The importance of the 'family clock': Women's lived experience of fertility decision-making 6 years after attending the Fertility Assessment and Counselling clinic

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Abstract

This study explored women's lived experience of making fertility decisions six years after attending the Fertility Assessment and Counselling (FAC) clinic in Copenhagen, Denmark, which is a personalized fertility awareness intervention. We conducted a qualitative interview study with 24 women who attended the FAC clinic 6 years earlier. Interviews were semi-structured and broadly examined the women's perceptions and experience of the intervention during follow-up. Data was analyzed using a phenomenological framework and themes were identified related to women's experience of making fertility decisions after attending the FAC clinic. The overarching theme regarding the women's lived experience of making fertility decisions after attending the FAC clinic was: **Fertility decisions are guided by the 'family clock'.** There were four themes*: 1) Deciding to 'get started' by attending the FAC clinic; 2) Sense of making informed and empowered decisions; 3) Influence of partner status on fertility decisions; and 4) Decisions dictated by circumstance over preference or knowledge.*

At follow-up, the majority (21 women, 88%) had become parents. More than half of the women said that they had not achieved their desired family size. Consideration of women's 'family clock' is necessary in personalized fertility awareness interventions to enable women to achieve their family goals.

Keywords: fertility, education, fertility awareness, qualitative

Introduction

Women's age at first birth has been steadily rising in high income countries as an increasing number of women delay childbearing (Schmidt et al., 2012). Fertility awareness initiatives and educational interventions have been developed in response to the recognized negative consequences of delayed childbearing (e.g., age related infertility, smaller family sizes than intended, unintentional childlessness; Schmidt et al., 2012) and strong evidence for the presence of significant gaps in men and women's fertility knowledge (Pedro et al., 2018). The underlying assumption in developing fertility education interventions is that men and women may be making decisions about their fertility based on inaccurate information or insufficient knowledge. Fertility education interventions were developed with the goal of promoting informed and satisfying fertility decisions and to assist men and women to achieve their family building goals. But what does it mean to make informed and satisfying fertility decisions and are men and women meeting their family building goals after being exposed to fertility awareness interventions? Two broad categories of fertility awareness interventions exist. The first are broad fertility educational strategies that are meant to reach a wider audience to increase general knowledge about fertility (e.g., fertility campaigns, educational websites; e.g., Boivin et al., 2018b; Hammarberg et al., 2017; Daniluk & Koert, 2015). The second are personalized fertility assessments that provide tailored guidance and information unique to the individual based on assessment of risk factors and/or medical examination to increase (e.g., Bunting & Boivin, 2010; Stern et al., 2013; Hvidman et al., 2015).

One such personalized fertility awareness intervention is The Fertility Assessment and Counselling (FAC) clinic, which was opened in late 2011 in Copenhagen, Denmark in Rigshospitalet, University of Copenhagen Hospital. It provides personalized fertility assessment and guidance to individual women and men in relation to their personal fertility levels (Hvidman et al., 2015). Individuals are self-referred and consultations are provided free of charge by a consultant in reproductive medicine. They undergo a clinical examination (e.g., for women – antral follicle count (AFC), anti müllerian hormone (AMH) test; for men – semen analysis) and an evaluation of individual risk factors for infertility (e.g., personal medical and reproductive history and lifestyle factors) and are given advice tailored to their personal risk profile. The overall goal of the FAC clinic is to increase women and men's fertility awareness and to assist them to achieve their family building goals (Hvidman et al., 2015).

Several studies testing the FAC clinic concept have been published (e.g., Birch Petersen et al., 2015; Hvidman et al., 2015). For example, in a two-year follow-up study, Birch Petersen and colleagues (2017) found that 68% of the 570 women who answered the survey (91% response rate) had started to try to become pregnant since attending the FAC clinic. However, we know less about women's lived experience of making decisions related to their fertility after attending the FAC clinic. In assessing the feasibility and acceptability of a health education intervention, it is important to gather qualitative data regarding the participants'

experiences with an intervention to assess its impact (Bowen et al., 2009). Qualitative data allows for an in-depth examination of a phenomenon in order to gain a better understanding of the unique nuances (Patton, 2014).

Besides the current study, only one other qualitative follow-up study has been conducted on women who attended the FAC clinic. Sylvest and colleagues (2018) gathered data from interviews with 20 women who attended the FAC clinic one year prior to the interview. This study examined the impact of attending the FAC clinic on women's decisions and subsequent choices regarding their fertility. Women believed that attending the FAC clinic was a 'catalyst for change' in their lives (i.e., created or facilitated change). Some women said they remained in 'limbo' and were still in doubt about timing of pregnancy because they did not receive a clear deadline of how long they could continue to delay childbearing from the FAC clinic. However, others stated that attending the FAC clinic gave them peace of mind that they could wait to become pregnant and figure out their future plans about childbearing. Given that the follow-up interviews were conducted only one year after attending the FAC clinic, we do not know about their lived experience of fertility decision-making in subsequent years.

The study of fertility decision-making has been undertaken in several different fields (e.g., demography, economics, reproductive health, maternal and child health, psychology). One of the ways in which fertility decision-making has been studied is through an examination of individuals' fertility intentions and behavior and the factors that influence them. The Theory of Planned Behaviour posits that there are social and psychological processes that influence the creation of individual attitudes and behaviour influencing decisions (Ajzen, 2002; Ajzen & Klobas, 2013). Miller and Pasta (1995) adapted the original Theory of Planned Behavior (TPB) to fertility-related decisions. They included intentions regarding child-desire (whether to have children), child-timing (when to have a child), and child number (how many children wish to have). In this model, fertility intentions (motivations to perform behaviour) are determined by personal attitudes (assessment of positive or negative outcomes of behaviour), subjective norms (social influence to perform/not perform the behaviour), and perceived control (the degree to which a person believes they can act) (Ajzen, 2002). Researchers such as Williamson and Lawson (2015) have found support for the TPB as a suitable conceptual framework for explaining the processes involved in people's fertility intentions regarding delayed childbearing.

Studies have examined the broad processes involved and factors related to readiness for parenthood and fertility decision-making (Boivin et al., 2018a; Lampic et al., 2006; Petersen et al., 2012). For example, Boivin and colleagues (2018a) examined fertility decision-making in 10,045 men and women currently trying to conceive. Factor analysis identified four important decisional factors in readiness to conceive: social status of parents, financial conditions, personal and relational readiness and physical health and child

costs. Cross-sectional research demonstrates that men play an important role in women's fertility decision-making (Hammarberg et al., 2017) with the lack of a partner or a suitable and ready partner being a common reason that women delay parenthood (Hammarberg & Clarke, 2005; Holton et al., 2011). Much of this research has been conducted using quantitative methods. A small body of qualitative research has focused on the lived experience of fertility and reproductive decision-making giving us a glimpse of the processes and experiences at play through an exploration of individual accounts and personal meanings. For example, this research has shown that the complex interplay between individual, familial and social factors influences women's fertility decisions (Benzies et al., 2006) and that 'whether' and 'when' to have children are salient fertility decisions that are considered a normal part of the life course (Alvarez, 2018). Other research has examined the lived experience of delaying childbearing and found that women often experience the timing of starting a family to be dictated by circumstance rather than an active, conscious choice (Cooke et al., 2012). There is a need to know more about the lived experience of making fertility decisions in general, but especially after exposure to a fertility awareness intervention.

Thus, the overall purpose of this qualitative follow-up study was to examine women's perceptions and experiences of fertility and assessment and counselling six years after attending the FAC clinic in Copenhagen, Denmark. A previous paper from this study examined the participants' perceptions of the FAC clinic as a fertility awareness intervention (Koert et al., 2020). The current paper explored women's lived experience of making fertility decisions in the six years after receiving personalized fertility education, assessment and counselling at the FAC clinic. The study study of lived experience focuses on how people live through and react to their experiences of every day life events. It "privileg[es] experience as a way of knowing and interpreting the world" (Boylorn, 2008, p. 490). As such, we can develop a nuanced, in depth understanding what it is like to make fertility decisions after attending the FAC clinic by examining the lived experience of those who have experienced it.

Materials and Methods

Design and Procedure

A qualitative study using a phenomenological perspective was conducted to answer the research question. Phenomenology is the study of the lived experience of a particular phenomenon from the point of view of those who experience it (van Manen, 1990).

A research study using a phenomenological perspective aims to generate rich, detailed accounts of personal experience to develop a nuanced understanding of a phenomenon of interest that is not well-known (Patton, 2014).

Setting

The FAC Clinic was opened at the end of 2011 in Copenhagen, Denmark and located in Rigshospitalet, Copenhagen University Hospital. See Hvidman et al. (2015) for details on the FAC clinic.

Data Collection

A semi-structured interview guide was developed that included open-ended questions exploring women's lived experience of making fertility decisions after attending the FAC clinic. The interview guide included questions about the topic of fertility decision-making including the guiding question: "What has it been like to make fertility decisions after attending the FAC clinic?". Questions on the topics of reasons for attending, if/how their needs had been met, their understanding of the information provided and their general perception of the FAC clinic were also asked and data specific to these topics have been previously published in Koert et al. (2020).

Before the study was started, we (co-authors) considered our preconceptions regarding the lived experience of making fertility decisions after attending the FAC clinic. We assumed, that attending the FAC clinic may have an impact on women's fertility decision-making, given what we knew from previous studies conducted one year post intervention (Sylvest et al., 2018). However, we did not assume to know the nuances in the lived experience of making fertility decisions over time. In order to make the questions exploratory and not restricted by our preconceptions, we remained aware of this assumption during the interview and analysis process. Open-ended and non-leading questions were asked to encourage exploration of all experiences of fertility decision-making.

In order to ensure trustworthiness of the study findings, we used the concepts of data saturation and information power to guide our decisions regarding number of participants included. Data saturation occurs when after conducting several interviews, no new aspects of the experience are added by additional interviews. A review of qualitative studies found that on average, data saturation was reached by 12 interviews (Guest et al., 2006). Information power suggests that the more information the sample holds, the fewer participants needed (Malterud et al., 2016). If the interviews are rich and in-depth, there is more information power. In this study, we conducted over 20 interviews to ensure we met these criteria.

The inclusion criteria included: having attended the FAC clinic in early 2012 and agreeing to be interviewed in person in English. Between February and March 2018, we extracted the names and Danish Personal Identification (CPR) numbers of women from a database of women who had attended the FAC clinic and agreed to be contacted for future research. We sorted by date of attendance starting from January 2012 (first year of operating). Names of potential participants were selected consecutively from the start of the list and sent out in batches of ~40 until data collection was finished. The recruitment notices were sent using the national Health Care electronic system.

In total, 141 notices were sent, 35 women indicated they wished to participate and ultimately 24 interviews were held due to scheduling or other issues (e.g., limited interview period; cancel due to illness). A detailed summary of the recruitment procedure is available in Koert et al. (2020). The interviews were conducted by EK, a Ph.D. and psychologist with experience in qualitative research. The interviews were held at Rigshospitalet, or the participants' work or home according to their preference between February and March 2018. The interviews ranged from 60 and 94 minutes (mean 73 minutes). Single interviews were held with only the interviewer and participant present. Field notes were written after each interview to document the interview conditions, observations on non-verbal communication, and reflections on the participants' experience. The interviews were audio-taped and transcribed verbatim.

Data Analysis

With a phenomenological perspective, the focus is on identifying common themes regarding the lived experience of a particular phenomenon. There are several available procedures for how the themes can be developed. We selected Braun and Clarke's (2006) process for thematic analysis because it can be used within various methodological frameworks. It is an inductive, bottom-up approach where themes are data driven. The analytic process involved the following steps after the interviews were transcribed verbatim: 1) *familiarizing self with the data:* the transcripts were read several times in order to become immersed in the participants' experiences; 2) *generating initial codes:* sections of the transcript (quotations) were labelled with a code that described the key meaning; 3) *searching for themes:* after all of the transcripts were coded and a code list was developed, the codes were sorted into potential themes according to similarities in meaning; 4) *refinement of themes:* all codes and quotations were re-read to ensure they formed a coherent pattern, changes made, themes re-worked and new themes developed. A thematic map was developed and considered in relation to the whole data set (returning to review the full transcripts) and whether these themes accurately reflect the meaning of the data as a whole: 5) *defining and renaming themes:* themes were defined and refined and a detailed analysis was written for each of the themes. Themes were considered in relation to each other. Questions were asked to deepen the analysis such as 'What does this theme mean?' 'What are the assumptions underpinning it?'. In order to develop an overarching theme from the themes, questions such as 'What is the overall story the themes reveal [about the lived experience of making fertility decisions after attending the FAC clinic]?' were considered (Braun & Clarke, 2006, p. 24). Trustworthiness of the analyses were ensured through several methods. Recruitment until saturation of data (i.e., no new themes or information arise in each additional interview; Saunders et al., 2018) was used as a criterion to ensure the research question had been explored in detail. Next, the analyses were shared with the co-authors for review at several stages, discussed in detail, and integrated into the output at each stage (e.g., code list, initial themes, thematic map). First, after EK coded 25% of the interviews, two co-authors read and confirmed that they agreed with the codes. Next, an initial list of sub-themes and themes was developed by EK and

discussed in detail with three of the co-authors. Changes were made based on discussion. All co-authors provided input into the map of the themes. Finally, a summary of themes, sub-themes, descriptions and key quotations was developed and approved by all co-authors. No feedback on the analysis was requested from the participants.

Ethical Approval

The study followed the Helsinki Declaration on human research ethics (World Medical Association, 2013). Informed consent was obtained from all participants before beginning the interview. The consent process involved providing verbal information about the purpose of the study and the interviewer's background. Participants confirmed that they had read the study information and understood that their participation was voluntary, that no identifying information would be published and that they were free to withdraw from the study at any point. The Danish Data Protection Agency approved the study (approval number: 514-0555/20-3000).

Results

The majority of the women (21 women, 87.5%) became parents in the six years after attending the FAC clinic with nine trying to become pregnant in the year immediately after attending the FAC clinic. All who had tried to become pregnant had given birth to at least one child (n=21). The remaining three women (12.5%) were childless and had not tried to become pregnant but wished for a child in the future. All data on demographics and parental status is provided in Table 1.

Six years later, the women were at different stages of making fertility decisions: some having just recently had a child, some having achieved their ideal/desired family size, others grappling with the reality of not achieving their ideal/desired family size or their preferred vision of a family (e.g., two parents) and some still childless and single. The overarching theme regarding the experience of making fertility decisions after attending the FAC clinic was: **Fertility decisions are guided by the 'family clock'.** There were four themes*: 1) Deciding to 'get started' by attending the FAC clinic; 2) Sense of making informed and empowered decisions; 3) Influence of partner status on fertility decisions; and 4) Decisions dictated by circumstance over preference or knowledge.* See Figure 1 for the thematic map. The overarching theme and the four themes are described in detail below with illustrative quotations in italics. Each of the themes corresponded to one of the common fertility decisions (e.g., *when* to start; also see Figure 1).

Overarching theme: **Fertility decisions are guided by the 'family clock'**

In each of the four themes, the women described how their fertility decisions were motivated by their personal preferences and intentions regarding parenthood. They spoke of common fertility decisions

including: *when* to try to become pregnant; *how* many children to have and *preferred spacing* between them (how far apart). The women's accounts also showed that their preferences regarding the decision of *how* to have a child: with their current partner, a new partner, as a solo mother, and/or using assisted reproduction was also an important consideration in their fertility decision-making.

We use the metaphor of a 'family clock' to describe the women's *personal preferences and intentions regarding parenthood and their related fertility decisions* in contrast with the metaphor of the 'biological clock' which generally refers to the biological / physical urges regarding timing of parenthood. The preferences represented in the women's 'family clock' were value-based regarding the 'ideal circumstances' or required preconditions in which to have children and their preferred vision of a family.

In some cases, women had to decide whether to shift their 'family clock' given the reality of their personal, economic and relational circumstances and their current fertility potential. For instance, some women intended or preferred to parent with a partner. But if they were still single in their late 30s or early 40s, they needed to consider solo parenthood or forgoing parenthood altogether if they could not find a partner while they were still fertile. The majority of the women saw having two children as the ideal/preferred vision of a family, but many had to shift this vision, given that they had difficulty becoming pregnant with their first child or did not have the structural or relational support to have more than one child.

Deciding to 'get started' by attending the FAC clinic

There are two subthemes within this theme: Attending the FAC clinic is a fertility decision and Fertility decisions made based on information provided at the FAC clinic.

Attending the FAC clinic is a fertility decision

The women saw attending the FAC clinic as a decision in itself, and in many cases their first active fertility decision.

> *My husband said he didn't want to know. So it was my decisions yeah to get this information. I was more curious about it. So that as well was a big decision.*

They had been thinking about their fertility before attending the FAC clinic, in many cases worrying about their fertility, so calling the FAC clinic was a way of taking control and making an active choice to seek out information about their fertility. Attending the FAC clinic was experienced as a positive decision to be better equipped with knowledge for future decisions.

Fertility decisions made based on the information provided at the FAC clinic

All of the women believed that the FAC clinic was an important and influential factor on their fertility decision-making. They connected attending the FAC clinic and the information they received with their subsequent fertility decisions – particularly about the decision of *when* to try to become pregnant:

> *We decided that we were going to try to have kids soon after that [attending FAC clinic] because we didn't know if it would be difficult or not.*

After attending the FAC clinic, women described feeling motivated to make a decision and take action to pursue their fertility goals even if the decision was to wait. Some described how attending the FAC clinic accelerated or slowed down their fertility decision-making: *'Maybe it got us started earlier than we thought we would'*.

Delaying pregnancy was also seen as a decision in itself – '*now I can wait*'. '*I was able to make the choice to do nothing*'.

Along with influencing the *when* to start trying to become pregnant decision, the women's accounts show that attending the FAC clinic also impacted the '*how*' question (how to have a child: with this partner, a new partner, as a solo mother, and/or using assisted reproduction).

> *I still didn't have a boyfriend so I had to start OK I have to do it myself and I sort of had to make that decision.*

Examples of decisions made and actions taken included initiating conversations with partner about family preferences, discussions with friends/family about possibility of solo motherhood, deciding to leave relationship in which their partner was not ready or willing to have children, and exploring fertility treatment options (e.g., IVF, egg donation). As one woman described, attending the FAC clinic was experienced as a little 'push' to think about and make decisions:

> *I knew that I wanted to have a child, for me it [attending FAC clinic] was a way to get a little push to do it and not to wait maybe 6 months or a year and I was afraid I'd get onto the wagon too late. Maybe too, it helped me make the decision I'd say.*

Sense of making informed and empowered decisions

The women wished for specific, detailed and up-to-date knowledge on their fertility potential in order to make their fertility decisions. The women described how they experienced calling the FAC clinic to make an appointment as an empowered decision to seek out information and take control of their family plans. After attending the FAC clinic, women talked about feeling equipped with knowledge regarding their personal

fertility status to make informed and empowered decisions, in particular the decision of *when* to try to become pregnant.

> *We were shown that yes everything is good and when you start it shouldn't be a problem from both of you, so for us we knew OK we can take a breather for a year or two.*

Women that were told at the FAC clinic that their fertility was declining described feeling a sense of pressure to start trying to become pregnant, but also a sense of relief that they had not missed their opportunity to become a parent and could still make an informed choice. Thus, the women experienced their decision to start trying to become pregnant in these circumstances as an empowered and informed one.

> *OK it was a bad result. You can cry for a day or two and then what can I do then? Just search and try to find a solution.*

> *It [attending FAC clinic] gives you more force, more power to actually make your own choices and to know that you did something. Maybe it won't end up the way you thought but at least you did something.*

For all women, the sense of making informed and empowered decisions was common in one to three years after attending the FAC clinic. As time since attending passed, some women described a wish for additional information regarding their current fertility to aid their decision-making. For example, after a first pregnancy or if several years had passed since attending the FAC clinic, they were uncertain about their current fertility status and potential. In these cases, women wished for an opportunity to attend the FAC clinic again.

> *If someone did offer me to come again I would go right away.*

The women described how their wish for this information was driven by their general sense that fertility declined with age, knowledge that was clearly remembered from the consultation at the FAC clinic that provided information on the age-related fertility decline.

Women also described wishing to receive additional guidance around their subsequent fertility decisions, such as what are their options in their current personal, relational and economic circumstances at this stage of their lives?

> *It could be nice to talk with somebody who did this work, saying OK what is your options where are you now?*

Influence of partner status on fertility decisions

The women's accounts illustrated that their partner status influenced the decision of *how* to have a child the most out of the common fertility decisions. The women described three distinct experiences. First, having the 'right' and 'ready' partner facilitated fertility decision-making. Second, deciding to prioritize parenthood over partnership in the short term, and third, by no partner meant no baby.

Having a supportive, suitable partner with the same fertility goals increased women's sense of empowerment and control over their fertility decisions. For many women, meeting the 'right' partner accelerated their fertility decisions. For example, some women described how any uncertainty or lack of readiness for parenthood disappeared when they knew they were making the decision to have a family with the right life partner.

> *…because he was quite keen on it* [having a child] *and he told me straight away that he would like to have some kids with me so I was like oh! Let's do that.*

Those who decided to become solo mothers because they could not find a partner or had been in a relationship with a partner who was not willing nor ready to have a child experienced a combination of grief and empowerment. They expressed feelings of grief related to not having children the way they had pictured it according to their 'family clock'. However, they also felt the decision to become a solo mother was an empowered decision within their current circumstances. They expressed an awareness of how their fertility was time-limited but their opportunity to find a partner was not. Thus, it was important to take the chance to become a mother while they were still fertile and to decide to *prioritize parenthood over partnership* in the short term. All of the solo mothers described their hope to find a partner in the future, but all remained single at the six-year follow-up interview.

> *I decided that I couldn't keep on waiting so I had to do it the other way around have the baby first and find the man afterwards because you couldn't if you wait too long perhaps it wasn't possible so it was, it was the age and the worry that I wouldn't be able to get pregnant so I thought yeah then the decision to say I can do this on my own.*

Other women did not want to parent on their own. Their 'family clock' included a preference to parent with a willing and suitable partner and they were unwilling or unable to shift this ideal. Thus, for them no partner meant there would be no baby. In the time since attending the FAC clinic, some of these women were fortunate to meet a partner. Others who had not were still waiting to have a child.

> *…this is a dream of a family and something I want to do with someone else. I am not at a point where I want to go, where I have, I want to go and say I will do this on my own.*

Specifically, two of the three childless women (all currently single) had decided they only wanted to start a family with a partner and were actively seeking this out (e.g., searching for the right partner; nurturing a new

relationship). The third woman remained open to solo motherhood in the future if the circumstances were right.

Decisions dictated by circumstance over preference and knowledge

Women generally experienced making the decision of *when* to have a first child as an empowered, informed choice influenced by their preferred 'family clock' and knowledge of their personal fertility status provided by the FAC clinic. The women's experiences demonstrate that making the decision of *how many* and *how far apart* was more complex with circumstances playing a role over preferences and knowledge.

Those who achieved their desired family size explained that their decision to have a second child was primarily motivated by age – both their own/partner's age (i.e., not wanting to be too old) and their first child's age (i.e., not wanting too many years in between children). For these women, making the decision regarding a subsequent child felt easier than their decision to have their first child, because they were already parents.

> *I think it was just sort of natural after our first is 3 now, turned in January and it just became kind of natural when she turned two that we just slowly started thinking about it.*

However, more than half of the women in the study said that they had not achieved their desired family size in the six years since attending the FAC clinic. These women explained that their decision regarding having a subsequent child felt restricted due to their circumstances. They did not experience this as an empowered decision motivated by their preferences or knowledge, but rather a decision made by default accompanied with feelings of grief and regret. They cited previous fertility problems/age related infertility, increasing age, or their personal and relational circumstances (e.g., solo mother, financial situation) as factors restricting their options. This group of women included those who had tried to become pregnant with a subsequent child unsuccessfully and those who had not tried due to their personal circumstances.

Age was also an influencing factor in this group's fertility decision-making and commonly cited as the reason for not achieving their preferred family size. Some with age-related infertility underwent fertility treatment to have another child and were unsuccessful. Some had had difficulty becoming pregnant with the first child due to age-related infertility and felt it would be too difficult or impossible to have another child. Others thought the fertility treatment necessary to become pregnant with a second child was too costly. Many described a felt sense of being 'too old' to have more children related to lower energy levels with increasing age. Others shared they believed they were beyond the age limit in which they would be comfortable trying to become pregnant with another child due to decreased chances of becoming pregnant and obstetric and neonatal risks associated with advanced maternal age.

All of the solo mothers wished they had a larger family but felt this decision was restricted by a combination of their advanced age and relationship status. Being both a solo mother and an older mother was too much in terms of risks related to advanced age (i.e., maternal and fetal risks) and responsibility and demand on their time and energy. They felt they only had personal and economic resources for one child.

> *Because I really wanted to have another one but because I am still alone with my son I don't think I can manage to have two children on my own to be honest. It's too much.*

> *If I had a second child I would have to have it too soon because of the age. Like I said if I had had the first child at 31, or 35 I could perhaps do it when she was 3 or 4 but I anticipate that I would be too old when I am 42 or something like that. I don't think I am up for that. Alone.*

Regardless of relationship status, women described feeling grief and regret that they were unable to achieve their desired family size. The women experienced a sense of loss regardless of whether they had tried to become pregnant or not because it involved the loss of the dream of their preferred family ('family clock').

> *It feels sad. Very sad. I am going to cry. It's super sad but that's how it is.*

> *So now I think I'm 45 it's too late now. So I think I am still quite sad about it.*

Those who had accomplished motherhood but were unable to achieve their desired family size were faced with reconciling and making peace with their circumstances, to actively decide to shift and revise their 'family clock' and to feel grateful for the child they had.

> *…there has been a lot of crying that we didn't have a second child but we are just being really humble that we actually got one.*

This was not an easy task and the majority of the women who had not achieved their desired family size were in the midst of grappling with this altered reality when interviewed (i.e., decision that had been made by default).

Discussion

The findings show that women have very clear preferences for the way they want their family to look (timing of when to start, how many children, preferred spacing) and the circumstances in which to have them (how, for example with a willing partner) and their fertility decisions are influenced by these preferences. We have called these preferences and intentions the women's 'family clock'. Many of these preferences are consistent with Miller and Pasta's (1995) common fertility intentions in their adaptation of the Theory of Planned Behavior for fertility decision-making: child-desire (whether to have children), child-timing (when to have a child), and child number (how many children wish to have) while demonstrating that preferences regarding

'*how*' to have a child (e.g., with or without a partner) are particularly salient in the lived experience of fertility decision-making. All of the women in the study expressed a child-desire. Some women shifted their preferences regarding their fertility decisions in response to their life circumstances in order to become parents, while others continued to hope for their ideal scenario (e.g., deciding to become a solo mother versus continuing to search for a partner). In our study, partner status was particularly salient in the women's experience of making fertility decisions after attending the FAC clinic. In some cases, women met the 'right' partner after attending the FAC clinic, which accelerated the fertility decision-making process. A few remained childless due to their lack of partner. Others decided to prioritize parenthood over partnership in the short term with the hope of meeting a partner in the future.

In Sylvest et al. (2018) one-year follow up study with women who attended the FAC clinic, many had made decisions regarding their fertility, but several women described remaining 'in limbo'. In our study (no overlapping participants) women were no longer 'in limbo' six years later – all but one identified they had made active decisions about their fertility (deciding to conceive, searching for partner) in the time since attending the FAC clinic and felt these were empowered, informed decisions. In this way, consistent with Sylvest et al. (2018) attending the FAC clinic acted as an external 'cue to action' as described in the Health Belief Model (Glanz & Bishop, 2010; Rosenstock, 1974) to stimulate the decision-making process to engage in health-promoting behaviours (i.e., actions to facilitate pregnancy). The decision of 'when to start' was particularly salient and consistent with their reason for attending the FAC clinic (Koert et al., 2020). The women's accounts show that the decisions of 'when to start' and 'how' were also influenced by the Theory of Planned Behavior's concept of 'perceived behavior control', that is, the degree to which the person believes they can act (Miller & Pasta, 1995). Partner status was a key factor in perceived control with those with ready, willing partners believing they could act (start to try to become pregnant).

The women in our study believed that attending the FAC clinic played a role in their fertility decision-making. Their accounts show that attending the FAC clinic was in itself a fertility decision that influenced subsequent fertility decisions. Although the women's sense of empowerment to make informed fertility decisions was particularly present in the first one to three years after attending the FAC clinic in regard to the 'when to start' question, their accounts show that their subsequent fertility decisions in later years (e.g., four to six years after attending FAC clinic) continued to be impacted by the information they received at the FAC clinic. The information became integrated into their previous knowledge and experience and was long-lasting. For example, the women retained a general sense that fertility declined with age and even after 6 years clearly remembered the age and fertility graph shown at the FAC clinic to illustrate age-related fertility decline. The information made them aware that their fertility was not infinite and they could not delay the decision to have a child (or an additional child) indefinitely. They wished for more of the same information and guidance as provided at the FAC clinic to aid subsequent decisions in the years after attending the FAC

clinic. The findings underscore that in order to promote empowered, informed decision-making, information and guidance are needed across the reproductive life span and fertility decision-making period in particular if pregnancy is delayed after attending the FAC clinic or with regards to the likelihood of additional pregnancies.

Although all those women who decided to try to have a child (n=21) were successful in having at least one child, less than half of the women stated that they had achieved their desired family size (two or more children). Despite being aware of age-related fertility decline, many ran out of time to have the number of children they desired. The women's accounts reveal the complexity of the decision to have another child. In many cases, the women felt their decisions to have an additional child were dictated by circumstance (e.g., their age or relationship status) rather than preference or knowledge. As such, they did not achieve their image of their desired family and this was accompanied with feelings of grief and regret similar to reactions to secondary infertility (Hammer Burns & Covington, 2006). Our findings underscore the importance of helping women and men to achieve their desired family size rather than only their first child. Interestingly, this is in contrast to current public policy in Denmark where citizens can access free fertility treatment in public clinics to have their first child but public funding is unavailable for subsequent children.

These findings suggest that when discussing when to try to become pregnant with women of reproductive age, it is important to map out and plan future pregnancies according to women's 'family clock' (i.e., preferences regarding family size and preferred spacing between children) so that women are more likely to achieve their family building goals. When attending the FAC clinic, the women in the study were primarily focused on the decision of 'when to start' and how long they could delay childbearing, which is consistent with previous research conducted in the FAC clinic that surveyed women's reason for attending (Birch Petersen et al., 2015; Hvidman et al., 2015; overlapping samples).

However, our study's findings suggest that in order to avoid having a smaller family than intended, focus should be shifted to 'when do I need to start to achieve my preferred family size?' Habbema et al. (2015) have developed a model regarding when people should try to start to become pregnant according to the number of children they would like, and this has later on been integrated into the FAC clinic. It may also be that women's reality and life circumstances (e.g., advanced age or solo motherhood) does not fit their 'family clock' and shifting plans is necessary in order to promote satisfying and informed fertility decision-making. For example, women may not have control over some circumstances (e.g., relationship status), but they can avoid age-related fertility issues (most common circumstance preventing their desired family size) if they start earlier. If they are unable to start earlier, the FAC clinic could facilitate the formation of realistic expectations regarding what is possible within particular age ranges in order to prevent grief and regret regarding unachieved family size as was described by the women in the study.

This fits with previous research on the Theory of Planned Behavior and fertility intentions which has been used as a model to explain how individuals make decisions in their social context with varying sense of control over their behaviours (Ajzen & Klobas, 2013; Klobas, 2011; Miller & Pasta, 1995). Researchers have found that in particular, people's perceptions over control of their decisions are the most significant predictor of intentions to delay childbearing (Williamson & Lawson, 2015). In the case of the present study, the women believed that it was possible to control their fertility. They sought information at the FAC clinic in order to give them a sense of control over their plans and decisions regarding their 'family clock'.

Fertility education interventions such as the FAC clinic have been developed with the goal of promoting informed and satisfying fertility decisions and to assist men and women to achieve their family building goals (e.g., Hvidman et al., 2015; Pedro et al., 2018). Our qualitative follow-up study illustrates that women perceive that attending the FAC clinic impacted their experience of fertility decision-making, particularly their experience of feeling empowered to make informed decisions regarding when to start trying to become pregnant. It provides support for the provision of personalized interventions as part of prevention efforts given the need for specific, detailed knowledge and the need for reassurance of their fertility potential. It is likely that a combination of different strategies at different points in the reproductive life course are needed in order to be fully effective in promoting informed fertility decision-making and preventing infertility and unintentional childlessness. Whilst this research focused on exploring women's lived experience of fertility decision-making, quantitative research is needed to determine efficacy of different interventions at specific time points and its causative effect on fertility decision-making.

Over half of the women shared that they perceived they were unable to achieve their desired family size due to life circumstances such as their advanced age. Thus, the decision of how many children to have and preferred spacing was made by default rather than as an active choice. It may be that decisions made by default are more difficult to accept given that control is attributed to external factors. Future research needs to operationalize the concept of 'informed and satisfying' fertility decisions to further measure the effectiveness of fertility education interventions like the FAC clinic.

Limitations

The participants were self-selected from a larger study that included volunteers who were eager to have knowledge about their fertility. Thus, this is a special sample that was eager to speak about their experiences. In a qualitative study, diversity of opinions and examples is preferred. Representativeness is not required. In this study we included women with a wide range of reported FAC clinic advice (fertility looks 'fine', fertility is declining and childbearing should start now, potential fertility problems) and fertility trajectories (parents of 1-3 children, currently childless, solo mothers, mothers with partners, heterosexual/lesbian). Only 25% of the women invited to participate expressed interest in attending. We were not permitted to ask why participants declined due to ethical limitations. It may be that the English language requirement caused some

women to decline. As such we do not know the experiences of those that did not participate and we cannot expect that this group's experience is reflective of all women of reproductive age. However, the study benefits from a long-term follow-up period to explore women's perception of the impact of a fertility awareness intervention, and is the first to do so.

Conclusion

In summary, the FAC clinic and other similar interventions should be aware of the power they have in conveying knowledge and information that influences women's fertility decision-making. The findings highlight the value of personalized fertility awareness intervention that provides information tailored to the individual. As such, prevention efforts to prevent infertility and childlessness by increasing fertility awareness should include both personalized and general approaches to be most effective. In order to promote empowered, informed fertility decision-making, information and guidance are needed across the reproductive life span so that individuals can achieve their family goals and to create realistic expectations regarding what is possible within particular age ranges.

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Disclosure of Interest

JB reports that the risk evaluation form used at the Fertility Assessment and Counselling (FAC) clinic was inspired by the Fertility Status Awareness Tool FertiSTAT that was developed at Cardiff University for self-assessment of reproductive risk (Bunting and Boivin, 2010). JB also reports personal fees from Merck KGaA, Merck AB, Theramex, Ferring Pharmaceuticals A/S and a research grant from Merck Serono Ltd. outside the submitted work. The other authors report no conflict of interest.

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Figure captions

Figure 1: Women's fertility decisions guided by their 'Family clock'

Note: Themes (in circles) correspond to one of the common fertility decisions identified within the clock.

The 'Family clock' relates to the personal preferences and intentions regarding parenthood and their related fertility decisions.

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Emily Koert is a psychologist and Postdoctoral Researcher at the Department of Public Health, University of Copenhagen, Denmark and Adjunct Professor in the Department of Educational and Counselling Psychology at the University of British Columbia, Vancouver, Canada. Her research and clinical work is focused in the field of reproductive health including psychosocial consequences of infertility, pregnancy loss, use of assisted reproduction and childlessness; family formation and childbearing decision-making; and fertility awareness and education. Emily specializes in qualitative and mixed methods research. She has presented at numerous national and international conferences and published over 20 peer review papers.

Randi Sylvest graduated as a master in Public Health from Copenhagen University, Denmark. She is a PhD-student at the Fertility Clinic of Hvidovre Hospital, Denmark. Her research field includes qualitative research with focus on men, family formation, fertility treatment and fertility awareness. She has conducted over 100 interviews. She is also working with quantitative studies including registries and questionnaires. Conducted nearly 20 original papers with peer-review and had presented at several big conferences worldwide.

Ida Vittrup is a PhD student at Copenhagen University Hospital Gentofte in the Department of Dermatology and Allergy. She graduated with a Master of Science (Medicine) from the University of Copenhagen, Denmark in 2016 and has subsequently completed her internship. Her research is focused on psychosocial consequences on patient and family of skin diseases (special focus on atopic dermatitis). She has most of her experience in quantitative research, working with the large Danish registries. She is also interested in and working with fertility assessment and awareness and is currently conducting a follow-up questionnaire study on the FAC clinic. She is an author of nearly 10 original papers with peer-review. She has presented at several big conferences worldwide and is a repeatedly awarded speaker.

Helene Westring Hvidman, MD, Ph.D, specialist registrar in Gynecology and Obstetrics at Rigshospitalet, Copenhagen University Hospital, research within the field of reproductive medicine focussing on the prediction of women's future fertility, ovarian reserve assessment and active part in establishing the fertility assessment and counselling clinic.

Kathrine Birch Petersen is a specialist in Fertility and OB/GYN. She is Medical Director/CEO of The Fertility Partnership in Denmark. Her PhD is about the Fertility Assessment and Counselling Clinic at Rigshospitalet - the first of its kind worldwide. Primary research areas are ovarian reserve, fertility awareness and female fertility. Has written several peer reviewed articles about fertility and early pregnancy. Fertility expert with strong management, organizational and strategical skills. International speaker with a substantial research network and collaborations worldwide. Has a Master in Public Governance from Copenhagen Business School. Previous chairman of the Danish Fertility Society.

Jacky Boivin is Professor of Health Psychology and Practitioner Health Psychologist at the the School of Psychology, Cardiff University. She is recognized internationally for her systematic and research-oriented perspective on the investigation of psychosocial issues in fertility heath. She has led many pioneering projects, published many peer-reviewed articles, and produced, with her research group, many tools to support the care of people with fertility problems (FertiQoL, PRCI, FertiSTAT, DrawingOut - Endometriosis). She is Section Editor for Reproductive Biomedicine Online ("Reproductive Technology and Society") and Associate Editor for Human Reproduction Open, and is on the Executive Committee of the British Fertility Society for Evidence-Based Patient Support. Her current research is focused on cognitive aspects of fertility, fertility education and global fertility health.

Anders Nyboe Andersen is a Professor Emeritus, Reproductive Medicine, the Fertility Clinic, Rigshospitalet, Copenhagen University Hospital. Copenhagen. He was head of the Fertility Clinic, Righospitalet from 1995-2011 and head of the Fertility Clinic, Herlev from 1991-1995. He has worked with Assisted Reproductive Technology for the last 30+ years. He developed the Fertility and Assessment Counselling Clinic concept in Copenhagen, Denmark in 2011 and expanded to several clinics. Total of 310 scientific articles, Assistant Editor of Acta Endocrinologica from 1988 – 1992 and Human Reproduction 2006 – 2009. University advisor for a total of 24 Ph.D. students. ESHRE, Member of executive board of ESHRE 1998 – 2002, Chairman of "European IVF Monitoring" 2006 - 2009 and Chairman of the Danish Fertility Society from 2001-2005. He received the Howard Jacobs Award from the British Fertility Society in 2016.

Lone Schmidt is Professor wsr, DMSc, PhD, MD in reproductive health and infertility at Department of Public Health, University of Copenhagen. Her research focuses on somatic and mental health consequences of infertility and its treatment; how we can prevent infertility and its consequences; and studies regarding

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Table 1

Demographics and fertility outcomes

Demographics and fertility outcome	At intervention (2012) N (%)	At follow-up (2018) N (%)
Age (M(SD))	33.5 (3.4)	39.5 (3.4)
Marital Status		
Married/Cohabiting	9 (38)	14 (58)
Single	15 (63)	10 (42)
Parental status		
No children	24 (100)	3 (13)
Parents		21 (88)
Partnered		14 (67)
Solo mother		7 (33)
Number of children (n=21)		
1 child[a]		14 (67)
2 children		6 (29)
3 children		1 (5)
Year tried to become pregnant		
Before FAC clinic		1 (5)
First year after attending		9 (43)
Second year		1 (5)
Third year		4 (19)
Fourth year		5 (24)
Pregnant without trying		1 (5)
Wished for more children (n=21) [c]		
No (all had 2-3 children or currently pregnant)		8 (38)
Yes		13 (62)

Note:

Intervention = attending Fertility Assessment and Counselling clinic.

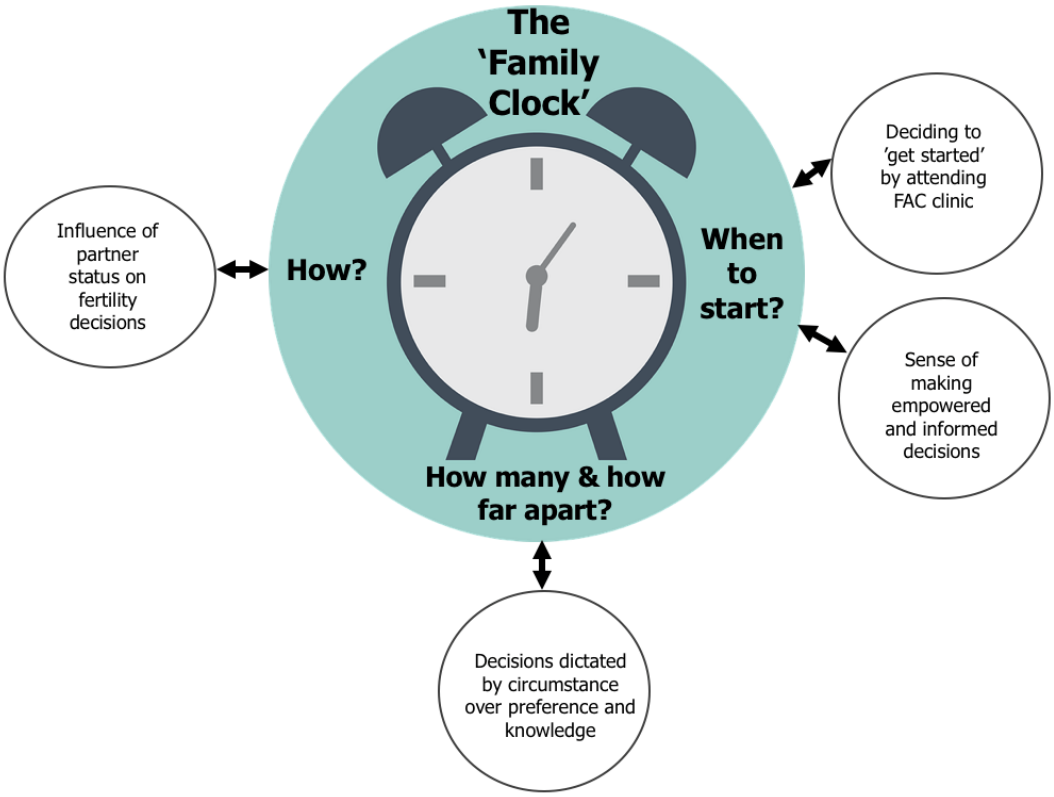
Cohabiting = living together. MAR= Medically assisted reproduction (any form of fertility treatment).

[a]Two women pregnant with second child.

[b] Two deliveries were through donor insemination for lesbian couple.

[c] Does not include 3 currently childless women that had not tried to become pregnant but wished for a child in the future

Figure 1: Women's fertility decisions guided by their 'Family clock'



Note: Themes (in circles) correspond to one of the common fertility decisions identified within the clock.

The 'Family clock' relates to the personal preferences and intentions regarding parenthood and their related fertility decisions.