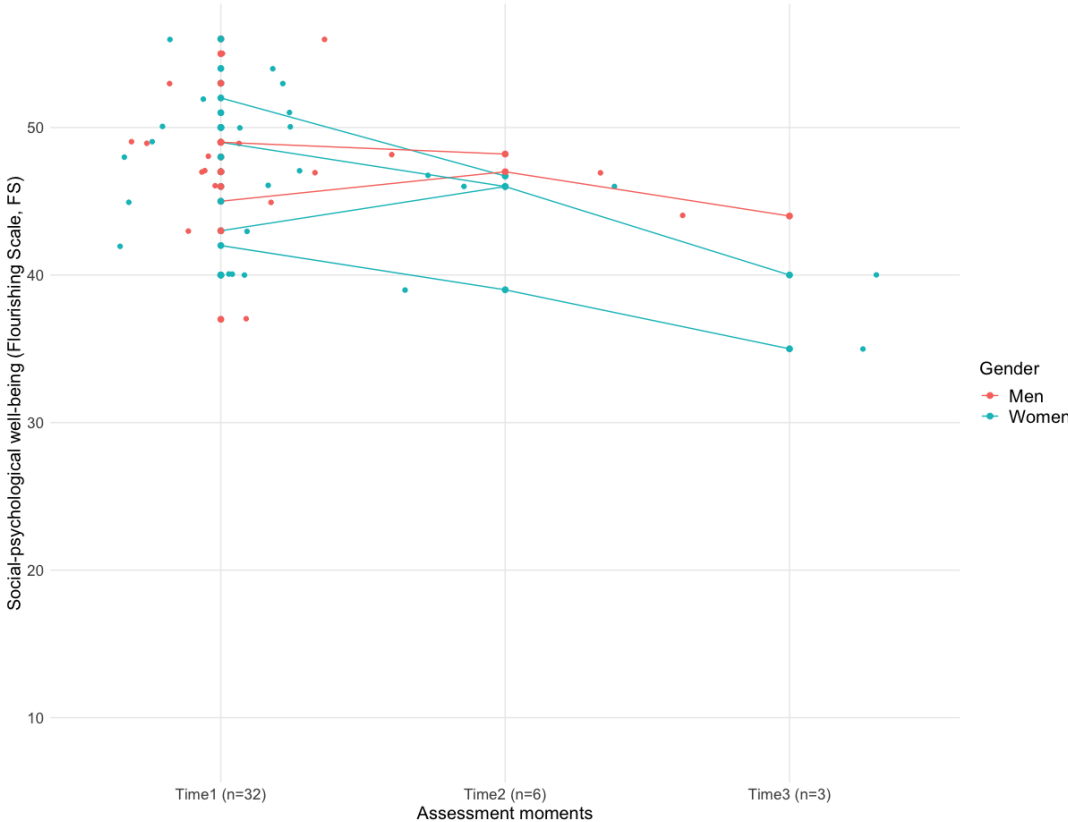
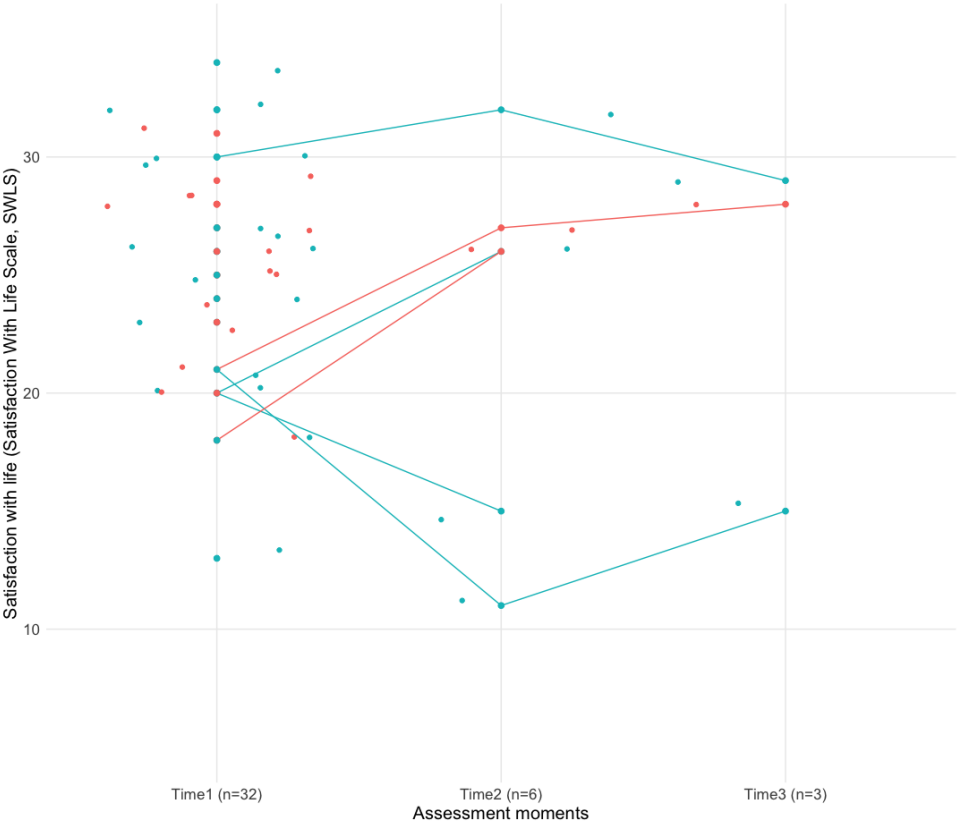
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Appendix O: Individual Total Scores and Trajectories on the Study Secondary Outcome Mental Health at T1 (Baseline), T2 (Post-Exposure to the Individual/Couple Sessions) and T3 (Post-Exposure to the Group Sessions) per Gender (Men, Women). Lines Connect the Participants Who Completed Both T1 and T2, and Those Who Completed T1, T2 and T3 (Chapter 4)



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Appendix P: Individual Total Scores and Trajectories on the Two Measures of the Study Secondary Outcome Well-Being at T1 (Baseline), T2 (Post-Exposure to the Individual/Couple Sessions) and T3 (Post-Exposure to the Group Sessions) per Gender (Men, Women). Lines Connect the Participants Who Completed Both T1 and T2, and Those Who Completed T1, T2 and T3 (Chapter 4)



Appendix Q: Two-Arm Parallel RCT - CONSORT Checklist (Chapter 5)

CONSORT 2010 checklist of information to include when reporting a randomised trial

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	137
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	N/A
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	137-139
	2b	Specific objectives or hypotheses	139-141
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	142
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	N/A
Participants	4a	Eligibility criteria for participants	144
	4b	Settings and locations where the data were collected	144

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Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	144-148
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	150-152
	6b	Any changes to trial outcomes after the trial commenced, with reasons	N/A
Sample size	7a	How sample size was determined	152
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	153
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	153
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	153
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	153
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	N/A
	11b	If relevant, description of the similarity of interventions	N/A

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Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	154-155
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	155-156
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	157-158
	13b	For each group, losses, and exclusions after randomisation, together with reasons	157-158
Recruitment	14a	Dates defining the periods of recruitment and follow-up	156
	14b	Why the trial ended or was stopped	156
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	162-163
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	164, 171
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	164-178
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	N/A
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	N/A
Harms	19	All-important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	174

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Discussion

Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	186-187
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	186-187
Interpretation	22	Interpretation consistent with results, balancing benefits, and harms, and considering other relevant evidence	179-185

Other information

Registration	23	Registration number and name of trial registry	142
Protocol	24	Where the full trial protocol can be accessed, if available	142
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	xx

Appendix R: Beyond Fertility Poster Displayed in the Waiting Room of the Fertility Centres (Original Portuguese Version; Chapter 5)

Apoio Psicológico Especializado

Para além da Fertilidade

Beyond Fertility
ALÉM DA FERTILIDADE

QUANDO?

- no período em que se prepara para iniciar o seu último ciclo de FIV/ICSI, &
- após o seu resultado, no caso de este ciclo não correr como tanto desejam.

CONSTRUÇÃO DE UM FUTURO NUMA NOVA DIREÇÃO

sessão 1 | sessão 2 | sessões 3-7

ciclo de tratamento

Contactos: Dra. Mariana Sousa Leite. Psicóloga e aluna de doutoramento
Escola de Psicologia, Universidade de Cardiff (sousaleitem@cardiff.ac.uk)

CARDIFF UNIVERSITY OF HEALTH & LIFE SCIENCES
ISPUP FCT Fundação para a Ciência e a Tecnologia
UNIÃO EUROPEIA
REPÚBLICA PORTUGUESA
PORTUGAL 2020 NORTE2020

Appendix S: Beyond Fertility Information Flyer Given to Participants at the Fertility Centres (Original Portuguese Version; Chapter 5)

SOBRE O PROJETO

O desenvolvimento e avaliação da intervenção *Para além da Fertilidade* é o produto de um projeto de Doutoramento, inserido no programa doutoral em Psicologia da Universidade de Cardiff, no Reino Unido. Este projeto é financiado pela Fundação para a Ciência e a Tecnologia (FTC), tem como instituição de acolhimento em Portugal o Instituto de Saúde Pública da Universidade do Porto (ISPUP) e teve a aprovação das Comissões de Ética da Escola de Psicologia da Universidade de Cardiff, do Centro Hospitalar Universitário de São João (CHUSJ)/Faculdade de Medicina da Universidade do Porto (FMUP), do Centro Hospitalar Universitário do Porto (CHUPorto)/Instituto de Ciências Biomédicas Abel Salazar (ICBAS), do Centro Universitário de Lisboa Central (CHULC), e do Centro Académico de Medicina de Lisboa (CAML).

CONTACTOS

Dra. Mariana Sousa Leite
Estudante de Doutoramento, Escola de Psicologia,
Universidade de Cardiff (sousaleitem@cardiff.ac.uk)

Prof. Doutora Sofia Gameiro
Professora Associada, Escola de Psicologia,
Universidade de Cardiff (gameiros@cardiff.ac.uk)

Prof. Doutora Bárbara Figueiredo
Professora Associada com Agregação, Escola de Psicologia,
Universidade do Minho (bbfi@psi.uminho.pt)

Prof. Doutora Raquel Costa
Investigadora Doutorada Integrada, ISPUP
(raquel.costa@ispup.up.pt)

Beyond Fertility
PARA ALÉM DA FERTILIDADE

Logos: ONEMI, ISPA, FCT, REPÚBLICA PORTUGUESA, PORTAL 2020 NORTE2020

A INTERVENÇÃO PARA ALÉM DA FERTILIDADE

O *Para além da Fertilidade* pretende apoiá-lo/a:

- neste momento em que se prepara para iniciar o seu último ciclo de FIV/ICSI,
- após o seu resultado, no caso de este ciclo não correr como tanto desejam.

Esta intervenção tem por base:

- a investigação existente na área,
- a experiência dos pacientes, em diferentes fases do seu último ciclo de tratamento,
- a experiência de profissionais de saúde de especialidades diferentes que trabalham diariamente na área.

SESSÕES DE ACOMPANHAMENTO PSICOLÓGICO

O *Para além da Fertilidade* pretende ajudá-lo/a:

- a ser mais compreensivo/a consigo mesmo/a e na relação com o/a seu/sua companheiro/a,
- a aceitar e tolerar os pensamentos, memórias e emoções angustiantes,
- a lidar com diversas situações sociais difíceis, com as quais os pacientes são frequentemente confrontados no seu quotidiano,
- a explorar e investir em novos objetivos de vida vitalizantes e congruentes com os seus valores pessoais.

NÃO ESTÁ SOZINHO/A

CONSTRUÇÃO DE UM FUTURO NUMA NOVA
DIREÇÃO

**7 SESSÕES: DUAS SESSÕES INDIVIDUAIS OU DE
CASAL E CINCO SESSÕES EM GRUPO COM
OUTROS PACIENTES A VIVER A MESMA
EXPERIÊNCIA**

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Appendix T: Table of Comparison of Completers and Non-Completers of the Two-Arm Parallel RCT on their Sociodemographic Characteristics, Fertility History and Psychosocial Care Received at Baseline (T1 Assessment; Chapter 5)

	Trial non-completers	Trial completers	$t[CI]/\chi^{2b}$
	(<i>n</i> =33)	(<i>n</i> =82)	
	<i>n</i> (%)	<i>n</i> (%)	
Sociodemographic characteristics			
Age (years) <i>M</i>(<i>SD</i>)[interval range]	36.67(4.83)[26-50]	38.55(3.25)[29-49]	2.06[0.04-3.73]*
Women	19(57.58)	55(67.07)	0.93
Portuguese	29(87.88)	81(98.78)	6.72*
Place of residence			
City	29(87.88)	64(78.05)	1.47
Village	4(12.12)	18(21.95)	
University education	14(42.42)	57(69.51)	7.31**
Employed^a	29(90.63)	76(92.68)	0.13
Financial difficulties <i>M</i>(<i>SD</i>) [interval range]^a	1.41(0.70)[1-3.50]	1.17(0.40)[1-3]	-1.82[-0.50-0.03]
In a heterosexual relationship	33(100.00)	82(100.00)	-
Duration (years) <i>M</i> (<i>SD</i>) [interval range]	12.45(4.90)[5-23]	11.70(6.10)[0-24]	-0.63[-3.11-1.61]
Have children	14(42.42)	21(25.61)	3.14
Biological	8(24.24)	15(18.29)	
Adopted	2(6.06)	2(2.44)	
Stepchildren	4(12.12)	5(6.10)	

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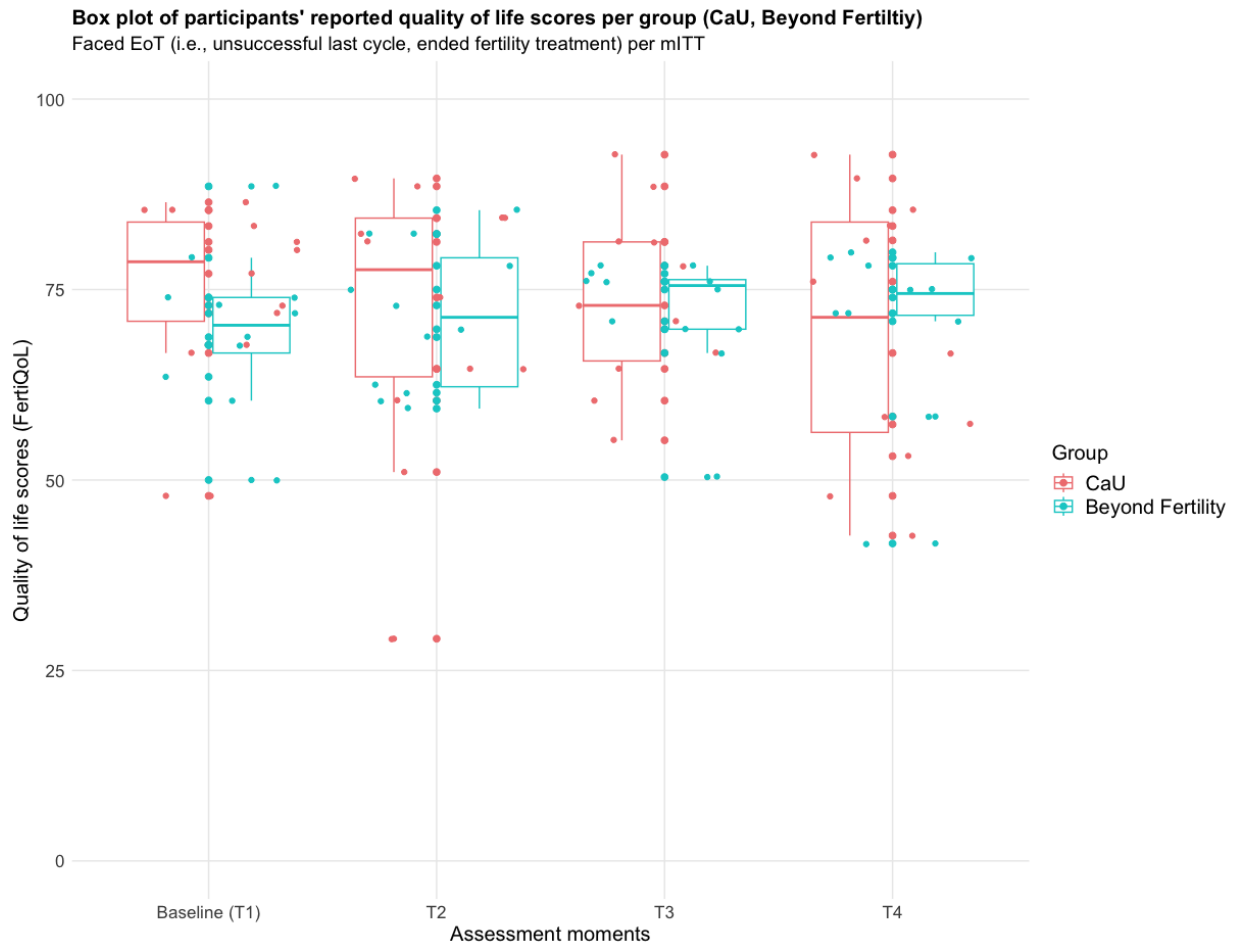
Fertility history and previous psychosocial care received

Age at which started trying to conceive spontaneously	29.43(4.92) [20-43]	33.45(4.63) [23-46]	3.85[1.95-6.09]***
<i>M(SD)[interval range]^b</i>			
Age at which sought medical help	30.91(5.43) (19.5-44]	34.39(4.36) [24-48]	3.39[1.44-5.51]**
<i>M(SD)[interval range]^b</i>			
Duration undergoing treatment	3.60(2.34)[0.17-8]	2.41(3.06)[0-19]	-2.01[-2.36-(-0.02)]*
<i>M(SD)[interval range]</i>			
Previous treatments	29(87.88)	61(74.39)	2.52
Medication	16(48.48)	25(30.49)	3.32
Surgery	5(15.15)	15(18.29)	0.16
Artificial insemination	10(30.30)	14(17.07)	2.49
Number of cycles	1.75(1.04)[1-4]	1.62(1.12)[1-5]	-0.28[-1.16-0.89]
<i>M(SD)[interval range]</i>			
IVF/ICSI	25(75.76)	48(58.54)	3.01
Number of cycles	2.83(1.09)[2-5]	2.22(1.50)[1-8]	-1.78[-1.31-0.08]
<i>M(SD)[interval range]</i>			
Had children from previous treatment^a	6(21.43)	8(13.33)	.94
Received psychosocial support in the past	14(42.42)	30(36.59)	0.34
Duration (years)	1.39(1.41)[0.08-4]	1.70(2.08)[0.08-8]	0.50[-0.93-1.55]
<i>M(SD)[interval range]</i>			
Due to fertility-related issues	7(50.00)	4(13.33)	6.84*
Considered it helpful	3(42.86)	2(50.00)	0.05

Note. *M*=mean; *SD*=standard deviation; *CI*=confidence interval.

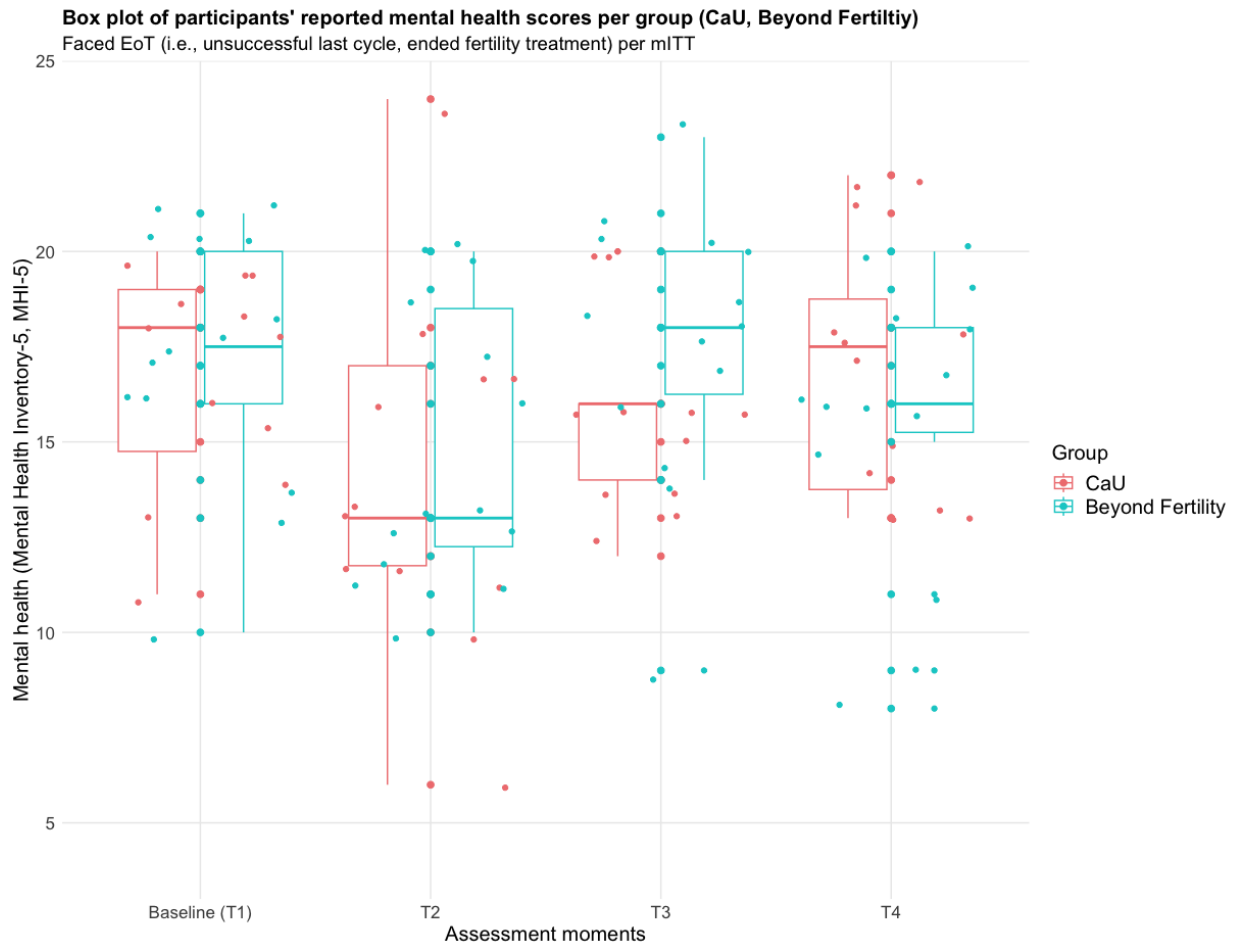
^avalid percentages were reported (^a1-2 participants did not report on this variable; ^b12-17 participants did not report on this variable). **p*<0.05. ***p*<0.01. *p*<0.001.

Appendix U: Participants' Reported Quality of Life scores at Baseline (T1) and Two Weeks (T2), Three Months (T3) and Six Months (T4) After EoT for the Sub-Group of Participants Who Faced EoT According to the Allocated Groups (CaU; Beyond Fertility; Chapter 5)



Note. EoT=end of unsuccessful fertility treatment. Participants who faced EoT: ended the last cycle with a negative result and decided to end treatment. Scores are presented for the sub-group of participants who faced EoT and were analysed for the primary outcome ($n=24$) according to the allocated groups (CaU: $n=12$; Beyond Fertility: $n=12$).

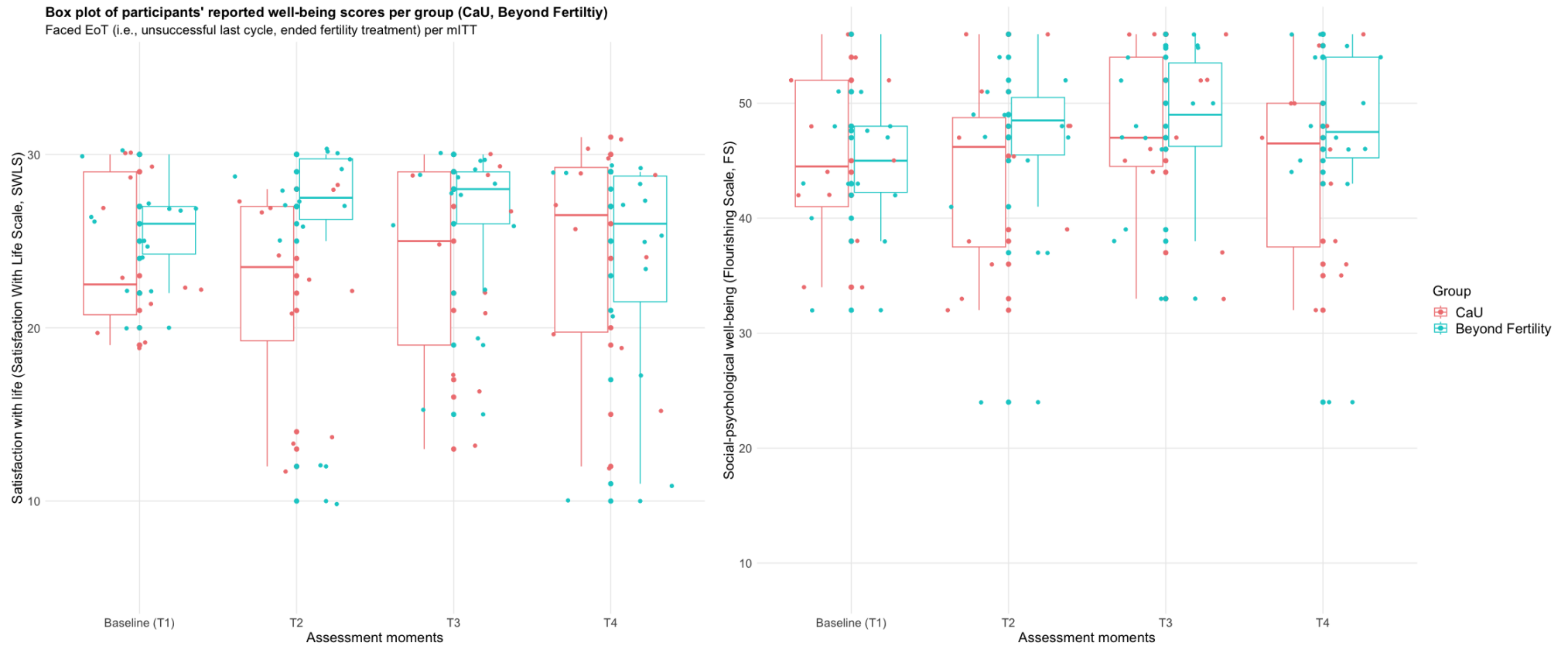
Appendix V: Participants' Reported Mental Health Scores at Baseline (T1) and Two Weeks (T2), Three Months (T3) and Six Months (T4) After EoT for the Sub-Group of Participants Who Faced EoT According to the Allocated Groups (CaU; Beyond Fertility; Chapter 5)



Note. EoT=end of unsuccessful fertility treatment. Scores based on raw data from four items, ranging from 4 to 24, with higher scores indicating a higher level of general mental health. Scores are presented for the sub-group of participants who faced EoT and were analysed for the primary outcome ($n=26$) according to the allocated groups (CaU: $n=12$; Beyond Fertility: $n=14$).

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Appendix W: Participants' Reported Well-Being Scores at Baseline (T1) and Two Weeks (T2), Three Months (T3) and Six Months (T4) After EoT for the Sub-Group of Participants Who Faced EoT According to the Allocated Groups (CaU; Beyond Fertility; Chapter 5)



Note. EoT=end of unsuccessful fertility treatment. Scores are presented for the sub-group of participants who faced EoT and were analysed for the primary outcome ($n=26$) according to the allocated groups (CaU: $n=12$; Beyond Fertility: $n=14$).

Appendix X: Focus Group Script (English version; Chapter 6)

Introduction

As you should have read on the information sheet and informed consent, this discussion will be recorded, both video and audio taped. This is for data analysis purposes, and this data will only be shared with members of the research team. Once the discussions have been transcribed, the video and audio files will be permanently deleted, and all data will be anonymised. Therefore, if any 'word-for-word' quotes are used in the published results, then efforts will have been made, so you will not be able to identify who said that.

Given the topic of today's discussion, it is possible that, at some points, you may feel upset or uncomfortable. In the end, we forward you links to online support resources, so you can access them if you feel you need to. We will also email you a debrief form, where you can find and access several support services and resources. The debrief form will also have our contact, and we encourage you to contact us if you have any concerns and wish to speak to one of us. You are, of course, free to withdraw at any point in time today from this Zoom discussion. If this happens, we will contact you after as a duty of care to check that you are alright. Does anyone have any questions or concerns about any of this?

Before we get started, I would just like to go over the code of conduct that everyone should adhere to today so we can have a discussion that is as balanced and respectful as possible.

Everyone is entitled to their own opinions, views and ideas based on their own personal and professional (for healthcare professionals, HCPs) experiences. It is fine if you wish to agree or disagree with what someone else is saying, but please do so as respectfully, non-judgmentally and compassionately as possible. We also ask that you try not to interrupt someone else when they are speaking and wait for your turn to say something. Please feel free to use the virtual hand function. You don't have to say anything if you don't want to, but we are very keen to hear the views of everyone attending today; everyone's contributions are equally important. If you don't understand a question or need clarity on something, then please do not hesitate to ask.

Please also try to focus on the specific topic under discussion, as time is limited. We understand everyone has their own experiences, but please consider which are directly relevant to the discussion.

The discussion will last at most 1h30 (for patients)/1h (for HCPs), so we should be finished by XX. As this discussion is time-limited, there may be points where we must move on to the section or question. If this discussion ends and you still feel that you have more to say, then please feel free to email us with additional written comments after the discussion today has ended.

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First, we will ask you about your views and experiences of conversations you have had with healthcare professionals (for patients) / patients (for HCPs) about fertility treatment being unsuccessful. When we refer to unsuccessful treatment, we mean when all attempted cycles were not successful, and no new cycles will be attempted. We recognise that patients and HCPs do not always know if patients have reached this point, but we would like to hear from you about when and how you started thinking this might have been a possibility.

After, we will be presenting a proposal for support resources for patients and HCPs to facilitate these conversations and support patients through this experience. We will be asking for your feedback on these developed resources.

Finally, before we end, you will be debriefed, as previously mentioned.

Proposal questions on EoT preventive care provision at clinics

Focusing on your experiences and views of unsuccessful treatment:

1. What are your views and experiences about how clinics currently support patients for unsuccessful treatment before, during and after treatment?
 - a. Prompts: If you have personal experience, please share. What could clinics do to improve this support? What things would you need from your clinic/healthcare team to better cope with unsuccessful treatment? **(only for patients)**
2. Do you think having the opportunity to discuss and prepare in advance for the possibility of treatment being unsuccessful is helpful?
 - a. Prompts: Why? When and in what circumstances would it make sense to have these discussions? What could be helpful about these discussions?
3. What would make it easier to have these conversations?
4. Are there any situations or valid reasons NOT to have these conversations?
 - a. Prompts: Please explain why.

Proposal questions on the evolving MyJourney web-based educational resources prototypes

Please note that all these Resources you are about to see are initial proposals, and our aim is to collect feedback from you so that we then develop the final versions that, hopefully, will better meet your needs. We appreciate all types of feedback. Everything you can tell us will be helpful, so feel free to express both positive and negative views.

Presenting participants with the evolving web-based educational resources prototypes

5. What are your views and thoughts about the Resources we presented?
 - a. Prompts: What did you like most? What did you like the least?

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6. Do you think these Resources fit the fertility clinics' organisational culture?
7. Do you think these Resources can create any benefits?
 - a. Prompts: for patients, for healthcare professionals, or clinics?
8. Would you expect any negative effects from using these Resources?
 - a. Prompts: for patients, for healthcare professionals, or clinics? Are there any other approaches you think would be more helpful?

Video animation

9. What are your views on the video?
 - a. Prompts: How can we improve it?
10. How would you react if your clinic invited you to watch this video? (for patients) How do you think patients would react if their clinic invited them to watch this video? (for HCPs)
 - a. Prompts: Positive and negative thoughts and feelings it may trigger? How (and when) would you like to be invited to watch it? (for patients) How (and when) do you think patients would like to be invited to watch it? (for HCPs) What would you think if this video on your clinic's webpage?

Webpage for patients

11. What are your views about this webpage?
 - a. Prompts: How can it be improved? Is there anything missing?
12. Would you explore this webpage on your own? (for patients) Do you think patients would explore this webpage on their own? (for HCPs)
 - a. Prompts: If no, what do you think is stopping you? (for patients). If no, what do you think is stopping patients? (for HCPs)

Webpage for healthcare professionals

13. What are your views about this webpage?
 - a. Prompts: How can it be improved? Is there anything missing?
14. Do you think these Resources would encourage healthcare professionals to have discussions about unsuccessful treatment with their patients?
 - a. Prompts: What would need to be improved (in case of negative views).

Closure and debrief

It is now approaching the finishing time; therefore, we are going to end the discussion here. Does anyone have any brief final comments or questions?

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I would like to thank you again for participating. We really appreciate your time and contributions to this important research.

As mentioned, you will each be emailed the debrief information soon after this Zoom session ends, with details of how your data will be processed and made available, as well as the team's contact details, should you have any questions. The debriefing document will also have links to support services and resources, but I will also put links into the chat box to support resources now should you wish to access them right now.

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Appendix Y: Focus Group Framework Matrix: One Row per Theme and Category, and One Column per Stakeholders' Group (HCPs; Patients and Patient Advocates; Chapter 6)

	Healthcare professionals (N=15)	Patients and patient advocates (N=41)
Theme: Idiosyncratic, cumulative and protracted burden of fertility care can only be addressed with integration and continuity of psychosocial care		
Category: Fertility treatment pathways are idiosyncratic and unpredictable	HCPs referred patients' access to treatment depends on the healthcare system patients have, which varies across clinics and countries (<i>'accessibility [to third-party reproduction] also differs greatly, I think, between countries'</i> FG1, N1). HCPs also stressed that many <i>'patients change from one clinic to the other'</i> (FG2, CM1), with or without their advice, which makes it difficult to plan treatment in the long term.	<p>Patients undergo treatment for different reasons (e.g., health reasons, same-sex couples, single women), and the same patient reports different experiences over each cycle, as treatment complications differ and cycles fail in different ways (<i>'Each of them [treatment cycle] failed at a different stage'</i> FG5, Pa1), each new cycle is adjusted according to the patient's clinical history, and different procedures are offered in response (<i>'I'm going for the second cycle, and this time is through egg and sperm donation'</i> FG1, Pa7). Experiences also vary between patients, depending on the healthcare system they access (<i>'The prepaid is a struggle because beyond the pain you feel for not being able to be parents, there is a lot of bureaucracy in Argentina with the prepaid'</i> FG2, Pa9), their geographic location (<i>'The clinic is 230 kilometres away'</i> FG2, Pa8) and financial possibilities (e.g., access to the private sector).</p> <p>From the patients' perspective, the unpredictability of their treatment journey impacts their psychosocial adjustment during and after treatment and overall satisfaction with the clinic, which for some patients leads them</p>

to look for another clinic (*'We're not entirely sure that we will stop, but we have definitely stopped with our current clinic, partly because of how they handled this'* FG5, Pa2). Patients referred that clinics should map all possible treatment pathways and share these with patients so they can anticipate and experience the journey more positively.

Category: Fertility treatment has cumulative impacts for all

Cumulative impacts result from:

- Low treatment success rates (*'Half of the couples don't get the child from IVF'* FG1, CL1; *'Three in ten [patients] will not become pregnant'* FG1, N1),
- Repeated failures and loss, which are extremely difficult for patients: *'I agree that it is very difficult when the result comes back negative, and then negative again, and they keep coming back negative'* (FG2, CM1),
- Treatment add-ons: *'there are also endless treatments with doing a lot of add-ons which are not successful'* (FG2, CL2), particularly in the private sectors, *'because they earn a lot of money with useless add-ons'* (FG2, CL2), *'the main problem is the search for money so for treatment'* (FG2, EMB1),

Cumulative impacts result from:

- Low treatment success rates and lack of control over the outcome (*'What I am still trying to learn with infertility is that nothing is under our control, nothing'* FG1, Pa7),
- Repeated failures and loss, which are extremely difficult for patients: *'the greatest pain I've ever had in my life'* (FG1, Pa7), *'grieving on not having the baby but also not becoming a mom'* (FG5, Pa4), *'I've had three miscarriages. I can't take it anymore'* (FG1, Pa6),
- Protracted nature: treatment drags on for a long time due to the long waiting lists (*'about four years' worth of waiting list, and we did not have four years to wait'* FG4, Pa1) and because patients undergo multiple treatment cycles and change providers for these cycles (*'Move to another clinic for a second opinion, search for a new sort of private consultant'* FG4, adv2),
- Providers always offer more treatment (*'One more, a little bit more, another donor or double donor'* FG2, Pa13), particularly in the private

- Stigma associated with infertility, in particular, in specific cultures (*'I know that for some, in some countries or some subcultures, in western countries as well, there can be a huge stigma on infertility and childlessness'* FG2, ETH1),
 - Impact on patients: treatment greatly impacts patients' emotional well-being, *'patients are very anxious all the time during the treatments'* (FG2, CM1).
 - Confrontation with EoT triggers surprise, denial, anger, and frustration: when the treatment cycle ends unsuccessfully, and patients are not offered more cycles, many show *'resistance'* (FG1, N1) and anger: *'anger is the number one, number one response'* (FG1, CL1), and most patients *'at a certain point, disappear'* (FG1, N1).
 - sector, *'because obviously, it is convenient for them as a clinic that you continue because it is still money'* (FG1, Pa7),
 - Complications during treatment and unexpected adverse outcomes: *'My first cycle ended like a surprise ectopic [pregnancy], and I definitely did not feel prepared for the idea that there were other outcomes besides pregnant or not pregnant, and that was a really, really huge shock'* (FG5, Pa2),
 - Impact on patients: fertility treatment is *'an incredibly difficult journey'* (FG4, adv2), *'physically and mentally brutal'* (FG5, Pa1), *'I genuinely thought I was going mental'* (FG5, Pa1), particularly after unsuccessful cycles and ultimate EoT. Physically, patients feel they have *'lost control of your body (...) no autonomy over it'* (FG5, Pa1),
 - Lack of formal and informal support: patients feel *'the process is super lonely'* (FG1, Pa3), even more so during the Covid-19 pandemic (*'my husband couldn't go in, so I received the news alone. It was very hard. I left heartbroken from there'* FG1, Pa4), and in particular at EoT. A minority of patients share the process with their close ones, but overall, patients feel unsupported and do not feel understood, even by the clinical staff. Patients feel *'retreated into like an IVF bubble (...) I don't feel there was anybody I could talk to about it because nobody understood what it was like to stab yourself every day'* (FG5, Pa1),
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- Impact on the partnership: *'how my husband supported me, and, in some sense, he didn't know how or wasn't prepared or didn't on some level'* (FG5, Pa1),
- Confrontation with EoT triggers surprise, denial, anger, and frustration: Patients go through an unexpected roller coaster of emotions when reach EoT: *'I never expected to respond the way I did [when treatment was unsuccessful] (...) my world fell through the floor when I got the news, and I've never known a feeling like it, and it is the most isolating thing in the world even if you were doing it as a couple'* (FG5, Pa1). Patients feel they *'completely lose [their] identity'* (FG5, Pa1) and go through an *'existential crisis'* (FG5, Pa2). They feel *'really mad that I wasted the last like four years of my life (...) I didn't look after me, didn't do the things I should have and didn't have joy in my life'* (FG5, Pa2). After EoT, patients need some time to acknowledge this event and *'reconnect with yourself and your life and prioritise you and self-care'* (FG5, Pa1). They feel the frustration associated with EoT which they believed is shared by everyone involved, *'the consultant, the clinic, everyone who wishes results are always positive'* (FG3, Pa2).

<p>Category: Satisfying care experiences</p>	<p>HCPs referred to empathic and integrated psychosocial care as associated with a higher quality of patient-centred care and patients' overall</p>	<p>Positive and negative experiences of empathic and integrated psychosocial care are described below, which, in patients' views, were</p>
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require empathic and integrated psychosocial care through the whole treatment pathway, and especially for EoT

satisfaction with the care provided. Positive and negative determinants of empathic care are described below.

Positive determinants:

- Empathic and timely support during and in the immediate aftermath of EoT

In some private clinics, *'the medical colleagues always call the patients two, three days after the procedure to check if everything is fine'* (FG2, CM1), and the mental-health team contacts patients and *'try to we try to make us [psych team] always available for patients every time is possible'* (FG2, Psych2).

Negative determinants:

- Lack of emotional support provision after EoT

'After they [patients] finish [treatment], they feel abandoned (...) maybe the clinic make a phone call to say them [patients] that treatment was unsuccessful, but does not offer, for example, further discussion' (FG1, Psych1).

associated with better quality of and higher satisfaction with the clinic-provided care:

Positive determinants:

- Supportive, empathic and responsive relationship with an HCP

Feeling validated and supported by HCPs (*'The doctor was very warm, very empathetic'* FG2, Pa4; *'Very kind, after a negative result he [the clinician] always asks me how I am psychologically'* FG3, Pa3),

Having someone to turn to at any time during and after treatment (*'The midwife has been like my support, let's say. I chat with her on WhatsApp. And I think she has been my fundamental support throughout the treatment'* FG1, Pa1),

Receiving psychosocial support (*'They [the clinic] do have psychology sessions included in the treatment'* FG1, Pa7) and, in particular, group support (*'It was a mutual support group with different couples with a series of experiences that have truly been one of the best things we have had in this process, especially before trying any treatment'* FG2, Pa3). All patients considered this support essential and highly beneficial, as it helped them feel validated and understood and become aware of and cope with the roller coaster of emotions triggered by treatment.

Negative experiences:

- Lack of empathy of HCPs

No validation of emotions: *'there's no containment for how hard it is'* (FG1, Pa6). *'Inappropriate'* (FG1, Pa6) comments and lack of *'empathy'* (FG1, Pa2) from HCPs when sharing adverse outcomes or talking about treatment procedures or available future options, *'they [HCPS] remain very cold'* (FG1, Pa3), *'there is no human warmth there, no attention because sometimes a word is enough, isn't it!?'* (FG3, adv1), *'it was like an administrative process'* (FG2, Pa7),

Regardless of how treatment results are communicated (in-person, by phone, email, being the patient who communicates it to the clinic), patients do not feel supported nor validated, *'I started crying during the phone call [to inform about the unsuccessful cycle], and there wasn't even nearly a validation of my feelings'* (FG3, Pa1).

High workload *'sometimes it is one more patient on a list of 20'* (FG3, adv1).

Patients felt they were treated as in a *'conveyor belt'* (FG5, Pa1, Pa5). The care was provided in a rush, *'which is not acceptable at all in these circumstances'* (FG4, adv2), *'losing that personalised touch'* (FG5, Pa5).

- Lack of emotional support provision

Most patients feel *'[psychosocial] support is totally deficient'* (FG2, Pa1). Many patients referred they *'have not had any support from the clinic of any kind'* (FG1, Pa5), especially poor after unsuccessful cycles and

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treatment: *'they [clinic] only called me to say that it failed. There is no session to talk about it'* (FG1, Pa2), *'the support really was zero'* (FG2, Pa5), *'they just left us'* (FG5, Pa1).

- Lack of access and screening/referral to medical and psychosocial care

Long waiting lists for psychosocial support (*'six-month waiting list? I need someone to talk to now'* FG4, Pa1), low frequency of support, and deficient referral processes (*'she [HCP] did say that she would refer me to the counsellor, but then I never got any contact'* FG5, Pa1). Patients highly endorsed this latter constraint. Most patients referred that the patient *'who has to insist on'* (FG1, Pa1) support (both medical and psychosocial), in particular after treatment,

Some patients *'feel like I'm begging. I feel like I'm wasting their time'* (FG1, Pa2). Many patients ended up self-referring outside their fertility clinics (*'the psychological help that I have taken has been because I feel that I can't take it anymore, but not because my doctor has told me to go to a psychologist'* FG1, Pa6), but acknowledged there are high financial costs associated with it.

<p>Category: Patients who feel empowered to take control over</p>	<p>HCPs also referred to different perceptions about shared decision-making and organisation of care in the clinic that contribute to higher quality of patient-centred care and patients' overall satisfaction with it.</p>	<p>Patients described different experiences of shared decision-making and organisation of care in the clinic that contribute to more positive patients' perceptions about the quality of the provided care and higher</p>
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<p>their treatment and parenthood decision-making have more satisfying care experiences</p>	<p>Positive and negative determinants of care are described below:</p> <p>Shared decision-making:</p> <p><u>Positive determinants:</u></p> <ul style="list-style-type: none"> • <u>Timely information provision</u> <p>In some private clinics, HCPs give patients opportunities to discuss their concerns, both during and after treatment (<i>'We always ask them to come back [after unsuccessful treatment] to talk to the doctor' FG2, CM1</i>).</p> <p><u>Negative determinants</u></p> <ul style="list-style-type: none"> • <u>Lack of information provision</u> <p>After EoT, patients do not have an opportunity to discuss their treatment and future plans, <i>'clinics make a phone call to tell them that treatment was unsuccessful, but do not offer, for example, further discussion (...) an appointment to discuss what happened at the end (...) They [patients] need a sort of follow up meeting with the clinic, with the doctors to understand and close the process. I notice this gap in care' (FG1, Psych1),</i></p>	<p>satisfaction with it. Positive and negative experiences are described below:</p> <p>Shared decision-making:</p> <p><u>Positive determinants:</u></p> <ul style="list-style-type: none"> • <u>Information provision and shared decision-making</u> <p>Patients valued having the opportunity (during and after EoT) to be encouraged and given the time to discuss their concerns and decide about their treatment and future options. Patients felt their consultant <i>'answered all our questions' (FG2, Pa8)</i> and <i>'gave us a range of possibilities' (FG2, Pa9)</i>. Patients referred that <i>'although the result itself was the same [negative] (...) the way we were treated was what made the difference' (FG2, Pa14)</i>.</p> <p><u>Negative determinants:</u></p> <ul style="list-style-type: none"> • <u>Lack of opportunities for shared decision-making</u> <p>Patients did not feel involved in their treatment plan (<i>'I need to feel much more listened to' FG1, Pa2</i>) and did not feel they had the information needed to make informed and timely decisions (<i>'But what is that? I mean, why don't they [HCPS] talk to me about it before I've made my decision?' FG1, Pa4</i>), impacting their overall satisfaction with and evaluation of the quality of the provided care. Although treatment-informed consent presented information on probabilities and risks of</p>
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Patients need to seek information on their own (*'I don't know how it is in the UK, but here in Finland, people devour all the information available. Any information and all the information they [patients] need: Finnish sources, English language sources, any sort of sources'* FG1, CL1).

Organisation of care:

Positive determinants

- Access to holistic care

HCPs working in the private sector tended to describe and value more holistic, multidisciplinary and personalised practices. Patients tend to have contact with all staff members, *'we also have psychologists. When the patient starts ovarian stimulation, we also create a WhatsApp group. We have a clinician, we have people from orientation [counselling], there is a pharmacologist and a nurse [in the WhatsApp group]'* (FG2, CL3).

Negative determinants

- Lack of access and screening/referral to medical and psychosocial care

treatment, patients felt it did not promote autonomy: the consent is associated with the *'legal part of treatment'* (FG3, Pa1), and the information is not presented nor discussed in a comprehensive way (*'Although they [HCPs] tell you, for example, you can ask questions and anything, you can ask the midwife or your doctor before signing [the informed consent], I feel that it is like they give you the papers and it's like read it and sign it and hand it in'* FG1, Pa4),

Patients felt they *'don't have the tools to decide'* (FG2, Pa2); *'we are not entirely sure [when] we will stop'* (FG5, Pa1). Patients *'are thirsty for answers and information'* (FG3, Pa2) but receive *'little information from the beginning'* (FG1, Pa4). Patients felt HCPs *'skimp on information'* (FG2, Pa2), with some perceiving *'they [HCPs] assume we already know and don't tell us or assume we don't care'* (FG3, Pa2). The information was overall insufficient (not covering treatment procedures, reasons for unsuccessful cycles/treatment, continuing vs discontinuing treatment, alternative options and pros and cons), given about the next treatment step and not tailored to the patient's circumstances (*'not knowing and not getting answers it's difficult throughout the journey, but (...) near the end it gets more difficult and more painful and very much more heightened'* FG4, adv2; *'they didn't give us any warning about what it would be like before the failed cycles, just as Pa1 said. We went into our third cycle, saying: -"This is it, this is our last one. We want to pull out all*

Usually, patients are not offered support (both medical and psychosocial), in particular after EoT, *'it is the patient who has to ask for an appointment'* (FG1, Psych1). HCPs only tend to refer those patients who show significant distress for support (*'If we're trying to convince them [patients] to stop and they're resistant, then we might offer them a consult with the psychologists of our centre'* FG1, N1).

the stops, you know, leave no stone unturned, tell us everything" (...) and in the follow-up chat, they were like: *"Oh well, here's this other thing that you could do"*, and we were like: *"Why didn't you tell us this before? We were very serious that this was our last time, we have no more money"*. Then they immediately suggested donation with like no warning' FG5, Pa2). Therefore, patients felt they had to do their *'own research'* (FG4, Pa1) (using webpages, social media forums, webinars, TED talks, books) *'to search a little for those answers that you can't find'* (FG2, Pa5) *'about treatments, about embryology, about a bunch of things'* (FG2, Pa2), but were unsure if they were accessing a reliable source and all the required information.

- Sub-optimal information delivery/communication

When information was shared, it was many times overwhelming, as it was provided at once (*'she was always talking really fast, and I was trying to take in this information, it was just hard, it was like information overload'* FG5, Pa5; *'many words that you don't know'* FG1, Pa2), with no preparation and support (*'I think our heads weren't ready to process it. I think that's where there was a lack of support'* FG2, Pa13),

Patients perceived HCPs were not at ease in sharing the negative treatment results, *'you can see their discomfort in giving you a negative'* (FG2, Pa3).

Organisation of care:

Positive determinants

- Access to holistic care

Having a multidisciplinary team: *'the doctor, the psychologist, and the endocrinologist'* (FG2, Pa4),

Overall, private clinics were perceived as more supportive (more resources and personalised care), but even so, they were insufficient.

Negative determinants

- Lack of coordination and continuity of care

Patients felt HCPs *'don't work as a team'* (FG2, Pa3). Most patients *'had contact only with the doctor'* (FG1, Pa5) or felt *'there was no union between the psychologist and the doctor'* (FG1, Pa2),

The care *'was very medically oriented, and professionals [clinicians] didn't have training on the psychological impact of treatment'* (FG5, Pa4),

No continuity of care (*'I also changed doctors constantly'* FG1, Pa6; *'I had to re-explain stuff, and then it's all getting lost in translation'* FG5, Pa5).

- Communication of the negative treatment outcome

Some patients find out about the treatment outcome by phone, others by email or letter and others find out for themselves and still have to communicate the result to the clinic. Patients considered these methods not ideal, *'leaving patients very, very isolated'* (FG3, adv1).

Theme: EoT preventive care is needed and beneficial, but its current provision is suboptimal due to perceived risks and a lack of initiatives

Category: EoT preventive care is rarely offered

HCPs referred they *'often don't have that conversation'* (FG1, N1) about the possibility of EoT:

- HCPs only discuss this possibility with *'very, very, very few patients'* (FG1, CL1), only with those who are *'certain they will not have treatment anymore, not with you, nowhere else'* (FG1, N1),
- Some HCPs compared this conversation with conversations about *'stopping treatment'*, which *'in these 22 years working in the field, I almost never heard, from the fertility clinic side or the patients' side that they want to stop treatment, or*

Most treatment-related discussions focused on *'what the [treatment] next step will be'* (FG1, Pa5), with little consideration of the overall treatment trajectory and the possibility of EoT:

- *'No one explains'* (FG3, Pa1) about intermediate cycle complications (e.g., failed stimulation, oocyte pickup, fertilisation), *'each of them [treatment cycle] failed at a different stage, and that completely caught me off guard, which kind of enhanced worsened that kind of trauma response really'* (FG5, Pa1),
- The possibility of cycle and EoT is rarely discussed. HCPs only tend to briefly acknowledge *'just the percentage of success (...) but always talking about it as if it was definitely going to be successful'* (FG4, Pa2) (*'I remember asking the doctor in one of the appointments what would*

from the clinic side, suggesting patients to stop treatment' (FG2, Psych1),

- Notwithstanding, HCPs highlighted mentioning this possibility, particularly with patients with very poor prognoses. The standard information was about the treatment success rates (formulated in terms of the probability of treatment working and not of not working). However, HCPs perceive patients do not acknowledge this information *'it's like we're talking to a wall'* (FG2, CM1), as *'the couples don't internalise this, always think: - okay, it may not work, but it's going to work with me'* (FG1, Psych4),
- Only one psychologist referred they discuss the possibility of EoT with those patients who *'come to me saying they want to work on a kind of coping strategies and planning for if treatment doesn't work'* (FG1, Psych2), but stressed that *'until you're actually there, I just think it's actually quite a difficult question or a difficult thing to plan for'* (FG1, Psych2).

happen, so what the next step would be if it [the treatment cycle] didn't work, and he even said to me: -"oh, let's not think about it now, like, let's be optimistic because it will work" (...), so in my case, it is unexplained infertility, so the doctor was quite optimistic and did not even want to address the scenario of not being successful' FG3, Pa1). *'Preparation for failure was completely inexistent'* (FG3, Pa1) at the start and during the whole treatment pathway (*'I don't recall any preparatory conversation for it, if it fails or what that might be like'* FG5, Pa1; *'Never in my ever, in my experience, and I did see loads of doctors, I can tell you that'* FG4, Pa1),

- Gametes/embryos donation is only discussed at the end of treatment, and as the last resource (*'then they just immediately went on to donation with like no warning'* FG5, Pa2), *'other possibilities'* (FG1, Pa6, Pa11), such as adoption or child-free lifestyle, were rarely discussed (*'It is a personal issue that surely not everyone wants, but like it isn't mentioned either'* FG1, Pa6), and the possibility of *'stop trying, it was never talked about'* (FG2, Pa13),
- Only three patients reported they discussed the possibility of EoT. They discussed it with their psychologist, considering it challenging but very helpful (*'with the psychologist, we have worked a lot that we*

really realise that there is a life without children, that you can also be happy, that you can do a bunch of things' FG2, Pa10).

<p>Category: Patients want to receive EoT preventive care, but HCPs expressed concerns about its appropriateness</p>	<p>HCPs recognised the importance of discussing the possibility of EoT with their patients (<i>'It is really important that we do mention it because we know that at the end of a treatment pathway, even if they [patients] do six cycles with us [clinics' country of residence], three in ten will not become pregnant'</i> FG1, N1), but expressed some ambivalence and concerns about it:</p> <ul style="list-style-type: none"> • HCPs recognised it would be helpful to prepare patients <i>'even though it's difficult in the beginning because you want to give them hope, it might be easier for them at the end of the trajectory'</i> (FG2, ETH1), • However, they also considered such discussions could be seen as inappropriate (particularly at early stages of treatment) because patients are too invested in treatment (<i>'they're still wanting to have treatments or still considering'</i> FG1, N1). HCPs also referred that patients need to be given 	<p>Patients 'do feel a great need to prepare for the possibility that nothing works or that each single [cycle] won't work' (FG2, Pa11), considering 'without a doubt' (FG3, Pa1) that these conversations would be helpful.</p> <ul style="list-style-type: none"> • Although patients recognised these <i>'conversations are hard'</i> (FG4, adv2) and discussing EoT would be difficult for both patients and HCPs, as it could trigger negative emotions, patients did not consider this potential downside should prevent conversations from happening, as <i>'not having any conversation at all about the impact of it failing on you, would lead to bigger trauma then, if experienced'</i> (FG5, Pa1), • Patients <i>'can't think of any situation where they [HCPs] shouldn't [have these conversations]'</i> (FG5, Pa3). However, they acknowledged that the moment and how it is delivered is important and can impact patients' reactions towards it (<i>'I think it's very useful but (...) sometimes, there are several phases of the treatment that I sometimes prefer not to know, because my anxiety interferes a lot with the process'</i> FG3, Pa2), • Patients felt that being prepared for EoT would be beneficial to <i>'have more knowledge'</i> (FG1, Pa5), <i>'not being given false expectations'</i> (FG2, Pa2), <i>'receive more psychological support'</i> (FG1, Pa5), <i>'make more</i>
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hope to be able to pursue treatment. Some referred that *'because infertility is often compared to cancer in terms of the burden. I think what we currently do is follow more or less the same strategy, which is to offer to always concentrate on what can be done and not really on what cannot be done'* (FG1, CL1),

- HCPs expressed additional concerns about the possibility of these conversations triggering negative emotions in patients (*'If you concentrate on what cannot be done with treatment (...) the treatment will be unsuccessful, or if you stop the treatment, then I can see how the couple disintegrates because they want to explore other possibilities, other clinics abroad or anywhere else, and any errors or whatever'* FG1, CL1) and reducing their satisfaction with the clinic (*'They would be extremely angry'* FG1, CL1).
- Reluctance to label cycles as the last attempt: HCPs referred that *'the clinics are reluctant to tell it's the last one [cycle]'* (FG1, Psych4), as it is difficult to know when treatment will end (*'the*

informed decisions' (FG5, Pa1) and have the *'confidence'* (FG1, Pa5, Pa10) and *'the tools to face those times when treatment fails'* (FG1, Pa1),

- Patients also stressed that having these conversations would positively impact their satisfaction and trust in the clinic: *'it would also give me confidence that even if something went wrong, they would be right there'* (FG3, Pa4),
- However, although all patients would like to be prepared for the possibility of EoT, a minority of patients also recognised it is difficult to prepare patients in advance and wondered if there is any *'amount of talking about it before that could really prepare you'* (FG5, Pa2),
- Some patients also acknowledged that patients' willingness to receive EoT preventive care may be a *'very individual thing'* (FG4, Pa2) and might *'there are people who won't be so comfortable talking about it and others who will be'* (FG3, Pa1).

difficulties are reaching the end of the road, rather than being at the end of the road' FG2, CL1). This is mainly due to the idiosyncrasy of treatment ('no one says that it'll be the last IVF treatment, we [HCPs] always offer other options like embryo donation' FG1, N2). HCPs perceive patients 'don't like to stop and the physicians as well' (FG2, CL2).

Category: Lack of EoT preventive care resources and know-how

Lack of resources:

- HCPs do not feel confident in discussing the possibility of EoT with their patients because they do not have the required resources to do so (*'they [patients] can be offered, of course, a visit to the psychologist, like in Belgium, but I think nothing more than this' FG1, CL1*),
- HCPs stressed that *'the reason why many clinics don't have that conversation early enough is because they don't have anything to really offer' (FG1, N1).*

Lack of communication skills:

- HCPs considered discussing the possibility of EoT *'a difficult job' (FG1, CL1)* and stressed their lack of

Lack of resources:

- Patients highlighted they do not have access to information about the possibility of EoT (nor in the clinic, nor online) (*'there is so much in the whole world. But this, the aftermath, there was nothing. If you search for it, there's nothing' FG2, adv1*),
- They also mentioned clinics lack resources to signpost patients for support for EoT: *'the clinic was also not prepared [for unsuccessful failures/treatment]. Like they had no information for me, they really didn't know how to support me (...) They really didn't have like any road map to explain this to me' (FG5, Pa2).*

Lack of communication skills:

- Patients highlighted HCPs' *'lack of training' (FG5, Pa4)* and communication skills when addressing and providing support for the emotional burden of unsuccessful cycles and ultimate EoT. Patients
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training in doing so (*'the majority of the doctors are not trained right from the beginning to properly approach this topic with their patients'* FG2, CL2),

- Most HCPs find it challenging to know how much information they should deliver about the possibility of EoT, how to provide this information, and to what degree they should tailor its delivery to the patient's profile. HCPs also stressed the lack of evidence about the right time to discuss the possibility of EoT (*'we do not know. And I think that is one of the main difficulties of this: we have no studies addressing exactly this question and with good controls, with enough psychological support before treatment'* FG2, CL1).

recognised 'the medical nature of it [treatment] is where people [consultants] feel comfortable and are trained in' (FG5, adv1) but stressed the medical team should also 'take responsibility as well as take charge' (FG1, Pa1) for the psychosocial care of treatment,

- Patients indicated that HCPs lack awareness of 'patients' perceptions, what they feel because sometimes they [HCPs] might know, but this needs to be more explained, they need to put themselves in the other's [patients'] place, other's shoes, and maybe reinforce this message that it is important to have this approach' (FG3, Pa2).

Theme: EoT preventive care requires a holistic, hopeful and patient-centred approach

Category: (HOW)
EoT preventive care provision should be empathic and

- HCPs referred EoT preventive care should be provided by the medical team with a signposting for mental healthcare professionals, as this latter would have more expertise and training in exploring the emotional issues around the possibility of EoT and

- Patients referred that EoT preventive care should be '*approached in a much more holistic way, seeing the patient as a whole and with a multidisciplinary team'* (FG3, Pa2),
 - Patients considered EoT preventive care should be provided by the medical team (all HCPs with an active role in treatment), the mental
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responsive, provided by a multidisciplinary team	<p>provide support for patients during the whole treatment process and in the aftermath (<i>'I think, having been doing this job for a lot of years, the main problem from my point of view is to differentiate between those things that the doctor should do and those things that a psychologist should do'</i> FG2, CL2),</p> <ul style="list-style-type: none">• HCPs referred EoT preventive care should be offered in an empathic and sensitive way (<i>'It has to have a great professional, empathic way. So, yes, I think maybe it's not as simple as that'</i> FG2, Psych2),• HCPs were concerned about how in-depth the possibility of EoT should be addressed, referring to the fact that it should not superimpose the hope for successful treatment (<i>'We need to have this fertility hope, feel that we are moving on every single day'</i> FG2, Psych1),• HCPs perceived EoT preventive care should be delivered according to the patient's level of differentiation <i>'by talking with them or writing information for them'</i> (FG2, CL3), and the language used also need to be sensitive throughout to avoid	<p>health team, and promoted by the clinic as an institution (e.g., actively offered by the clinic): <i>'holding a team meeting, let's say because here is not only the gynaecologist but there's also the psychologist, there's the psychiatrist in some cases, there's the urologist as well. So, there are many doctors and those who participate in medical health who have an important role'</i> (FG1, Pa5). However, patients acknowledged that <i>'obviously, I don't expect a consultant to be a psychologist'</i> (FG3, Pa1) and stressed that mental healthcare professionals would be more trained to support patients exploring some topics on the possibility of EoT.</p> <ul style="list-style-type: none">• Patients referred that EoT preventive care should be carried by respectful, sensitive, and trustworthy staff members and with time (<i>'needs to be considered, it needs to be respectful, and it needs to be given the time that it deserves'</i> FG4, adv2),• Although it needs to have a <i>'delicate balance'</i> (FG5, Pa2) between realism and hope, as patients need <i>'the energy and the hope you know, to get through an incredibly difficult journey'</i> (FG4, adv2), these conversations about EoT need to be very much informative, <i>'open and honest'</i> (FG4, adv2) to enable patients to be <i>'in charge of their own health, the treatments, and the choices'</i> (FG2, Pa2),• Patients would like EoT preventive care to be offered in an individual/couple format and personalised to the patient's values, needs
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blame or put extra distress on patients (*'like dropout rates, for example, it already suggests that you are kind of giving up and that you're not doing enough to fulfil your goal. Whereas it might be that some patients stop because it's very emotionally draining, and they have other things in life that they want to focus on now. And so maybe if we can also try to see, you know, portray this more positively, that you can have a positive outcome without children, that might help the patient'* FG2, N1).

- One HCP additionally contested references to unsuccessful treatment, questioning what successful means and referring to that ending treatment (even without achieving a live birth) *'sometimes is a success!'* (FG2, CL2), as patients reached acceptance of their unfulfilled desire for children or found alternative ways to fulfil this wish.

and preferences (*'person-centred tailored to the individuals, so they [HCPs] can make a clinical judgement about the person, the people sitting in front of them, their situation and shape it'* FG5, Pa3).

Category: (ABOUT) Patients value a holistic EoT preventive care

HCPs envision present-focused information and support, targeting treatment success rates, the next treatment step, and signposting for support.
Psychosocial information:

Patients want to prepare for their whole treatment pathway, including all potential outcomes and alternative options and would like to be offered holistic support to cope with the emotional, relational and social impact of EoT.

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<p>provision, but HCPs envision targeted information provision</p>	<ul style="list-style-type: none">• Reassure and signpost patients to psychological support (<i>'if you're among those 30 unlucky per cent, then we'll also, you know, offer you some support to go on with your life. I think that would be like a really important thing to offer, and it could even help us (...) because we might be brave enough to say that to the patient because we can offer them some support afterwards because it's all interconnected'</i> FG1, N1),• Two HCPs referred that patients should be informed about alternative (parenthood) pathways beyond treatment and a childfree lifestyle (<i>'if it doesn't work, there are really good options for you. There are other options of having a child or having a life, you know, without children that can also be fulfilling'</i> FG2, ETH1; <i>'at least a view of the trajectories that they can go on'</i> FG2, Psych2),• Two psychologists referred that patients should discuss the possibility of continuing vs discontinuing treatment (<i>'it is a very difficult decision, and some couples and some people need just some support here'</i> FG2, Psych2).	<p><u>Psychosocial information</u> (information to help move through the loss)</p> <ul style="list-style-type: none">• Be informed about the emotional burden of EoT (<i>'Get to know those feelings that happen to you'</i> FG2, Pa4),• Be informed about coping strategies to manage the emotional burden of EoT (<i>'What you could do in those circumstances to support those feelings of grief'</i> FG5, adv1),• Be informed about how to manage social relationships - insensitive comments, questions, others with children or reaching parenthood (<i>'How my relationship will change with other people because when I was trying, loads of my friends were having like successful pregnancies'</i> FG4, Pa1),• Be informed about how to manage challenges in the partnership - communication and mutual support (<i>'Difficulties in how my husband supported me (...), what this means for you as a couple, and what your motivations are so when it fails, they can like lay on these'</i> FG5, Pa1),• Be informed about alternative (parenthood) pathways <i>'so, what's plan B? If plan A doesn't work, what will be plan B, or plan C or plan D?'</i> (FG3, adv1), <i>'other ways of being able to be a mother'</i> (FG2, Pa4), <i>'other paths for people who do think about it [other paths beyond treatment to achieve parenthood, such as adoption] and who maybe need like that little push or that encouragement'</i> (FG1, Pa6),
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Medical information

- Inform patients about treatment success rates (*'I think it's all part of explaining success rates of treatments'* FG1, N1), with some HCPs highlighting the need to explicitly inform about unsuccessful rates and not only successful rates (*'when we tell a patient that she has a 30% chance of becoming pregnant or delivery, she, we are not addressing that she has 70% chances of not becoming pregnant. And that is a very different thing. And people hear what they want to hear'* FG2, CL1). Some stressed it is important to provide information about both single cycle and cumulative success rates, and specific to the type of treatment (with or without donation),
- Explain reasons for unsuccessful cycle attempts and EoT (*'patients need a sort of follow-up meeting with the doctors to understand and to close the process'* FG1, Psych1).

- Be informed about a childfree lifestyle (*'I may not have children in my life, so what, why, and how can I bring meaning?'* FG5, Pa4),
- Be reassured and signposted in advance to different types of support because *'for some [patients] it may be just having other types of activities, others will benefit from a support group, others from psychological support'* (FG3, Pa1). Specialised psychosocial support was particularly mentioned: *'it should be considered from the first moment you begin treatment'* (FG1, Pa1) and *'even in the private sector, psychological support should be included in treatment'* (FG3, Pa3). Group support was also very much emphasised, as *'it could be a plus if the clinic could put together a group of people who are in the same circumstances where there are options to talk, to meet, basically like what each one feels and share experiences'* (FG1, Pa3).

Medical information

- Be informed about individual treatment success rates and prognosis,
 - Be informed about *'how many rounds of treatment'* (FG4, adv2), *'all treatment options'* (FG2, Pa11), and *'what [treatment] options do we have if treatment is unsuccessful'* (FG3, Pa1),
 - Be informed about the treatment procedures and all possible complications: *'an explanation of all steps of treatment'* (FG3, adv1) and
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‘what can go wrong at each step’ (FG2, Pa2) because ‘what we could control is to be clearly informed about what can happen’ (FG1, Pa7),

- Have a follow-up meeting with the medical team to review the process and be informed about the reasons why the cycle did not work. Patients would like to have a *‘structured closing of the cycle’ (FG1, Pa7), ‘here’s everything we can tell you (...) it would be important for the clinics to offer closure of what happened, like an analysis, a reflection’ (FG1, Pa2).* For some patients, knowing there is no explanation is important to close the process (*‘you know what, there isn’t an answer. But for me, that is an answer’ FG1, Pa7).*

Category: (WHEN)
Patients want EoT preventive care at the start of treatment, but HCPs express concerns about it

Ambivalence in offering EoT preventive care at the treatment start due to patients’ lack of willingness and readiness to receive it:

- Although HCPs recognised patients would benefit from being aware of the possibility of EoT from the start, actual preparation and planning for this possibility were considered difficult while patients are pursuing treatment and would be more appropriate at later stages of treatment (*‘I think it would help in the beginning just to have a first conversation of the options that we have here and*

Receive EoT preventive care at the treatment start - necessary for informed consent:

- Patients considered discussing the possibility of EoT and its psychosocial implications *‘vitaly important at the beginning, before treatment commences’ (FG4, adv2).* Patients indicated *‘it’s part of the informed consent’ (FG2, Pa1/adv2), part of the ‘decision tree’ (FG3, Pa1). ‘It’s a right to be informed from the beginning, perhaps about that I am going to undergo treatment and how these things can happen, and then I consent that I want to undergo this treatment, assuming those risks and knowing’ (FG2, adv2),*

be available to discuss them along the way of the treatment' FG2, Psych2). However, HCPs also agreed that only providing this support after EoT would not be optimal as 'what we see is that the patient, at a certain point, disappears' (FG1, N1),

- HCPs considered patients would not be prepared to discuss this possibility at the start, as this is a moment when there are high chances of success, in which patients have a lot of hope and are very engaged: 'because I oftentimes think in the beginning, people are said or the patients, they are given a lot of hope. You don't want to say: well, we'll, you know, it'll probably not work, but we'll try to treat you. So, you'll say we'll do everything we can to help you' (FG2, ETH1).

- Patients agreed that receiving EoT preventive care at the treatment start would help them make more informed and timely decisions and better cope with the treatment journey and EoT if it comes to happen ('I think accompaniment or support should be considered from the beginning, so that you can have the tools to face those times when the treatment fails' FG1, Pa1),

- Patients expressed that having this awareness from the start would be essential, but some stressed they would benefit from being given the opportunity to revisit it as they progress through treatment cycles. During the actual treatment process, some patients referred they would not 'welcome too many of those conversations' (Pa4, adv2),

- In addition, although all patients would like to receive EoT preventive care and agreed it should be offered to all patients at the early stages of treatment, some also stressed that some patients might only be prepared to have more in-depth conversations at later stages.

Theme: High acceptability and perceived feasibility of the MyJourney web-based resources to support the provision of EoT preventive care at fertility clinics

<p>Category: MyJourney web-based resources support the</p>	<p><u>HCPs perceived the MyJourney web-based resources were highly useful and helpful for both patients and themselves and identified several benefits from them:</u></p>	<p><u>Patients identified several benefits from the MyJourney web-based resources:</u> <i>'It's comforting (...) it's like a virtual hand, isn't it!?' (FG3, Pa2)</i></p>
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provision of EoT preventive care

- Offering a gentle approach to the possibility of EoT and, therefore, promoting EoT preventive care provision at fertility clinics,
- Providing information to support HCPs delivering EoT preventive care. HCPs highlighted it would be *'helpful not only for the clinicians but for all clinic staff'* (FG2, CL3), *'for training purposes for staff (...) to reflect on those questions [common questions and concerns section] addressed to the patients'* (FG2, CL2),
- Benefiting patients: *'It would be really good for the patients'* (FG2, Psych2). It would help patients find psychosocial support, validate their emotions and experiences, and support them by *'sharing and speaking about them [these emotions and experiences]'* (FG1, Psych1).

Perceived barriers do not outweigh benefits:

- HCPs did not consider any potential adverse effects of the MyJourney web-based resources for themselves but stressed they could *'raise some anxiety'* (HCP2, Psych2) in some patients.
- Promoting EoT preventive care provision at fertility clinics: *'clearly helps to open or start the conversation with the clinic'* (FG5, Pa4),
- Providing the required information to support HCPs in EoT preventive care provision (*'it provides key points to be considering when you're talking to someone that's going through something tremendously difficult'* FG5, adv1),
- Facilitating shared treatment decision-making *'by breaking up with the medical view that is out there where they are on top and make the decision and decide what information they give us or not, when the body and health are ours'* (FG2, Pa1),
- Decreasing feelings of isolation (*'I think it helps reduce the loneliness that can be felt by someone who is in this situation, realising that other people have the same questions, and having the answers there, I think it is undoubtedly a very, very good support'* FG3, Pa1),
- Increasing access to psychosocial support during and particularly after EoT. Patients considered the MyJourney web-based resources *'would be part of the support from clinics (...) like half of what the clinic is responsible for providing, which would be the psychological accompaniment'* (FG1, Pa1),
- Providing *'reliable information'* (FG3, Pa1) all *'under the same roof'* (FG4, Pa1). Patients referred that *'the resources have loads of great points to*

it' (FG5, adv1), providing 'support, information, guidance, points for reflection, ways that you can try and progress and move forward' (FG5, Pa5).

Perceived barriers do not outweigh the benefits:

- Patients acknowledged some adverse effects of the MyJourney web-based resources, such as triggering negative emotions or crushing patients' optimism towards treatment ('you are really very excited and maybe seeing these materials... is like you get stuck and go back to zero again' FG2, Pa3) and jeopardising their engagement with treatment, as 'looking at it from the final goal that is to get pregnant, maybe someone could make the decision not to even start treatment, that you scared someone with so much reality, basically' (FG1, Pa5). However, patients also believed that, as the MyJourney web-based resources include 'signposting links and contacts they [patients] can seek for further advice or support' (FG5, Pa5), so patients would find it supportive and comforting ('I think that if this type of information reached everyone on time, even if it's cruel, it would avoid a lot of pain' FG2, Pa9).

Category:	<ul style="list-style-type: none"> • All HCPs considered the MyJourney web-based resources very 'thorough' (FG1, CL1), 'attractive' (FG1, N1), 'helpful' (FG2, Psych2), and 'useful, 	<ul style="list-style-type: none"> • All patients expressed positive views towards the MyJourney web-based resources, considering them 'reliable' (FG3, Pa1), 'really good' (FG4, adv2), 'super interesting' (FG2, adv2) and 'super useful' (FG2, Pa14). All were highly willing to engage with the resources, referring to them as
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strike the right tone	<p><i>mainly because we don't have, and the patients don't have any alternatives'</i> (FG1, Psych4).</p> <ul style="list-style-type: none">• HCPs were willing to offer them to their patients but expressed concerns about exploring them in the consultation due to lack of time, appropriateness, and training. In particular, HCPs were concerned about how and to which patients the resources should be offered: <i>'how can this project fit in reality? When clinicians are with a patient in front of them, how would they share this information?'</i> (FG2, Psych1),• All HCPs considered most patients, <i>'not all of them of course'</i> (FG1, CL2), <i>'would definitely want to explore that in their own surroundings and time'</i> (FG1, Psych2).• HCPs valued that <i>'everybody can freely access [the MyJourney web-based resources], and that is freely advertised'</i> (FG1, CL1). Regarding the content, HCPs expressed positive views towards specific sections of the resources. On the clinics' web page, HCPs valued having <i>'practical tools'</i> (FG1, Psych1) to	<p><i>'totally necessary'</i> (FG2, Pa9) (<i>'I really needed something like that, some support like that (...) it's very valuable for the patients'</i> FG1, Pa1),</p> <ul style="list-style-type: none">• All patients were willing to explore the MyJourney web-based resources (<i>'from what I know, I think that it will be really well received'</i> FG4, avd1). Patients valued that the resources were self-guided and that patients could explore and reflect on them on their own and at their own pace (before or after having discussed with their medical team; <i>'without a doubt that I would [after the clinical appointment] be curious to explore these better at home, in a private and safe place'</i> FG3, Pa1),• Most patients referred that they <i>'don't have any negative views because I think it's a very (...) I think a lot of thought has been put into, you know, the visual and, of course, the content, you know, itself, I think it's just a really, really positive tool'</i> (FG4, adv2),• Patients appreciated the features of the resources being online and easily accessible - <i>'updated to our times'</i> (FG3, Pa1), <i>'open and free'</i> (FG1, Pa1) - anonymous and self-contained, and also valued having both written and video information,• Regarding the content, patients particularly valued the video and the common questions and concerns section (<i>'the questions and the video are very, very well done'</i> FG1, Pa5; <i>'absolutely brilliant [questions and concerns section]'</i> FG4, adv2), considering that overall the resources
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promote EoT preventive care provision, particularly the common questions and concerns section, which would help them be aware of patients' preferences and needs. On the patients' page, HCPs valued 'the mixed media. I like that you have the video and then you have the written part' (FG1, N1), and in particular, the video animation: 'how it's executed' (FG1, CL1), considering it 'very schematic' (FG1, CL1), 'suggestive' (FG1, Psych1) and 'leaving a lot to the imagination' (FG1, CL1).

convey a realistic approach to the topic (*'I like kind of the imagery that it doesn't have babies because I notice a lot of things about infertility will include baby pictures and pregnant people all over it'* FG5, Pa2),

- *'It just has the right tone, right colours, you know, the content looks comprehensive, you know, the questions (...) I think it looks really appealing, and I do think it would be well received'* (FG4, adv2).

Category: Patients want early access to the MyJourney web-based resources, but HCPs support a more targeted dissemination

When:

- Most HCPs considered the MyJourney web-based resources 'should come later' (FG1, N2/Psych3) in the treatment pathway, with some suggesting the 'cycle review appointment' (FG1, Psych2) after at least one cycle 'had completely failed' (FG1, N1), as patients have already experienced a failed cycle and can 'relate' (FG1, N1) with it. Giving access to resources later could also 'ensure better adherence to whatever the clinic offers as a follow-up care or follow-up plan' (FG1, CL1). HCPs considered that

When:

- Almost all patients would like to be signposted to the MyJourney web-based resources 'at the beginning, whether the treatment is low or high complexity' (FG1, Pa4), with some additionally stressing they would like to be given the possibility of revisiting the resources during the journey (*'it is good to have them there accompanying us (...) after each negative outcome it is good to remember and refresh that feeling that we are supported'* FG2, Pa14),
- Only two patients would like to be signposted to the resources and have more in-depth discussions with staff after at least one unsuccessful cycle because 'at another time, it could be a hard blow' (FG5, Pa3),

exploring the resources ‘at the beginning is a little bit scary (...) too discouraging’ (FG1, N1), could ‘scare patients away’ (FG1, CL1) and negatively impact patients’ trust in the clinic. However, HCPs also agreed that ‘at the end of the road (...) it’s not the right time either’ (FG2, CL1).

Dissemination:

- HCPs agreed they ‘would always mention, I would mention this [the MyJourney web-based resources] as part of the road they [patients] have to travel but (...) I would not put emphasis on it’ FG2, CL1),
- HCPs highlighted the resources should be disseminated, in particular among HCPs, to ‘train staff, broadening their view’ (FG2, CL2) and to ‘try to make it [EoT preventive care] a routine’ (FG2, Psych 2) practice at clinics, as ‘the more your website gets out there, then the more clinic staff members know about it, and even the counsellors and psychologists are referring [patients] to it’ (FG1, Psych2),
- In general, HCPs expressed concerns about disseminating the resources among patients. Some

- Some patients recognised ‘when they [patients] want to receive information and what information they want to receive’ (FG2, adv2) might ‘depend on each person’ (FG2, adv1), but that it ‘should be part of the initial treatment (...) and always offered to patients’ (FG1, Pa1). Patients agreed HCPs should exercise discretion on the depth with which they approach the possibility of EoT, according to the patient’s preferences: ‘I think personalisation is important. Some people just don’t want to think about that [EoT], and that’s ok, but to know that it’s there and have it as a resource. I don’t think it could ever be negative’ (FG5, Pa2).

Dissemination:

- Patients agreed that the MyJourney web-based resources (in particular the patients’ video) should be offered empathically and in-person by the clinic, in particular by the clinician, as they are ‘the closest person to us’ (FG3, Pa2) and ‘the most trusted person’ (FG3, Pa1) or the mental healthcare professional. It should also be made available online and disseminated as much as possible. Patients referred clinics should embed the resources on their websites, with many patients highlighting they would be much more likely to choose that clinic if this information were there (‘I would say that this clinic would immediately go up a few points in my consideration (...) [It] would demonstrate the clinic or the hospital is concerned with the emotional part of the treatment’ FG3, Pa1;

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	<p>considered it could be made available <i>'on the clinic's website' but not on the front page, it will be down at the bottom, somewhere'</i> (FG1, N1), <i>'like additional information'</i> (FG1, CL1), due to the same reasons expressed above. They also considered that <i>'patient associations are a good place to post it because patients who get desperate and are thinking: "should I go to another clinic, yes or no, what is my way out?"', I mean, they might go there too, and I am doubting whether they're coming to us, right?'</i> (FG1, N1).</p>	<p><i>'it would give me confidence. Even if something went wrong, they would be right there for me'</i> FG3, Pa4). Notwithstanding, they stressed they would feel <i>'absolutely devastated if they [HCPs] didn't follow through on that promise of advice and support'</i> (FG5, Pa2).</p>
<p>Category: More content and features can be added to improve acceptability and feasibility: emotional and coping resources, support links and testimonies, higher personalisation</p>	<p>HCPs provided further suggestions to improve the acceptability and feasibility of the MyJourney web-based resources:</p> <p><u>HCPs' page</u></p> <ul style="list-style-type: none"> • Tailoring treatment success rates according to the type of treatment (i.e., with or donated gametes/embryos) and number of cycles (<i>'the data you presented they don't necessarily reflect the success of treatment in other countries (...) not all patients have six IVF cycles'</i> FG1, CL1), 	<p>Patients made several suggestions to improve the acceptability and feasibility of the MyJourney web-based resources:</p> <p><u>HCPs' page</u></p> <ul style="list-style-type: none"> • Emphasising the importance of HCPs setting realistic expectations about treatment outcomes and using a measured approach to hope, • Emphasising that patients feel extremely lonely during and after EoT (<i>'professionals should know that isolation can be really acute - point out more'</i> FG5, adv1), • Some patients suggested having <i>'a video designed for the medical team on how to communicate this information'</i> (FG2, adv2).

**and tailoring to
minoritised groups**

- Clearly defining what EoT is: *'so this is ending treatment which own gametes, right? (...) So, I think that's an important thing to clarify'* (FG1, N1),
- Making clearer what the MyJourney web app is *'because I think the reason why many clinics don't have that conversation early enough is because they don't have anything to really offer'* (FG1, N1),
- One HCP questioned if it would make sense to tailor the resources to the HCP's background (*'differentiate between clinicians, psychologists and other staff'* FG2, CL2).

Short video animation

- Wording more empathically (*'I do like the video, and I think it's really good. And I think it portrays well, you know, particularly that bit in the beginning, going through the black tunnel and everything. But I think sometimes some of the wording lacks empathy for the patients who are ending treatment. So, it's not necessarily conveying the empathy of how rubbish the patient is likely to be feeling'* FG1, Psych2),

Short video animation

- Worded more empathically, with some suggesting soft music in the background: *'the tone has to be a little more friendly (...) also maybe perhaps a little soft music (...) I think that also hugs you sometimes. When you hear a kind voice and beautiful music, it still comforts you'* (FG1, adv1),
- Some patients *'do wonder a little bit about the train metaphor on the journey'* (FG5, Pa2), suggesting it could be softer (*'personally, it struck me as fear, like a feeling of terror rather than as welcoming'* FG1, Pa5).

Patients' page

- Wording directly to the person (*'it is more friendly when (...) you feel that it is directed more at you (...) when it's written directly in the second person'* FG1, Pa4),
- More containment and measured approach to hope when talking about setting a Plan B and having alternative fulfilling pathways, in particular, a child-free lifestyle (*'I feel that this is something, for me, it is something that impacts me. It is something very delicate (...) very personal'* FG1, Pa2),
- Having a section with other paths to and beyond parenthood (*'It occurred to me to add this, I think someone said it, that thinking of a life without children is still thinking of a different family configuration. Just*

- Clearly differentiating between the MyJourney web-based resources and the MyJourney web app: (*'this [the MyJourney web-based resources] might be an independent tool because for some patients it might be enough to have all these normalisations of what they are feeling or thinking'* FG1, Psych3).

Patients' page

- Making clearer for whom the MyJourney web-based resources are directed and at which stage: *'does it also work for patients who are deciding whether or not to stop? Because I think it's very difficult for patients to decide, that's what I see in my research, that they're really stopping, right?'* (FG1, N1);
- More containment and measured approach to hope when talking about having alternative fulfilling pathways, mainly a child-free lifestyle, as *'what I find a little bit trouble when you say that unsuccessful IVF patients can have a happy and fulfilling life. Because, you know (...) I have never seen really truly happy unsuccessful IVF patients later on in life'* (FG1, CL1),

as we see here, there are a bunch of people who have the desire to set up a different type of family - all different, and there can also be other family forms even without children' FG2, adv2) and different types of support sources, such as patients' associations, group and peer support, webinars, books, help lines and psychological support (*'peer support is one of the most important things when it comes to dealing with the feelings, with the grief, with the isolation'* FG4, adv2) - one of the most mentioned suggestions,

- Including testimonies/personal stories of other patients who have positively moved on from treatment (*'It would be interesting to put a real case, some interview, some family that has failed and tells their experience or how they achieved that... I mean, to be able to see that there is light after the tunnel and beyond the data. That maybe, I mean, it would help me or give me a little more hope from the failure'* FG2, Pa13),
- Coping strategies tailored to the treatment stage (*'because it goes hand in hand with the moment you are in treatment'* FG1, adv1) and specific life events: holidays, menopause (*'I wonder if there is evidence then women do really feel better after menopause? We heard from someone who has fully moved on from treatment and gone through menopause, and they talked about the sadness of their friends becoming grandparents'* FG5, Pa2),

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- One HCP suggested *'adapting to different cultural backgrounds because I know that in some countries or some subcultures, in western countries as well, there can be a huge stigma on infertility and childlessness'* (FG2, ETH1).
- Tailoring the resources to others, such as men (*'as the text may perpetuate gender stereotypes'* FG5, Pa2), single women and same-sex couples (*'also recognising same-sex couples, that just like heterosexual couples, we also have the same desire to procreate'* FG2, Pa14), and different cultures (*'some cultures look at things very differently obviously (...) Sometimes talking about fertility can be, you know, often not spoken by stigma so that might be helpful for other people looking from different cultural perspectives'* FG5, Pa3),
- A minority suggested presenting the common questions and concerns section in a more 'iconographic' FG1, Pa4) way and with audio files (*'could there also be a person narrating? I kind of imagine a person as being very empathic, very close, very warm, who can kind of say themselves, not written, like it would feel closer perhaps (...) and not have to read because basically, it is just as difficult'* FG1, Pa3),
- Two patients expressed ambivalent views about using the Journey word: *'I like the journey word, but sometimes I get frustrated with the journey word that everybody uses because to me journeys are usually a fun thing, and now it's like: well now I hate journeys because of this whole experience'* (FG5, Pa2).

Note. FG=focus group; HCP=healthcare professional; Pa=patient; Adv=patient advocate; CL=clinician; N=nurse; Psych=psychologist; EMB=embryologist/andrologist; CM=clinic manager; ETH=ethicist; EoT= end of unsuccessful fertility treatment.

Appendix Z: Screenshots of the Final Prototype of the MyJourney Web-Based Resources to Support the Routine Provision of EoT Preventive Care in Fertility Clinics (English Version; Chapter 6)

HCPs' web page (www.myjourney.pt/clinics)

MyJourney Home About Support Login

Helping your patients cope with unsuccessful fertility treatment

Research-informed materials to support fertility clinics and healthcare professionals in helping their patients cope with unsuccessful fertility treatment

Why?

- Infertility and its treatment pose a huge physical and psychological burden on single people and couples.
- In every 10 patients who do three cycles of IVF/ICSI, four will not achieve a live birth. Even the most optimistic estimates (younger, good prognosis) show that when patients complete a total of 6 cycles of IVF/ICSI, 2 to 3 out of 10 will not achieve a live birth.
- Unsuccessful treatment is an extremely difficult outcome for patients. It triggers intense sadness and grief reactions, feelings of guilt, low self-worth, and anger. Patients who undergo unsuccessful treatment report moderate to large impairments in their mental health and wellbeing and take around 2 years to adjust to this outcome.
- Medically assisted reproduction regulators and evidence-based guidelines recommend clinics to support patients while they are doing treatment and when it ends without a live birth.
- Nine in every ten patients want to discuss the possibility of their treatment not working with their fertility team so that they feel better prepared to cope with all possible treatment outcomes, if and when they happen.
- You can signpost patients to evidence-based support tailored to help them cope with unsuccessful treatment: [MyJourney](#) is a free online self-guided tool to help people come to terms with the fact they are not able to have the children they wish for. A feasibility randomised controlled trial showed that people who use [MyJourney](#) experience clinically significant improvements in their wellbeing within 10 weeks. These remain stable for at least 6 months.

When?

You may feel there is no good time to approach this difficult topic, and indeed patients find this is a challenging conversation to have. However, they think there are benefits to having it and that these are worthwhile the anxiety they may feel. While you are best placed to decide when you should discuss the possibility of treatment not working with each of your patients, being aware of patients' preferences may help you decide:

- Seven in every ten patients want to have this discussion before they start any IVF/ICSI cycle. Why? Patients think having a comprehensive picture of treatment - all its options and possible outcomes - will help them make more informed decisions about and after treatment, foster realistic expectations about the outcome of treatment, and better cope with the emotional burden of treatment and its success, if it happens.
- Three in every ten patients only want to have this discussion after they have done at least one unsuccessful IVF/ICSI cycle. Why? To feel supported by their clinic in moments of distress and doubt, because they fear discussing unsuccessful treatment earlier could negatively impact their optimism and engagement with treatment.
- Five in ten patients report it is appropriate to discuss the possibility of treatment being unsuccessful when patients: are given a bad prognosis, experience distress, express difficulty accepting the possibility of treatment not working, have doubts about whether to continue or stop treatment.
- Most (93.4%) patients want to be offered support immediately after they end unsuccessful treatment.

How?

Before Treatment Ends

After Treatment Ends

If you choose to discuss the possibility of an unsuccessful outcome while your patients are still doing treatment:

1. Allocate time and ensure a private setting.
2. Acknowledge you would like to discuss a sensitive topic, adopting an empathic and collaborative attitude. Reassure patients you are not having this conversation because you think their treatment is not going to work, but because it is standard procedure with all patients.
3. Inform treatment is not always successful but the clinic will support them in any eventuality. Tell patients the chances of treatment not working (in addition to the chances of it working). Cohort studies show 4 and 3 out of 10 patients will not achieve a live birth with 3 and 6 cycles of treatment, respectively.
4. Tell patients they can know more about what to expect if treatment does not work and access available support at myjourney.pt/patients.
5. Make yourself available to answer any questions and address concerns. The FAQs below can help you address the most common questions and concerns patients have. Reassure patients that talking about treatment not working does not make it more likely to happen and that you are always available to discuss this.

How?

Before Treatment Ends

After Treatment Ends

If you choose to contact your patients after treatment finishes unsuccessfully:

1. Allocate time and ensure a private setting, even if you are reaching your patients by phone.
2. Acknowledge that treatment was unsuccessful and validate patients' feelings adopting an empathic and collaborative attitude. Allow them time to express emotions.
3. Reassure patients there was nothing else they could have done for treatment to work. If possible, explain the reasons why it did not work. If this is not possible, then explicitly acknowledge that sometimes a reason cannot be found.
4. Let patients know that the clinic is there to support them. Ask if they would like in-person support and make the necessary referral.
5. Tell patients they can explore other support resources at myjourney.pt/patients, including information about what to expect after treatment, other routes to have children, and access to MyJourney. Explain MyJourney is a free online self-guided tool to help people come to terms with the fact they are not able to have the children they wish for, and that research showed those who use it report better wellbeing within 10 weeks.
6. Make yourself available to answer any questions and address concerns. The FAQs below can help you address the most common questions and concerns patients have.

10 facts about ending unsuccessful fertility treatment you should tell your patients

- | | |
|---|---|
| <p>1</p> <p>It is normal to feel distressed. Most people feel sadness and grief after ending treatment.</p> | <p>2</p> <p>Couples who end unsuccessful treatment <u>are not</u> more likely to separate than couples for whom treatment works.</p> |
| <p>3</p> <p>Deciding on a 'Plan B' to explore if treatment does not work helps people move forward.</p> | <p>4</p> <p>It is helpful to connect with others in the same situation.</p> |
| <p>5</p> <p>There are <u>other routes</u> to have children.</p> | <p>6</p> <p>Most people who remain childfree find new valued goals, achieve a contented life, and feel they grow stronger with their experience.</p> |
| <p>7</p> <p>The sadness of infertility may never fully be forgotten.</p> | <p>8</p> <p>There are <u>different types of support available</u>.</p> |
| <p>9</p> <p>If you know you won't have the children you desire and want to come to terms with it <u>MyJourney</u> can help you build acceptance.</p> | <p>10</p> <p>Nine in every ten people who go through unsuccessful treatment end up living satisfying and fulfilling lives.</p> |

Answering questions and addressing concerns

Research shows patients have specific questions and concerns they want to discuss. Below you will find suggestions to address these.

▼ What should I advise patients who are undergoing treatment to help them cope if treatment does not work?

- Advise patients to decide on a 'Plan B'. Research has clearly shown that having valued goals beyond the success of treatment is associated with better patient wellbeing, both during treatment and after, when it does not work. Unfortunately, many patients give up valued hobbies and life goals to better concentrate on treatment. Even when this is the case, deciding on a 'Plan B' for if treatment does not work can make it easier for patients to move forward at the end of treatment.
- Other things you can ask your patients to consider are:
 - Who could best support them through this challenge? It will be helpful to have the support of someone who is not invested in them becoming parents, who is empathic and understanding, but can also gently push them to take challenging but helpful steps forward.
 - What usually helps them stay calm and hopeful in difficult situations? Making a list of these things now can help knowing what to do if and when they are feeling sad or discouraged.
 - How to access support if it is needed? Provide patients with the clinic's support contacts. Patients are more likely to uptake support if the referral mechanisms are private and easy to follow. Inform patients they can use MyJourney for free. Explain MyJourney is a free online self-guided tool to help people come to terms with the fact they are not able to have the children they wish for, and that research showed those who use it report better wellbeing within 10 weeks. Inform patients other support sources are also available.

▼ How should I discuss the pros and cons of continuing versus ending treatment?

- Tailor the discussion to patients' medical and personal profile and provide an individual prognosis estimate, when possible.
- Provide clear explanations for past unsuccessful cycles or explicitly state sometimes the reasons are unknown.
- Invite patients to revisit all the efforts they have done to have children and acknowledge and validate these.
- Invite patients to list pros and cons of continuing vs ending treatment and to rank these in terms of how important each is to them.
- Inform patients about how the clinic can support them coping with the issues they are struggling with to continue treatment (if there are any).
- Inform most patients adjust well to ending treatment when they:
 - feel they were well advised by their fertility team
 - understand why previous cycles did not work
 - feel they have done 'all they could'
 - are supported by their partner (if they have one)
 - do not experience pressure to have children
 - are open to contemplate other routes to having children or stopping trying altogether.

▼ How can I support patients at the end of treatment?

- Reassure patients it is normal to feel distressed and that most people in their situation feel that way. Research shows the period after unsuccessful treatment is a period of grief, pain and sadness, during which patients report low wellbeing and mental health.
- Give patients an opportunity to vent their anger and frustration. Research shows these are common emotions after unsuccessful treatment. The simple act of validating these emotions is empathic and can empower patients.
- Inform patients about what to expect:
 - Tell them women and men feel things differently. Women describe feeling sad, hopeless and guilty, even though they had no control over treatment. One way women cope is by talking openly about their grief with some family members or friends. Men also feel pain but tend to be more private and to cope by focusing on other aspects of their life.
 - Inform patients they can also feel relief at ending treatment. Many patients rediscover the time and emotional space to take better care of themselves and their partnerships (if they have one). Taking up new activities or hobbies is common and helps patients to feel distracted from their loss and regain control over their lives.
- Reassure patients that, with time, most people find peace. Cohort studies show that 9 in each 10 patients report good adjustment up to 17 years after ending treatment. According to patients, as time passes, a new sense of hope and possibility restarts to grow, and many patients are surprised to feel it is possible to be content and fulfilled.

▼ How can I support couples at the end of treatment?

- Reassure patients research shows that couples who go through unsuccessful fertility treatment are not more likely to separate than couples who achieved a live birth. In fact, the most common experience is for couples to feel their relationship is strengthened by the experience of infertility and treatment, even when it does not work.
- If your patients are in a heterosexual partnership, alert them that men and women experience the end of treatment in different ways, and this sometimes creates tension. Tension often arises because men see their partner suffering and feel they need to 'stay strong' to support them, but women sometimes interpret this as lack of empathy or importance given to the loss. Recognising people cope in different ways and accepting those differences may be helpful.

▼ How should I advise patients about other pathways to have children?

- Reassure patients there are other routes to have children they can explore during or at the end of treatment.
- Inform them that, while alternative routes offer new possibilities, they also present challenges.
- Signpost patients to this [list of charities and resources they can explore](#) on their own or with significant others.
- If you know of other resources/links not yet on this list, please email MyJourney@cardiff.ac.uk with your suggestions.


▼ How can I advise patients about a childfree lifestyle?

- Most patients find exploring this route challenging so we recommend to only approach this topic if they raise it.
- Inform patients that reaching acceptance can take time. Many women only let go of their desire for children when they reach menopause. This means there will be moments of pain, but these become less frequent and intense as time passes.
- Reassure patients they can still live a fulfilling and satisfying life. Tell patients research shows that most people who go through this journey say it made them stronger and that they grew personally and spiritually. Towards the end of their journey, patients talk about having a better sense of what is important for them and greater ability to appreciate the 'good things' in life.
- Inform patients that [MyJourney](#) was designed to ease their process of acceptance and to help them build a life as fulfilling as possible, even if without children.

▼ How to signpost patients for available support?


- If you have inhouse support make sure the referral mechanisms are private and easy to follow, as this will make patients more likely to use it.
- Inform patients who end unsuccessful treatment they can access free tailored support at myjourney.pt/patients.
- Tell patients most people find connecting with other people in the same situation very helpful.

Resources



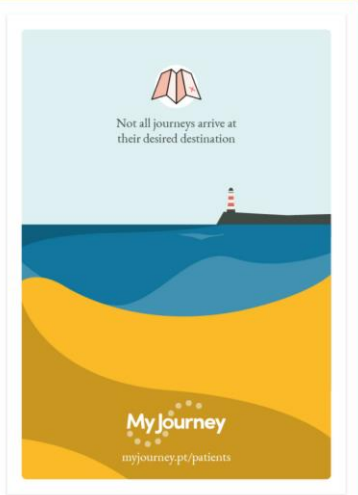
Helping your patients to cope...
Information for clinicians about helping patients to cope if treatment doesn't work.

- [English](#)
- [German](#)
- [Portugese](#)
- [Spanish \(Latin America\)](#)
- [Spanish \(European\)](#)



Ten Facts
A summary of the key facts about ending unsuccessful treatment you can communicate to your patients.

- [English](#)
- [German](#)
- [Portugese](#)
- [Spanish \(Latin America\)](#)
- [Spanish \(European\)](#)



MyJourney poster
A poster signposting patients to information about ending unsuccessful treatment you can hand out in your clinic.

- [English](#)
- [German](#)
- [Portugese](#)
- [Spanish](#)



How to continue your journey if fertility treatment doesn't work

An animation you can embed in your clinic's website.

[English](#)

[German](#)

[Portuguese](#)

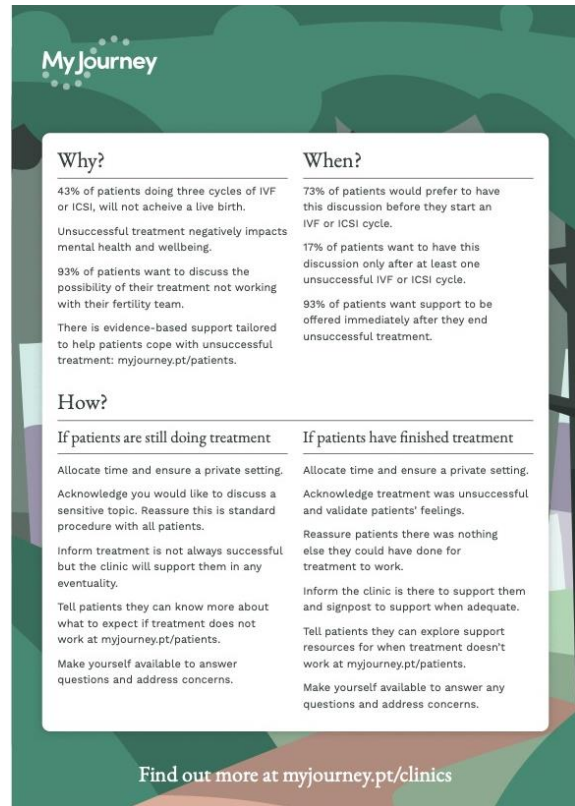
[Spanish](#)

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In-printed materials that HCPs can use to ease the provision of EoT preventive care

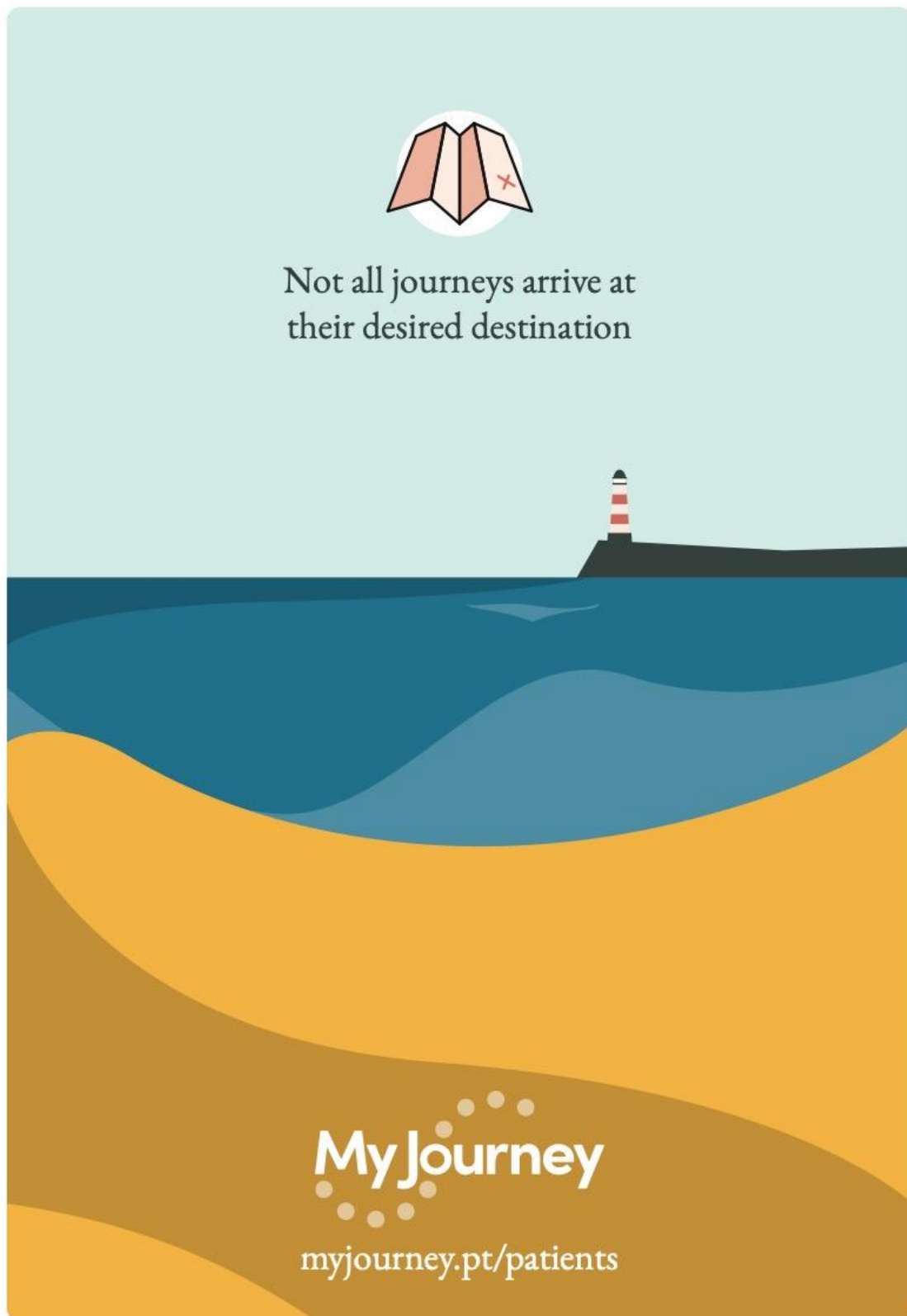
A5 information flyers for HCPs about helping their patients to cope if EoT



A5 flyer with a summary of the EoT key facts that HCPs can communicate to their patients



Poster signposting patients to the patients' web page on EoT psychosocial preventive care that HCPs can hand out in their clinics



Patients' web page (www.myjourney.pt/patients)

MyJourney Home About Support Login

MyJourney (English) Share

How to continue your journey if fertility treatment doesn't work

This page is for anyone whose fertility treatment has finished unsuccessfully or wants to prepare in advance for this possibility. It is informed by the personal experiences, views and needs of people who have lived through this loss.

Fertility Patients Ending Treatment Other Routes

Learn about the end of unsuccessful fertility treatment


Learn about what most people experience when treatment does not work, the challenges they face, and what helps them move forward. Consider ways in which you can make your own journey easier.

[Learn More](#)

Explore other routes to have children

Fertility treatment is not the only way to have children. There are other options available, like donor conception, surrogacy, adoption, or fostering. These options offer new opportunities but also involve new challenges, which can vary from country to country, according to legislation and other factors. To help you consider other routes to have children, we compiled a list of organisations and resources you can explore on your own or with others.

[Explore Other Routes](#)











Build acceptance of your unfulfilled wish for children



If you will not pursue other routes to have children but are struggling to accept your situation, MyJourney can help you. MyJourney is a free online tool that eases your journey towards acceptance. It is research-based and user-led, built with the participation of people who went through this experience. Research shows MyJourney improves the wellbeing of people who use it in a clinically significant way and within 10 weeks.

[Learn more about MyJourney](#)


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Home About Support Login



Learn about the end of unsuccessful fertility treatment

Fertility Patients


Ending Treatment

Other Routes


Planning is part of the journey

Thinking about how to move forward from unsuccessful treatment can be challenging. However, planning will make your journey easier and help set new paths to explore in pursue of the things you value in life.


If you are still doing treatment, you may worry that thinking about the chance of treatment not working may make it come true. However, thinking is not the same as wanting or making it happen. The sad reality is you cannot control if your treatment is going to work or not. What you can do is to prepare for all chances. If you are not a planner, at least you know this webpage is available if things do not work out as you wish.



It may be helpful to know what you are likely to experience when venturing onto a new path.



It may be helpful to find answers for concerns you have about what your future may look like.



It may be helpful to learn about support sources and ways of coping with the challenges you may face.

You can explore this page now or at any stage of your journey, when you think it may help you.

10 facts about ending unsuccessful fertility treatment

1

It is normal to feel distressed. Most people feel sadness and grief after ending treatment.

2

Couples who end unsuccessful treatment are not more likely to separate than couples for whom treatment works.

3

Deciding on a 'Plan B' to explore if treatment does not work helps people move forward.

4

It is helpful to connect with others in the same situation.

5

There are other routes to have children.

6

Most people who remain childfree find new valued goals, achieve a contented life, and feel they grow stronger with their experience.

7

The sadness of infertility may never fully be forgotten.

8

There are different types of support available.

9

If you know you won't have the children you desire and want to come to terms with it MyJourney can help you build acceptance.

10

Nine in every ten people who go through unsuccessful treatment end up living satisfying and fulfilling lives.

Find your answers

Below you will find answers for questions many patients have when they are approaching the end of their fertility treatment.

▼ How do I know when treatment ends?

Some patients are told by their fertility team that there are no more treatment options they can do. However, this is not the most common situation and many times patients have to decide when to stop. This is a deeply personal decision to make and many people struggle to have a clear idea about what is 'enough' treatment. The following information and suggestions may help you think about it.

Ending treatment is always a difficult experience and it will most likely trigger feelings of doubt, sadness, and loss. Looking back, some patients realise they delayed this decision because they were afraid they (or their partnership) would not be able to cope with such feelings. However, some people also mention feeling relieved with their decision.

Patients adjust better to ending treatment when they feel they were well advised by their fertility team, understand why previous cycles did not work, feel they did 'all they could', are supported by their partner (if they have one), do not feel pressured to have children, and are open to contemplate other pathways to having children or stopping trying all together.

If you are unsure about continuing or stopping treatment, you can discuss the following topics with your fertility team:

- Reasons for why your previous cycles did not work.
- Your personal chances of another cycle being successful. If the clinic cannot provide you with this information, request information on success rates for the specific cycle number you are attempting and/or for same aged patients doing the treatment you would start. This information is usually available, even if it is not specific to your clinic.
- Things you could do differently that are proven, without a doubt, to improve the chances of your treatment being successful.
- How can the clinic support you with the issues you are struggling with, which make you consider it may be better to stop treatment.

Contacting or knowing the stories of others who have decided to end treatment may also be helpful. You can explore the social opportunities patient charities offer here.

Fertility Patients	Ending Treatment	Other Routes
<p>▼ How may I be affected if treatment does not work?</p>		
<p>Ending unsuccessful treatment is a difficult experience. Fertility patients tend to talk about it as a period of grief, pain, and sadness. One common emotion is anger, and patients talk about feeling angry towards 'everything and everyone'. If you have a partner of the opposite gender, it is likely that you will feel things differently. Women describe feeling sad, empty and unsure about how to build meaning back into their life. Many times, they blame themselves for treatment not working, even though they had no control over it. One way women cope is by talking openly about their grief with some family members or friends. Men also feel pain but tend to be more private and to cope by focusing on other aspects of their life. Along with these difficult feelings, many patients express relief at being freed from doing more medical treatment. They rediscover the time and emotional space to take better care of themselves and their partnership (if they have one). Reconnecting with themselves and taking up new activities or hobbies is common and helps to distract and gain distance from the sadness. As time passes, people feel their life is more balanced and under their control. As a new sense of hope and possibility restarts to grow, many people are surprised to feel that it is possible to be content and fulfilled. Central to this sense of balance is realising that not having the children they desire is only a part of who they are or can become.</p>		
<p>▼ How may my partnership be affected if treatment does not work?</p>		
<p>If you are in a partnership, the end of treatment is a challenge you will face as a couple. The most common experience is for couples to feel their relation was strengthened by the experience of infertility and associated treatment. Overcoming adversity brings couples together and this strength remains after ending treatment. Of course, any relationship can end because of different reasons. When people are not totally happy in their partnerships, facing any type of adversity usually accentuates that dissatisfaction. Couples going through fertility treatment are not different from all other couples in that sense, but they are <u>not</u> more likely to separate than other couples. If you are in a heterosexual partnership, you should know that men and women experience the end of treatment in different ways and this sometimes creates tension. Tension often arises because men see their partner suffering and feel they need to 'stay strong' to be able to support them, but women sometimes interpret this as lack of empathy or importance given to the loss. Recognising people cope in different ways and accepting those differences may be helpful.</p>		
<p>▼ How may my relationships with other people be affected if treatment does not work?</p>		
<p>Many people who go through fertility treatment talk about how their relationships with others are affected by the fact they cannot have the children they wish for. Feeling alone and distant from friends and family members because they cannot share parenting experiences is a common theme. Many people avoid situations where children are present because these are painful. Feeling pressured to have children is another common theme, and some women feel the need to let others know how hard they have been trying (or have tried). This pressure, along with the fact that most people think it is easy for everyone to have children, make it harder to accept one's reality. Other social beliefs, for instance, that all women are born to be mothers, make people doubt themselves and their self-worth. Two things that are helpful are, first to carefully choose who you confide about this issue. Talking to people who are not invested in you becoming parent, who are empathic and understanding, but can also gently nudge you to take difficult but helpful steps forward can be helpful. Second, to connect with other people in similar circumstances, with who you can share experiences, concerns and useful information. To do so explore our support page.</p>		
<p>▼ Can I reach closure from my fertility treatment?</p>		
<p>Yes, you can. Nine out of each ten patients do. Once enough time passes, some people even feel empowered because they can let go of their treatment experiences and have more control over managing their desire for children. Some patients also take comfort in the idea that, by ending treatment, they allowed other people to have a go. As time goes by many patients talk about better understanding the limits of medical treatment and of how this helps them accept that sometimes it will just not work.</p>		

Fertility Patients	Ending Treatment	Other Routes
<p>▼ What can I do now that can help me later, if treatment does not work?</p>		
<p>Usually, when we know what to expect, we feel less overwhelmed if indeed it comes to happen. Hopefully, reading this information will help you know what to expect. Keep in mind you can come back to this website whenever you need.</p> <p>Having a 'Plan B' can also be helpful. Research has clearly shown that having valued goals beyond the success of treatment is important for patients' wellbeing. Unfortunately, because fertility treatment is hard and takes time, many patients end up letting go of valued hobbies or life goals to better concentrate on treatment. Even if this is the case, deciding on a 'Plan B' now can make it easier to move forward at the end of treatment. We advise you to write down your 'Plan B' and put it in a safe place where you know you will find it later if you need it.</p> <p>Other things you may want to think about in advance are:</p> <ul style="list-style-type: none"> • Who could best support you through this challenge? It will be helpful to have the support of someone who is not invested in you becoming parent, who is empathic and understanding, but can also gently push you to take difficult but helpful steps forward. • What usually helps you stay calm and hopeful in difficult situations? Making a list of these things now can help knowing what to do if and when you are feeling sad or discouraged. • Know where to access support in case you need it. If in the future you find yourself struggling to accept you cannot have the children you wish for, you can use MyJourney for free. MyJourney is a self-guided online tool that gives you step-by-step support to ease acceptance of an unfulfilled wish for children. It has been shown to better the wellbeing of those who use it. 		
<p>▼ Where can I find more information on alternative pathways to have children?</p>		
<p>Fertility treatment is not the only way to have children. There are other options available, like donor conception, surrogacy, adoption, or fostering. These options offer new opportunities but also involve new challenges, which can vary from country to country, according to legislation, accessibility criteria, and other factors. To help you consider these alternative pathways to become a parent, we compiled a list of charities and resources you can explore on your own or with significant others.</p>		
<p>▼ Will I be able to cope with treatment not working?</p>		
<p>Right after ending treatment you may have moments when you think you are not being able or will not be able to cope. But, as with other losses in life, time does play a role in making things easier. Time allows you to reflect about who you are and can become, even if you do not have the children you desire. It allows you to think about what is important to you and how you can still look for fulfilment in your life.</p> <p>Many people do this by trying new hobbies or activities, or picking up new goals, for instance in work or education. Those who try new things end up being surprised that they have fun or feel pleasure. At the very least, they are distracted from the pain for a while. Trying new things is also helpful to regain some control over your life, something you might have lost while doing treatment. With time, people become more committed to their hobbies or goals and end up having a new sense of purpose.</p>		
<p>▼ Will I be able to live a fulfilling and satisfying life, even if I end up not having the children I wish for?</p>		
<p>Yes, you can. Reaching acceptance can take time and it does not mean your hope to have the children you desire will totally go away. For many women this really only happens when they reach menopause. It also does not mean you won't have moments of pain. These can happen, though they tend to become less common and bad with time. The way to acceptance means recognizing that you can be in contact with pain and yet not let it stop you from being who you want to be or from doing what is important to you.</p> <p>However, nine out of each ten people who go through this journey say it made them stronger and that they grew as a person. Towards the end of their journey, they feel a new sense of balance and peace with themselves, their partnership (if they have one), and the world in general. They also talk about having a better sense of what is important for them and greater ability to appreciate the 'good things' in life.</p>		

Appendices

▼ Where can I find support?

If you know you won't have the children you desire and want to come to terms with it, [MyJourney](#) can help you. MyJourney is a free online tool to ease acceptance of an unfulfilled wish for children. It has been shown to better the wellbeing of those who use it within 10 weeks.

You may be looking for something else. Indeed, people cope in different ways and not all types of support will be right for you. People who go through this experience also say that connecting with others in the same situation is very helpful. To make sure you can find the right type of support sources and networks, we made a long [list of organisations and resources](#) you can explore.

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Have you finished fertility treatment and are exploring alternative routes to have children?

Fertility treatment is not the only way to have children. There are other options available, like donor conception, surrogacy, adoption, or fostering. These options offer new opportunities but also involve new challenges, which can vary from country to country, according to legislation and other factors. To help you consider these alternative routes to have children, we compiled a list of charities and resources you explore on your own or with others.

[Fertility Patients](#)

[Ending Treatment](#)

[Other Routes](#)

United Kingdom

Gamete and embryo donation

[FertilityNetworkUK](#)
[Human Fertilisation & Embryology Authority](#)
[The Sperm, Egg and Embryo Donation Trust](#)
[Donor Conception Network](#)

Surrogacy

[COTS](#)
[Human Fertilisation & Embryology Authority](#)
[GOV.UK](#)

Adoption and fostering

[Action for Children](#)
[Adoption UK](#)
[Barnardo's](#)
[Family lives](#)
[GOV.UK](#)
[Simply fostering](#)
[The fostering Network](#)

Appendices

Portugal

Gamete and embryo donation

[Associação Portuguesa de Fertilidade](#)
[Sociedade Portuguesa da Medicina da Reprodução](#)

Surrogacy

[Associação Portuguesa de Fertilidade](#)

Adoption and fostering

[Associação Portuguesa de Fertilidade](#)
[Comissão Nacional de Promoção dos Direitos e Proteção das Criança e Jovens](#)
[ePortugal.gov.pt](#)
[Santa Casa da Misericórdia](#)
[Segurança Social](#)

Germany

[SGRM](#)
<https://www.wunschkind.de/>

Spain

Gamete and embryo donation

[Asociación para el estudio de la Biología de la reproducción](#)
[Comisión Nacional de Reproducción Humana Asistida](#)
[Sociedad Española de Fertilidad](#)

Surrogacy

It is not legalized in Spain
[Ministerio de derechos sociales y agenda](#)
[Asociación Estatal de Acogimiento Familiar \(ASEAF\)](#)
[Consejería de Igualdad, Políticas Sociales y conciliación](#)
[Consejería de Derechos Sociales, Igualdad, Diversidad y Juventud](#)
[Gobierno de España](#)

Latin America

Gamete and embryo donation

[Programa Nacional de Reproducción Médicamente Asistida](#)
[Ministerio de Salud de la Argentina](#)

Surrogacy

[Blog - Maternidad Subrogada en Chile](#)
[Blog - Vientre en Alquiler o Embarazo Subrogado en Colombia](#)

Adoption and fostering

[Fundación Chilena De La Adopción](#)
[Gobierno de Colombia](#)
[Gobierno de Estado de México](#)
[Instituto Colombiano de Bienestar Familiar](#)
[Ministerio de Justicia y Derechos Humanos](#)
[República Argentina](#)
[San José Fundación](#)
[Servicio Nacional de Menores \(Sename\) - Chile](#)

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