

Understanding Dental Professionals' Roles in Oral Health Education

Emma Barnes

Supervisors: Prof Alison D Bullock, Prof Ivor G Chestnutt

A Thesis Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy of Cardiff University

School of Social Sciences, Cardiff University.

October 2021

Funded by Knowledge Economy Skills Scholarships (KESS).

Knowledge Economy Skills Scholarships (KESS) is a pan-Wales higher-level skills initiative led by Bangor University on behalf of the Higher Education sector in Wales. It is part-funded by the Welsh Government's European Social Fund (ESF) West Wales and the Valleys programme.

Ysgoloriaeth Sgiliau Economi Gwybodaeth (KESS) yn Gymru gyfan sgiliau lefel uwch yn fenter a arweinir gan Brifysgol Bangor ar ran y sector AU yng Nghymru. Fe'i cyllidir yn rhannol gan Gronfeydd Cymdeithasol Ewropeaidd (ESF) cydgyfeirio ar gyfer Gorllewin Cymru a'r Cymoedd.

This study was facilitated by HealthWise Wales, the Health and Care Research Wales initiative, which is led by Cardiff University in collaboration with SAIL, Swansea University.

Acknowledgments

I would like to express my sincere thanks to my two supervisors, Professor Alison Bullock and Professor Ivor Chestnutt. It was with their support that this study was initially designed, and the funding secured to enable me to carry it out. Throughout the PhD their guidance and encouragement has been invaluable, and I am incredibly grateful for their time and advice. I would also like to thank Dr Jemma Hawkins for her constructive and supportive feedback as part of the School of Social Sciences review process.

I am also extremely grateful to Knowledge Economy Skills Scholarships (KESS) for funding the study and many travel and learning opportunities. A huge thank you to my company partners Professor Sue Bale (Aneurin Bevan University Health Board) and Professor John Geen (Cwm Taf Morgannwg University Health Board) for co-funding the studentship and their support.

I would also like to deeply thank everyone who gave their time to participate in the data gathering. Those who trusted me to spend time in their dental practices, and the dental professionals and patients who shared their views and experiences with me.

I would like to express my love and gratitude to my dad for his unwavering belief in me, both in the PhD and just in general. A thank you to Jason, this would have been a very different three years without our Skype chats. I am also very grateful for the support and encouragement of my friends Kath and Jennifer, and Felicity, Elaine, and the whole CUREMeDE team.

Abstract

Re-orientation of dentistry towards prevention is leading to a greater emphasis on attempts to encourage patient self-care through Oral Health Education (OHE) in general dental practice. Little is known about how dental professionals define prevention and how it is applied in practice or on how patients' expectations influence their understanding of the OHE interaction. The main research question addressed in this thesis is "How is oral health education understood and delivered within a preventive approach?".

Qualitative data were gathered from semi-structured interviews with 30 dental professionals (17 dentists, seven dental nurses, and six dental therapists) and 87 patients. Prior to the Covid-19 restrictions, case studies of two NHS general dental practices generated 14 dental professional interviews (six dentists, three dental therapists, and six dental nurses), and 20 patient telephone interviews (10 per practice). Following the Covid-19 restrictions, telephone interviews were carried out with a further 11 dentists and three dental therapists. Sixty-seven patients were recruited for telephone interview via HealthWise Wales. The data were analysed using Thematic Analysis and mapped onto the Capability-Opportunity-Motivation-Behaviour (COM-B) and Theoretical Domains Framework (TDF) using qualitative content analysis.

Findings included a favourable view of the perceived importance and patient benefit of OHE by both patients and dental professionals, and patient trust in the expertise of dental professionals. Key practice-related and dental professional-patient communication barriers to OHE provision were identified such as time-pressured appointments owing to insufficient remuneration and perceptions of patient disinterest or of dental professionals'

communication of blame or judgement. Professional responses to OHE outcomes and motivation, and barriers and facilitators to behaviour change (e.g., new knowledge, retaining dentition) were also identified.

The findings highlight the interactional nature of OHE and illustrate how the encounter is constrained or facilitated by contextual factors operating at different levels, both for the dental professional and the patient.

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Abbreviations

ABUHB	Aneurin Bevan University Health Board
ACORN	Assessment of Clinical Oral Risks & Needs
BSDHT	British Society for Dental Hygiene and Therapy
CCGs	Clinical Commissioning Groups
COM-B	Capability-Opportunity-Motivation-Behaviour framework
CTMUHB	Cwm Taf Morgannwg University Health Board
DCPs	Dental Care Professionals (In this study: DHs, DTs, DNs, OHEds)
DH	Dental hygienist
DN	Dental nurse
DT	Dental therapist
DPB	Dental Practice Board
GDC	General Dental Council
GMP	General Medical Practitioner
HIW	Health Inspectorate Wales
HRA	Health Research Authority
HWW	HealthWise Wales
NHS	National Health Service
OHE	Oral Health Education
OHEds	Oral Health Educators (usually DNs who have completed an OHE qualification)
RCT	Randomised control trial
TDF	Theoretical Domains Framework
UDA	Unit of Dental Activity
UHB	University Health Board
UK	United Kingdom

1 Introduction

This chapter introduces oral health as a state with both physical and social impact. Firstly, the concept of oral health is explored. This is followed by a discussion of oral health as a public health concern, highlighting oral health's personal and societal impact. The chapter then explores the drive towards preventive oral health care, and current policy efforts to improve population oral health in Wales. A summary of oral health education provision that underpinned the work undertaken in this thesis is provided, leading to a summary of the research's aims.

1.1 What is oral health?

While oral health is understood as an essential part of general health and well-being, it has been noted to have a broad definition (Gift et al. 1997) that is open to different interpretations (Glick et al. 2016). An agreed definition of oral health is important in the provision of prevention and health promotion— clear definitions can help stakeholders design appropriate provision (Dyer and Robinson 2006; Glick et al. 2016). It also ensures that health professionals are able to convey a clear, consistent message to patients (Dyer and Robinson 2006).

Downie et al (1996) point out the distinction between negative (the absence of disease) and positive definitions of health (well-being). According to the negative definition of health, poor oral health would most commonly be viewed as the significant presence of conditions such as dental caries (tooth decay), periodontal disease (gum disease) or, at its most life-threatening, oral cancer (Stillman-Lowe and Levine 2007). Positive approaches to health

view oral health as multifaceted, and consider the impact on functioning, quality of life, and overall well-being alongside oral disease status (Gift et al. 1997; Petersen 2003; Sisson 2007; Glick et al. 2016). Functional aspects of oral health include the ability to *“speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex”* (Glick et al. 2016; p322). Well-being and quality of life includes psycho-social factors such as impact on mental health and the ability to interact with others (Gift et al. 1997; Petersen 2003; Sisson 2007; Glick et al. 2016). These factors exist on a continuum and involve subjective perceptions rather than relying on discrete, objective clinical categorisation of the individual’s state (Peres et al. 2019). The link between health and wider well-being is implicit in modern health promotion, for example as used in the Ottawa Charter (World Health Organization 1986).

1.2 Oral health as a public health concern

Historically, public health concerns mainly addressed communicable diseases, such as cholera, smallpox, tuberculosis, and poliomyelitis, that were transmitted by infection and environmental factors (Brachman 2003). Today, public health is increasingly concerned with non-communicable diseases, such as cardiovascular disease, cancers, chronic respiratory diseases, and diabetes, which are often claimed to be caused by lifestyle factors (Cheminade 2017; World Health Organization 2018). Dental caries is the most common non-communicable disease globally (Kassebaum et al. 2015; Kassebaum et al. 2017), periodontitis is the sixth most prevalent (Marcenes et al. 2013; Kassebaum et al. 2014). Non-communicable oral conditions are chronic and highly prevalent across all age groups (Peres et al. 2019) and have been claimed to pose an economic burden on society (Listl et al. 2015).

The prevalence of oral disease represents a high-cost demand for treatment for both patients and healthcare services (Listl et al. 2015; Peres et al. 2019). For example, oral disease costs the NHS in England £3.4 billion each year (Yusuf et al. 2015; Menegaz et al. 2018). The levels of tooth decay in children are improving although remain at unacceptable levels (Welsh Government 2017a). A 13.4% reduction in tooth decay in 5-year olds was recorded in the period 2007/8 to 2015/16 in Wales, but this still represented a 34.2% decay-presence prevalence (Morgan and Monaghan 2017). The proportion of 12-year olds in Wales with decay in at least one permanent tooth fell from 33% to 30% between 1988 to 2017, with children having an average of 2.1 decayed, missing, or filled adult teeth (Morgan and Monaghan 2018). The population in Wales is growing (Office for National Statistics 2016) and the changing demographics of an increasingly ageing population present urgent challenges for oral health care. The ageing population are retaining their teeth for longer. Patients present at general dental practices with complex oral healthcare needs such as heavily restored dentitions, periodontal disease and advanced tooth wear (Innes et al. 2019).

Like other chronic non-communicable conditions, oral disease has been found to be socially patterned (Peres et al. 2019) with socio-economic inequalities in prevalence (Office of National Statistics 1998; Watt 2007; British Dental Association 2009; Sturrock et al. 2017). Levels of tooth decay have been found to show clear links to socio-economic deprivation (Locker 2000; Welsh Government 2017e), with those at the lower end of the socioeconomic scale reported to experience significantly worse oral health (Locker 2000). These oral health inequalities pose a significant public health challenge (Watt 2007).

Levels of oral health, as with general health, are influenced by psycho-social, environmental, economic and political factors (Watt 2007) such as employment, income, housing and household size, education, and access to health services (Solar and Irwin 2007; Frenk and Moon 2013; Hosseini Shokouh et al. 2017), and vary by age, gender, ethnicity, environment and lifestyle (Sabbah et al. 2007; Levine and Stillman-Lowe 2014). The interaction of different contributing factors operating at multiple levels mean that inequalities are graded within groups as well as between groups at different levels of the socio-economic ladder (Sabbah et al. 2007; Golden and Earp 2012). Dahlgren and Whitehead (2007) illustrated these interconnecting levels of influence on health (Figure 1.1).

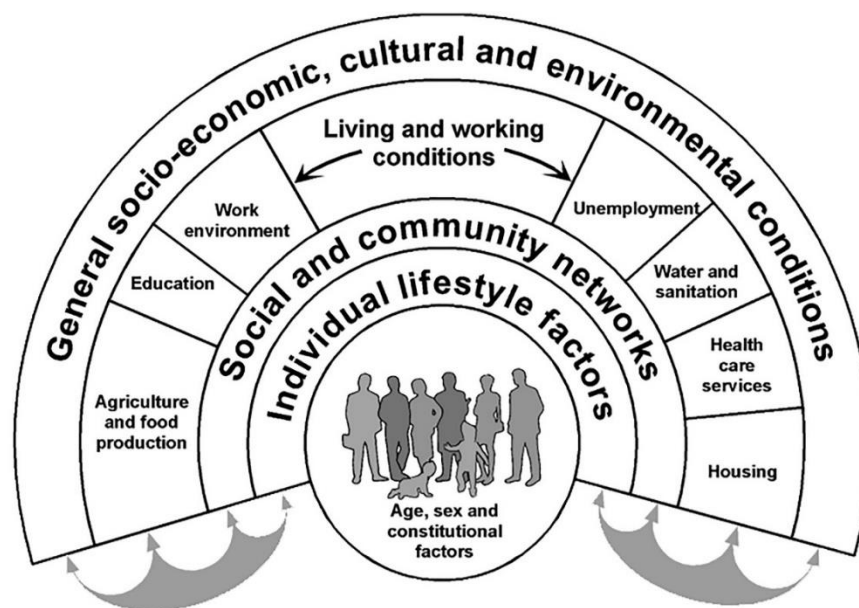


Figure 1.1: Influences on health (Dahlgren and Whitehead 2007)

Self-care incorporates any actions undertaken with the intention of improving or maintaining health (Richardson et al. 2018). There is evidence of a correlation between lower educational attainment levels and the likelihood of participating in health

compromising behaviours such as lower toothbrushing frequency, fewer dental visits, and higher levels of smoking and sugar consumption (Singh et al. 2013). Other studies have shown that improved oral hygiene behaviour was associated with some improvement in oral health but did not eliminate the differences in oral health between participant socioeconomic groups (Lantz et al. 2006; Sanders et al. 2006; Sabbah et al. 2009).

Contextual factors can limit people's available resources and influence priorities in their daily life (Dumas et al. 2014; Warin et al. 2015; Audet et al. 2017; Franklin et al. 2019a).

Health compromising behaviours can have different levels of impact on people from different socioeconomic groups depending on the health-supporting conditions of their wider context (Dahlgren and Whitehead 2007). Sheiham (2000) conclude that

“lifestyle is an expression of the social and cultural circumstances that condition and constrain behaviour in addition to the personal decisions that the individual may make.”

(Sheiham 2000, p.351)

1.3 Social impact of oral health

Poor oral health also affects quality of life and impacts on both individuals and the wider community (Menegaz et al. 2018; Peres et al. 2019). There is evidence of associations between oral disease and wider diseases. There are reports of bi-directional links between periodontitis and diabetes, atherosclerotic cardiovascular disease, obesity, rheumatoid arthritis, kidney disease, dementia (Pischon et al. 2007; Lockhart et al. 2012; Chapple and Genco 2013; Linden and Herzberg 2013; Tonetti and Van Dyke 2013; Ricardo et al. 2015; Kshirsagar and Grubbs 2015 ; Grubbs et al. 2016 ; Daly et al. 2017; Dietrich et al. 2017; Glick 2019) and aspiration pneumonia in older adults (Awano et al. 2008). However, the full extent of links between oral health and general health remains a matter of debate and the

degree to which such findings are simply associations rather than truly causal has recently been discussed (Pihlstrom et al. 2018; Raittio and Farmer 2021).

Alongside general health and quality of life, oral health impacts on the social well-being of both individuals and the wider population (Patrick et al. 2006). Tooth loss can result in limited food choice (Kay et al. 2003; Yonel and Sharma 2017) and speech changes or difficulties (Yonel and Sharma 2017), which may in turn lead to avoidance of social activities (Kay et al. 2003). Social norms and expectations around the appearance of people's teeth have changed over time (Cronin et al. 2009). Missing, misaligned, or discoloured teeth were previously both common and acceptable (Cronin et al. 2009). Today straight, white teeth are desired (Barford 2008 cited in Exley 2009), reflecting social, cultural and historical factors (Exley 2009). Visible signs of poor oral health can influence people's identity and how others perceive them (Strauss and Hunt 1993; Fiske et al. 1998; McGrath and Bedi 1998; Steele et al. 2000; Rousseau et al. 2014). Kay et al (2003) found that more than half (n=390) of their participants reported feeling concern about the appearance of their teeth/mouth over the previous year and around 15% of those who participated in the Adult Dental Health Survey 2009 (England, Wales, and Northern Ireland) reported feeling embarrassed when smiling or laughing because of the appearance of their teeth (Health and Social Care Information Centre 2011).

The condition of a person's teeth is perceived as a social indicator of overall health, wellness, and financial success (Alkhatib et al. 2005; Gregory et al. 2005; Exley 2009; Jamieson 2016). According to Welsh Government, poor oral health acts as a *"barometer of poverty, parenting, hygiene, nutrition, lifestyle choice and reflects the impact of common risk*

factors. It impacts on school readiness and absenteeism, employability, sickness rates, obesity, self-esteem and well-being" (Welsh Government 2017b, p. 4). In a review of the impact of dental appearance on employability, Moore and Keat (2020) found evidence of people with 'undesirable' dental appearance being perceived more negatively in terms of factors such as intelligence and education, trustworthiness, laziness, reliability, and sociability. A survey of American adults found that 18% of respondents perceived that their oral appearance affected their ability in job interviews. This increased to 29% for respondents in the lowest socioeconomic brackets (Health Policy Institute 2015). These findings emphasize the complexity of influences on oral health and its broad ranging effect on physical and social well-being.

1.4 The drive towards preventive dental care

Historically, dentistry was positioned as a surgical specialty, predominantly concerned with excision of dental caries "infection" (Innes et al. 2019). Now, with greater knowledge and therapeutic options it is understood that most common diseases of the mouth are preventable through appropriate oral hygiene routines and regular professional care (Choo et al. 2001; Innes et al. 2019). This position was originally based on a positivistic biomedical model which operated a reductionist view of health focused on treating acute afflictions (Apelian et al. 2014). This resulted in a paternalistic approach (Szasz and Hollender 1956) towards patients, which worked well for the treatment of acute infections (Apelian et al. 2014) but overlooked prevention which is now an essential part of general dental care. Alongside policy drivers, this paradigm shift in dentistry, away from repairing damage done by disease to prevention of the disease has been prompted by changes in the severity and prevalence of oral disease (chronic rather than acute) and increased understanding of its

causes and increased treatment options (Richards 2013; Witton and Moles 2015; Kay et al. 2016; Aziz et al. 2019; Innes et al. 2019). The focus of dentistry is increasingly on prevention and minimum intervention to allow patients to benefit from the enhanced quality of life that arises from functional *“teeth for life”* (Wilson and Mills 2020).

Patient demographics and demand have shifted. People are living longer and retaining their dentition (Harper et al. 2013). Different generations will have received different types of dental care and will have different care demands and use of dental services (Gibson 2003). Improvements in global dental health and reductions in the rates of caries and periodontal disease (Brocklehurst and Macey 2015) mean children and adults may require minimal intervention but an increasing population of older patients may have complex treatment needs (Bullock and Firmstone 2011). To enhance patient well-being and reduce treatment burden, prevention is an essential part of all general dental services (Richards 2013; Witton and Moles 2015). Preventive care is defined as *“behaviours that will prolong one's healthy life or practices that otherwise lessen the effects of infectious disease, chronic illness, or debilitating ailments”* (Jayanti and Burns 1998, p. 6). Oral disease shares risk factors with other chronic diseases, such as excessive alcohol consumption, tobacco use, and dietary behaviour (Yusuf et al. 2015; World Health Organization 2018), and oral health is increasingly being viewed as part of overall health (Levine and Stillman-Lowe 2014; Cheminade 2017). Changing lifestyle choices are viewed as a way to improve the quality of people's health and well-being (Cheminade 2017).

Between 2006 and 2019, 52-53% of the adult Welsh population received NHS dental care each year. This percentage has remained relatively stable in a population that has increased

greatly. In the period 2018-19 the percentage represented 1,622,635 examinations as part of a course of treatment (an increase of 2.5% from the previous year, and an increase of 26.2% since 2006) (Welsh Government 2019). Dental teams' ongoing contact with healthy patients means that dental teams are in an ideal position to monitor patient risk factors and provide preventive advice to patients who may not as regularly access their general medical practitioners or pharmacists (Yonel and Sharma 2017; Mossey 2020; Holliday et al. 2021).

All members of the dental team have a part to play in patient treatment and education. Each dental professional's responsibility for OHE is defined in *Preparing for Practice* (General Dental Council 2015), a document outlining the required necessary competencies of each role. In the United Kingdom (UK), dentists currently hold responsibility for the examination and treatment planning decisions for patients receiving NHS dental care. During routine examinations dentists explore and monitor patients' oral health and have the potential to identify early opportunities for personalised oral health advice and to provide ongoing support and monitoring (Watt et al. 2004). Dental hygienists and dental therapists are two mid-level dental care workers with a wide scope of practice that reflects a preventive approach to patient oral care.

Dental professionals' scope of practice (General Dental Council 2015) states that, with regards to health promotion, dentists, dental hygienists, and dental therapists' training should enable them to be able to *"Provide patients with comprehensive and accurate preventive education and instruction in a manner which encourages self-care and motivation"* (p86). Additionally, all three professional groups should be trained to *"Assess the results of treatment and provide aftercare and ongoing preventive advice"* and either

“Evaluate” (dentists) or “Describe (dental hygienists/dental therapists) the health risks of diet, drugs and substance misuse, and substances such as tobacco and alcohol on oral and general health and provide appropriate advice, referral (dental hygienists/dental therapists only) and support” (p86&88). Dental nurses should also be trained to be able to provide patients with preventive information and discuss wider health risks on oral and general health (General Dental Council 2015). This can be extended with Oral Health Education (OHE) qualifications. Alongside clinical learning, the OHE courses available to dental nurses typically address social influences on oral health, communication skills and how to tailor health messages to different audiences.

In England, a national Governmental reform of NHS dentistry underscored the importance of prevention as key to improving population oral health (Department of Health 2002) and followed this with a policy document highlighting prevention as a priority for general dental practices (Department of Health 2005). In 2007, Public Health England recognised this drive towards greater use of preventive support and published *“Delivering Better Oral Health: an evidence-based toolkit for prevention”*, recommending evidence-based interventions for preventive self-care. The guidelines, in a soon to be published fourth edition, include simple instructions for optimum daily cleaning routines for patients of all ages which members of the dental team can explain to patients. Smoking and alcohol consumption are also addressed (Public Health England 2017).

Welsh Government also recognised the need for reorienting the dental services towards prevention with a series of policies: *Together for Health: A National Oral Health Plan for Wales 2013-18* (Welsh Government 2013), *Taking Oral Health Improvement and Dental*

Services Forward in Wales. A Framework outlining priorities for dentistry and a future work programme (Welsh Government 2017d), and *A Healthier Wales: our Plan for Health and Social Care. The oral health and dental services response* (Welsh Government 2018b).

Practical measures to improve preventive dental care were taken with Public Health Wales's Welsh Dental Pilots Programme (Public Health Wales 2013). This included the *Designed to Smile* programme (Welsh Government 2017a) which uses a team approach to providing targeted prevention work to children in community dental practices and a school-based toothbrushing scheme. Promising successes in reducing tooth decay in children have been reported and on-going evaluation has led to a re-focussing of the programme on treating children up to five-years-old and increasing engagement with the General Dental Service (Welsh Government 2017c).

The way that general dental practices are funded has also been addressed in policy to try to improve the business case for prevention. General dental practices are traditionally independently-owned businesses run by one or more principal dentists but there are also an increasing number of corporately-, or group-owned practices which introduce an additional tier of management to practices (Stagnell et al. 2017). In the UK, dental practices typically fall into one of three models: practices that provide only private care; only NHS-funded care; or a combination of both NHS and private care (Csikar et al. 2009).

Some private practices are solely funded through direct patient payment or through patient-held insurance reimbursement. In Wales, the majority of general dental practices hold a contract with the NHS to provide dental care (Welsh Government 2013), although they may also carry out a proportion of private care. Under NHS care, all non-exempt

patients pay a fee towards their care and the extra costs are paid by the NHS to the practice. In England and Wales, the remuneration is paid per course of treatment rather than by individual activity, with a number of units of dental activity (UDAs) allocated according to the type of care provided. UDAs are calculated by the complexity of the course of treatment, organised into four bands. The patient-incurred costs are also determined by the banding of the course of treatment carried out. Table 1.1 provides a summary of the NHS dental bandings and patient-incurred costs.

Table 1.1: NHS England and Wales dental UDA bandings

Band	Treatment	UDA value	Patient charge
1	Clinical examination, radiographs, scaling and polishing, and preventive dental work, such as OHE or application of fluoride sealants	1	£23.80
2	Simple treatment, such as fillings, root canal treatment, extractions, surgical procedures, denture additions, and periodontal (severe gum disease) work	3	£65.20
3	Complex treatment that includes a laboratory element, such as bridgework, crowns, dentures, and veneers (if a clinical need), and orthodontic treatment (e.g., braces).	12	£282.80
4	Emergency dental treatment including examination, radiographs, dressings, repair of bridgework, crowns, or reinsertion of displaced or damaged tooth, up to two extractions, one filling, draining abscesses, and post trauma-related treatment.	1.2	£23.80

(Watson 2010; National Health Service 2021)

UDAs are managed by the Local Health Boards (LHBs) in Wales and the Clinical Commissioning Groups (CCGs) in England. Each dental practice is contracted to complete a certain number of UDAs per year. It is usually the dental practice owners or the corporate owners who are registered contractors (also known as NHS providers) with the General Dental Service (GDS). While all dental team members such as associate dentists or dental therapists can contribute to the practices' UDA total, within their scope of practice (General Dental Council 2015), the total remains the responsibility of the contractor. Practices are

expected to achieve 95% of their allocated UDAs, if they do not meet this requirement then they face clawback. Clawback is managed differently by the different LHBs and CCGs with approaches such as carrying a set percentage forward into the next year or repaying the cost of the underspend (Owen et al. 2019). The need to meet their contracted number of UDAs places pressure on dental practices as business costs including staff salary costs are paid out of the UDA allowance. NHS funding has been said to disincentivise lower banded work (Owen et al. 2019) such as OHE and prevention (Watt et al. 2004; Dyer and Robinson 2006; Chestnutt et al. 2009; Sbaraini et al. 2013; Yusuf et al. 2015). Despite increasing their scope of practice, insufficient attention had also been given to funding to support and encourage the employment of dental hygienists and dental therapists (Gallagher and Wilson 2009). NHS general dental practices have been found to use a variety of different payment systems to pay dental team members, with some incorporating a percentage of private work to increase revenue and help support the employment of salaried team members (Barnes et al. 2019).

Following the Steele Report review of NHS general dental provision (Department of Health 2009) two reformed contract pilots were trialled in England and in Wales. During 2011-2016, the first Quality and Outcome Pilot in Wales trialled the removal of the UDA payment method in favour of a system that was based on widening access and promoting prevention rather a traditional interventionist/restorative approach to general dental practice. It aimed to allow dental professionals to use risk-assessment and clinical judgement based on their patients' best interests. Practitioners in the pilot practices reported positive changes to patient care arising from increased prioritisation of communication and patient education.

However, some had concerns around administration, staff training, and ability to evidence oral health education (OHE) activity in inspections (Public Health Wales 2012; KilBride 2015).

An amended contract reform pilot was raised in *Taking Oral Health Improvement and Dental Services Forward in Wales* (Welsh Government 2017d). The current programme continues piloting ways of incentivising needs-led care, prevention, and enhancing teamwork via amended UDA management methods. The amended pilot uses UDA flexibility within the current contract to offer opportunities for greater patient-centred, evidence-based preventive care. The importance of encouraging patient commitment to managing their own oral hygiene was also highlighted as a key aim for practices. Dentists must complete the Assessment of Clinical Oral Risks and Needs (ACORN) with patients and update it on a regular basis. The form explores what matters to patients about their oral health, patients' medical, dental, and social history, and is used to ascertain their 'risk' level. This risk level, using a red, amber, and green system, must be communicated to patients along with the implications for their oral health and guides their mutually-agreed course of treatment (Public Health Wales 2019a; Laverty and Harris 2020). Adoption of a team approach is also required, with at least one dental nurse per practice being trained in prevention and the application of fluoride varnish. All members of the dental team are also encouraged to attend training sessions on providing brief interventions, motivating behaviour change, and improving team-working (Public Health Wales 2019b). While the programme was halted during the Covid-19 restrictions on general dental practice operations, guidance issued emphasized using the opportunity to increase provision of prevention and widen access wherever possible during the break (Welsh Government 2021).

An implicit aspect of the drive towards prevention is increasing patient responsibility and self-management of their own oral health. As well as improving health, increasing patient self-management has been promoted as a way to improve the efficiency and quality of health services (Sixty-sixth World Health Assembly 2013) by reducing the strain currently faced by healthcare systems (Kendall et al. 2011; Sadler et al. 2014). In England, the document *Five Year Forward View* promoted an NHS commitment to helping patients to manage their own health (NHS England 2014). In Wales, the Welsh Government Prudent Healthcare (Allen 2014; NHS Wales/Wales Government 2014) approach also emphasizes the role of the patient in the provision of patient-centred care which acknowledges the role of self-care and working in a co-productive manner with patients (Dineen 2014). Patient-centred care shifts the focus of dental examinations from dentist-led and symptom-based to a holistic view of the patient as person, incorporating exploration of their knowledge, motivations, and wider social context when planning a mutually-agreed course of treatment (The Health Foundation 2014). The Prudent Healthcare approach underpinned the strategy document, *A Healthier Wales: Our plan for Health and Social Care* (Welsh Government 2018a) which advocated for supporting patient self-management to aid service transformation.

1.5 Oral health education content and delivery

The lifestyle-related nature of oral health risk factors have led to educational interventions of differing levels aiming to provide knowledge, and change attitudes and behaviours (Kay and Locker 1996). Oral health education (OHE) provides an opportunity for a conversation between the dental professional and the patient. During this interaction, the patient can gain understanding of the preventable causes of oral diseases and the dental professional

can explore causative factors in the patients' behaviours (e.g., toothbrushing) or lifestyle (e.g., smoking, a diet high in sugar) that may lead to oral disease. Both parties should then agree a mutually acceptable and practical pathway (e.g. an amended cleaning regime, or ways to reduce their sugar intake) for the patient to follow (Levine and Stillman-Lowe 2014). Prevention advice within general dental practices typically addresses common oral health risk factors for dental caries, periodontal disease, and oral cancer. These include toothbrushing (with fluoride toothpaste) (Marinho et al. 2003) to reduce plaque build-up around the gum line which can lead to gingivitis and in susceptible patients to periodontal disease. Reducing sugar in the diet or managing consumption of acidic beverages to minimise acid attacks (Sheiham and James 2014) that can respectively cause cavities or enamel erosion. Advice on smoking cessation addresses a major risk factor for oral cancer and periodontal disease. Opportunities for what Holliday et al. (2021) referred to as "*teachable moments*" may arise during the dental examination such as the identification of tooth staining or tooth loss which provide an opportunity to discuss smoking cessation. Encouraging regular dental examinations provides opportunity for monitoring and early intervention (Stillman-Lowe and Levine 2007; Levine and Stillman-Lowe 2014). These views of OHE paint an idealised vision of how discussions can occur within the dental appointment. In practice, implementation is often shaped and constrained by a range of factors.

1.6 The study

Given increasing demands on dentistry, socio-economic differences in oral health, growing emphasis on prevention and patient self-care, together with recognition of the importance of oral health for wider patient well-being, there is a need to research how members of the

dental team can best support self-care. Research is needed on dental professionals' understanding of prevention (Fox 2010a), their willingness to engage in OHE (Jensen et al. 2014), and how its delivery is influenced by personal and professional beliefs regarding patients' well-being (Kay et al. 2003).

Acknowledging the influence of wider social determinants on oral health and the resulting importance on working towards reducing health inequalities are key to improving population oral health (Watt 2002). Levine and Stillman-Lowe (2014) note that health promotion measures may include re-orientation of health services and creating public policies that support health, developing health-supporting environments and community action. However, in attempts to improve population oral health, it is important that the role of the patient is not lost within a movement focused on these social determinants (Richards and Filipponi 2011). Mismatches between patients' and dentists' expectations of dental care, (Lahti et al. 1996b) and between dentists' and patients' expectations of each other's roles (Lahti et al. 1996a) reveal the importance of negotiation in healthcare delivery.

This research focuses on the provision and experience of oral health education for adult patients, currently an under-explored population. There is a large volume of literature on oral health education measures with children and teenagers (e.g., Al-Jewair et al. 2011; Garbin et al. 2013; Xiang et al. 2020) and increasing attention being paid to the oral health care of cared for older people (Howells et al. 2020). Interventions with young people are vital for enhancing oral health self-care routines that will carry on into adulthood (Griffin et al. 2012) and an increasing number of people retaining dentition for longer and with complex treatment needs (Bullock and Firmstone 2011) necessitates research to ensure

their needs are being addressed. There has been little in-depth exploration of the factors influencing provision of oral health education as part of routine care to adult patients attending general dental practices (Leggett et al. 2021). Additionally, the views and experiences of appointment-attending adults who may not have benefitted from recent early-years intervention and who are not receiving older-adult targeted measures are also currently relatively unheard. This is the population that may be most affected by any variations in delivery of provision of a preventive approach encouraging self-care, in the absence of other interventions. Looking to the future, this population are a group that are possibly raising children, in turn shaping their oral healthcare behaviour. They will also, in time, become part of the expanding older generation with complex care needs – needs influenced by their current self-care practice.

1.7 Aim and Objectives

The aim of this research is to explore how oral health education is conceptualised and delivered within a preventive and health promoting approach which encourages patient self-care.

The objectives of this study are to explore:

- How dental professionals working in general dental practices view their role in the provision of oral health education (OHE)
- How patients view the dental professional and patient relationship in oral health education
- What influences dental professionals' delivery of OHE to individual patients

- How dental professionals view the patient's responsibility for maintaining their own oral health care and their perceptions of what limits patients from following recommended advice
- Patients' reasons for not following recommended advice.

The following chapter explores the literature underpinning these research questions in more detail: oral health education effectiveness, dental professionals' perceptions of oral health education as part of preventive care and its delivery, and patient perceptions of oral health education and its fit within the dental professional role. This is followed by *Chapter 3: Methodology* which explains the conceptual framework foundation of the study, including the researchers' experience and positionality. The chapter continues with a discussion of the data gathering methods and their strengths and limitations, and a detailed account of how the study was conducted and amended in light of Covid-19. A description of the approach to analyses taken and the potential ethical issues raised by the study complete the chapter.

In both *Chapter 4 Findings from the interviews with dental professionals'* and *Chapter 5 Findings from interviews with patient/public* the findings are presented using a descriptive summary of approaches/views of OHE topics, followed by a summary of the thematic analysis of the interview data, presented both in table and narrative form. *Chapter 6 Application of the theoretical frameworks* presents the findings further analysed using the COM-B (Michie et al. 2011) and TDF (Cane et al. 2012) frameworks. The report concludes with *Chapter 7 Discussion* with a discussion of the findings in light of the literature, the methodological reflections on the design and conduct of the study, and a summary of the study contributions, conclusions, and recommendations.

2 Review of the literature

2.1 Literature search process

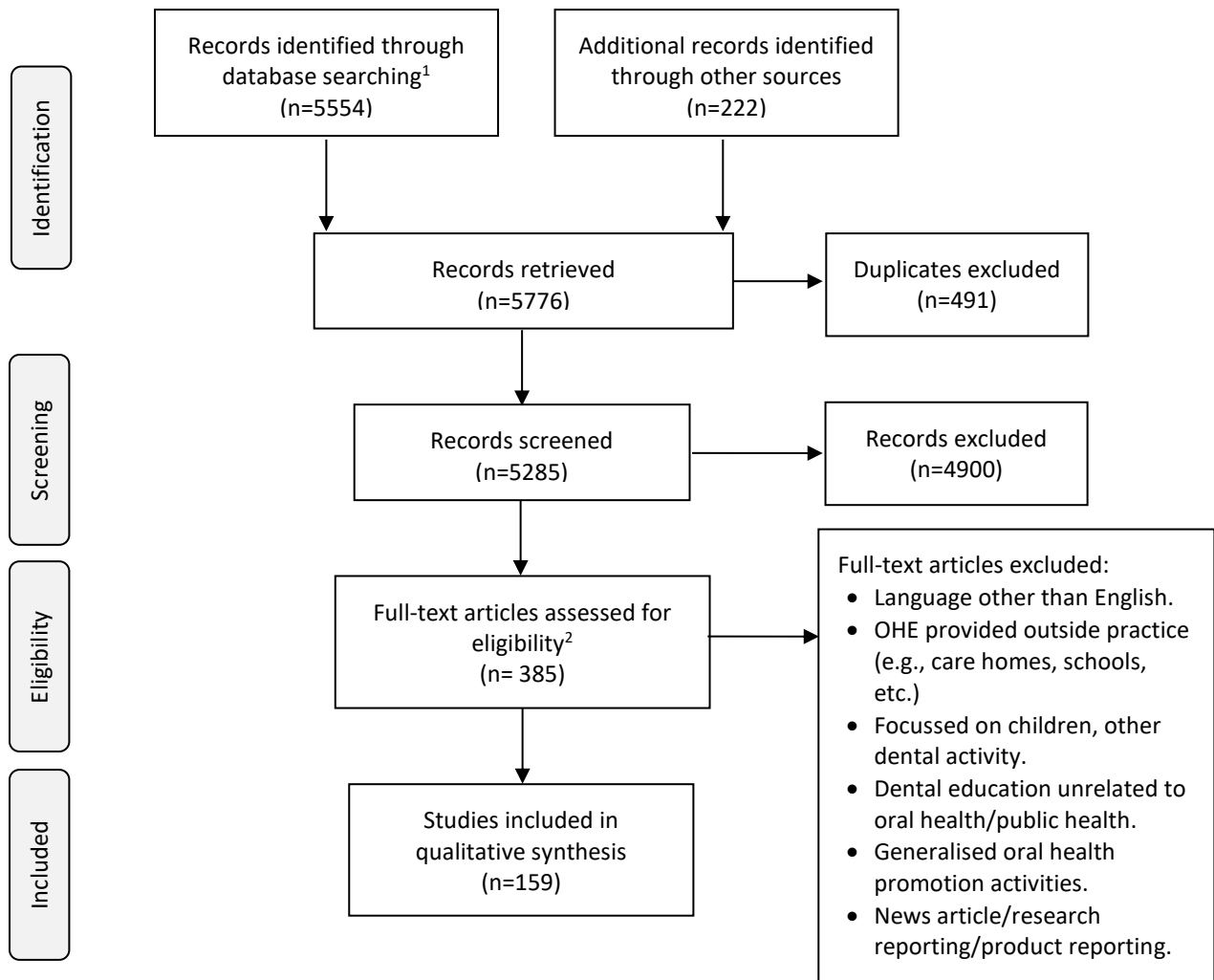
The first part of the study was a search of available literature to explore the current knowledge on the different factors influencing the provision of oral health education within general dental practice and how it is perceived/received by patients. The narrative review method was chosen over a systematic review as it allowed analysis of a broader range of papers (e.g., topics addressed, methods used, and country of study) rather than is typical in the more narrowly defined set of eligibility criteria typical of systematic reviews. This review aimed to explore the range of available literature on OHE, some aspects of which have not been as exhaustively addressed as other areas e.g., dental professionals' personal views and understanding of OHE and patients' experiences of OHE.

The search was carried out using databases covering a range of academic disciplines (Scopus, Science Direct, Web of Science, CINAHL Plus, ASSIA, ERIC, OVID SP), and Google Scholar. Search terms included combinations of:

- dentist*OR dental
- oral or dental health or oral hygiene instruction/education/intervention/promotion
- smoking cessation or dietary advice or sugar or lifestyle interventions or behaviour change
- general practice or primary care
- patient adherence or patient views/opinions

The full search strategy is detailed in Appendix 1. See Figure 2.1 for an overview of the literature search and selection process.

The key words/terms were searched to elicit papers in English, published since 1998. This date was chosen as one reflecting contemporary contexts of general dentistry, and which covered a period during which measures had been taken to promote the use of prevention and OHE in general dental practice.



² Inclusion criteria:
 Post-1998; English language; Adult patients; Oral health education – theory, research, best practice, patient perception, professional perception; OHE delivered in dental practices; Patient-centred oral health care; The importance of oral health and prevention; Models/theories of health behaviour/adherence; Social influences on oral health/health behaviour.

Figure 2.1: Literature search process

Following each keyword search, the search results were exported to the reference management programme, EndNote X9 (The EndNote Team 2013). When all searches were completed, duplicate references were removed using the “*Find Duplicates*” function in EndNote followed by a manual scan of all remaining titles to check for duplicate citations with slightly different formatting that was not picked up during the automated search. For example, there were instances where authors middle names or initials were added or omitted, or where full stops or colons were used interchangeably in the paper titles and therefore were not recognised as a match.

Following completion of the duplicate removal steps, owing to the large number of references remaining, a search for key exclusion words within the reference titles or keywords (e.g., care homes, schools, children) was carried out and the results reviewed by the researcher and excluded as necessary. Initial screening of the remaining papers was conducted by reading each reference title. Depending on the papers’ title, it was either removed if clearly outside the scope of the search criteria (e.g., was not clearly related to OHE, influences on oral health, professional perception, or patient perception of OHE) or added to a broad topic group created in EndNote for later further examination. The papers within each group were then in turn read in more detail, reading each reference’s abstract and deciding its relevance to the review. The researcher adopted a broad approach in deciding potential relevance at this stage to avoid rejecting papers based on initial assumptions about the topic.

Full versions of papers that had passed through the initial scanning processes were sourced and read to check for final relevance. When sourcing full papers from the database search,

papers citing the target paper (citation tracking), or suggestions of similar papers (where offered by databases) were also gathered where they met the inclusion and exclusion criteria. During the final reading/coding stages, relevant citations within papers were also obtained (citation mining).

As both a way to explore and reflect on the topics covered in the literature and as a way of maintaining a manageable record of the sourced papers, the first batch of papers read (approximately 80 papers) were imported to NVivo (QSR International Pty Ltd 2018). While reading, the papers were coded using broad thematic codes to identify and map recurring topics and areas of discussion within the literature. This method also provided a way to organise the large amount of data. Once the general topic areas covered within the literature were established, the coding was then exported into Word documents into which relevant notes from all subsequent papers were added. As a narrative review, the focus was on a thematic analysis of content and a formal assessment of the quality of the reported methods was not undertaken.

To assist ongoing awareness of relevant papers published following the initial searches, email alerts for each search were established, where available, (e.g., Ovid and EBSCO) and content alerts from relevant journals (e.g., British Dental Journal, BDJ Open, European Journal of Dental Education, Community Dentistry and Oral Epidemiology, and Sociology of Health and Illness). This alerted the researcher to new relevant papers throughout all stages of the study.

While comprehensive, the search strategy was not as clearly defined as in systematic reviews and was open to new avenues as they emerged from the literature. Paper selection for the literature was conducted solely by the researcher. The constraints of funding within a PhD programme precluded double coding of paper selection and later reading. The researcher acknowledges that this approach limits reproducibility and introduces a risk of bias from inadvertent omissions, and from no formal appraisal of the rigour of methods used in reported studies. However, the review did include commentary on the nature of the methods employed, and where appropriate, an indication of sample size.

2.2 OHE effectiveness

While not directly related to the research questions shaping this study, papers on the effectiveness of OHE were reviewed. Several systematic reviews have explored the effectiveness of OHE (Brown 1994; Kay and Locker 1996; Sprod et al. 1996; Kay and Locker 1998; Yevlahova and Satur 2009; Kay et al. 2016; Menegaz et al. 2018; Soldani et al. 2018). Studies using plaque index as a measure to assess oral hygiene improvements resulted in a small reduction in plaque accumulation (30% decrease in plaque index compared with controls) and studies using percent of tooth surface to measure plaque found patients expected to have 10% fewer affected tooth surfaces following OHE (Kay and Locker 1996). “*Substantial*” (Watt and Marinho 2005) or “*dramatic*” (Kay and Locker 1998) short-term reductions in plaque levels were reported with adults and in children when educating parents. Again, the long-term implications of these effects were unsure (Watt and Marinho 2005). The impact on caries rates varied across and within the different reviews. In their two reviews, Kay and Locker found that studies measuring caries rates were complicated by the inclusion of fluoride as part of the intervention. As it was not possible to separate the

effects of either intervention, they did not analyse or draw conclusions on the interventions' effects on caries in their meta-analysis (Kay et al. 2016). In their later review, they found that small but non-significant effects on caries reported in the randomised control trials (RCTs) they reviewed but more positive effects on caries levels in the quasi-experimental studies involving brushing with fluoride toothpaste (Kay and Locker 1998). Menegaz et al. (2018) similarly found improvements in caries rates but only at significant levels in just under half of the studies.

Knowledge and attitudes about oral health were concluded to be improved by simple OHE interventions but the reviews questioned whether these led to changes in health behaviours (Kay and Locker 1996; Sprod et al. 1996; Kay and Locker 1998). Brown (1994) explained that they did not find much evidence of long-term improvements in knowledge or attitudes towards dental health despite seeing some short-term gains. In a review of the effectiveness of smoking cessation studies, Holliday et al. (2021) found low-certainty evidence of increased cessation rates after the provision of behavioural support and moderate-certainty evidence of effectiveness when behavioural support was coupled with pharmacotherapy. However, only 16 of the 20 studies reviews explored smoking cessation in dental clinics while the remaining four were conducted in school or college settings and there was insufficient evidence whether the interventions had any positive impact on the participants' oral health.

Overall, the reviews mainly concluded that the various types of OHE interventions can lead to short-term changes in knowledge and oral health promoting oral hygiene behaviour. But the authors were uncertain whether these represented longer-term improvements and

their wider public health impact. The cost effectiveness of such interventions was also questioned (Brown 1994; Watt and Marinho 2005). Methodological and reporting issues constrained the reviewers' ability to draw conclusions on effectiveness identified in the reviews (Brown 1994; Kay and Locker 1996; Sprod et al. 1996; Kay and Locker 1998; Watt and Marinho 2005; Yevlahova and Satur 2009; Kay et al. 2016; Menegaz et al. 2018; Soldani et al. 2018). The reviewers reported insufficient descriptions of the interventions being explored and the measures used to assess them in the papers they reviewed. Short follow-up periods also limited confidence in the longer-term impact of the behaviour changes resulting from each intervention. Additionally, many studies showed a limited use of the theoretical frameworks informing the design of each intervention. Brown (1994) noted that those that did include theories of health behaviour change often showed better outcomes. Sprod et al. (1996) concluded that interventions that included patient-centred approaches based on more holistic models of health behaviour which take account of social, cultural, and personal factors showed more promise for achieving longer-term changes. The use of convenience samples in studies, often children, also led to concerns regarding the transferability of the results to other patient groups.

One of the difficulties of attempting a cause-and-effect exploration of OHE interventions is that it is impossible to separate the influence of OHE from that of other external factors. The inclusion of fluoride as part of the intervention (e.g., encouraging brushing with a fluoridated toothpaste, or other fluoride supplements) and the various other sources of fluoride that the patient may be exposed to is one aspect that impedes drawing conclusions (Brown 1994; Kay and Locker 1996; Kay and Locker 1998). Patient-related factors are also overlooked in the evaluations. Brown (1994) noted that traditional types of OHE do not take

account of how the patient will filter the information according to their own understanding of health and oral health. The dental professionals' skills in communicating and rapport-building impacted on patients' motivation to follow advice (Kay et al. 2016).

While general oral health levels are improving, inequalities continue despite attempts to address them (Kay and Locker 1996; Watt and Sheiham 1999; Watt and Marinho 2005; Harris et al. 2012). In theory, the most deprived populations have most to benefit from primary care prevention (Welsh Government 2013). In practice, while oral health education may improve oral health, it has been found to increase inequalities (Watt 2007) as behaviour change has been shown to be more effective with affluent participants than with deprived participants (Schou and Wight 1994). This reflects the importance of exploring patient, and social influence on OHE outcomes.

2.3 Dental professionals' understanding and reflections on provision of oral health education within general dental practices

This section investigates the available literature on dental professionals' views on how oral health education (OHE) fits within their professional role, or within the roles of others in their team. It also explores the influences on dental professionals' views of oral health education. This is followed by a discussion on dental professionals' understanding of the efficacy of oral health interactions and the practitioners' confidence in their ability to deliver oral health education. How dental professionals have been reported to view their patients and their role in oral health education is then discussed. Finally, practice-relevant factors

such as the financial barriers and the appointment time implications of providing oral health education are outlined.

2.3.1 The available research literature

There is a small number of published papers addressing dental students' views and understanding of oral health education (e.g., Humphreys et al. 2010; Metz et al. 2015), or the views' of other healthcare professionals' such as community pharmacy staff (e.g., Steel and Wharton 2011; Buxcey et al. 2012), and medical professionals (e.g., Wårdh et al. 2003; Yuen et al. 2010). However, there is a relative dearth of literature on how general dental professionals define and view OHE, or their motivation and skills in offering OHE to patients (Jensen et al. 2014).

Methodologically, alongside systematic reviews (Suga et al. 2014; Kay et al. 2016) the few studies published to date were surveys (of various size and response rates) (Warnakulasuriya and Johnson 1999; Anderson et al. 2002), qualitative interviews, focus groups, or mixed method studies (of varying sizes) (Shepherd et al. 2010; Andersson et al. 2012; Filipponi et al. 2018; Franklin et al. 2019b), or review papers/research summaries/commentary papers (Fox 2010a; Bedos et al. 2018).

While there is a range of literature on toothbrushing there was very little published exploration of dental professionals' attitudes and experiences of discussing toothbrushing with adult patients. Instead, the toothbrushing literature explores OHE with children and their parents (Threlfall et al. 2007; Yuan et al. 2019), and OHE interventions outside the dental practice (e.g., mobile apps or workbooks) (e.g., Schlueter et al. 2010). The relevant

literature mainly explores dental professionals', particularly dentists', views on providing OHE on smoking cessation and alcohol consumption, and to a lesser extent, sugar consumption (Chestnutt and Binnie 1995; Watt et al. 2004; Stacey et al. 2006; Ahmed et al. 2018), or alcohol consumption (Warnakulasuriya and Johnson 1999; Shepherd et al. 2010). In addition, a variety of terms including "*prevention*", "*oral health education*", and "*oral health promotion*" are often used interchangeably in papers, or with oral health education implicitly embedded within explorations of wider preventive care (Dyer and Robinson 2006; Tomlinson and Treasure 2006; Fox 2010a; Leggett et al. 2021). Even so, the conclusions of such studies suggest variation in dentists' beliefs and opinions and resulting activities (Tomlinson and Treasure 2006; Threlfall et al. 2007).

2.3.2 Views on provision of oral health education

Studying data on providing general health promotion, gathered from South Yorkshire-based dentists using qualitative interviews and questionnaires, Dyer and Robinson (2006) found that dentists' views reflected a spectrum, ranging from seeing oral care as disease-focussed to as a health issue. Health-focussed dentists were more likely to acknowledge the changing role of dentistry and reported adopting a more preventive approach, taking a holistic view of the patient. This included welcoming the delivery of more OHE and providing wider health interventions such as smoking cessation or dietary advice. Disease-focused dentists reflected a narrower approach targeting only activities that directly impacted on the mouth rather than wider health implications. They were also more likely to report gaining little enjoyment from any preventive work: *'There is not much pleasure to be gained out of oral hygiene instruction in my experience ... I just don't think I would enjoy it [health interventions] really'* (p47) (Dyer and Robinson 2006). While this study focusses on the

provision of general health promotion, Jensen's (2014) finding that OHE was only perceived as necessary when patients showed evidence of caries, rather than discussing oral health with everyone, reflects how these differences can influence OHE provision.

A recent study of attitudes towards preventive oral care comprised interviews and focus groups with 149 participants from the United Kingdom, Denmark, Germany, Hungary, Ireland, and the Netherlands (Leggett et al. 2021). Participants included dental teams, policy makers, and insurers (EU)/commissioners (UK). Despite cross-country agreement that dentistry was increasingly focussing on prevention and a recognition of the need for prevention provision, some dental professional participants (mainly dentists) still viewed prevention as less interesting than treatment. Participants identified that an interest in treatment as a reason for entering dentistry and that preventive work was not "*fun*" or "*sexy*" and lacked the "*kudos*" of treatment. While discussing general prevention, including placing fissure sealants and fluoride varnish alongside providing OHE, the findings suggest that there is still some devaluing of OHE and other preventive work amongst some dentists. It is unclear, however, whether this devaluing of prevention impacted on participants provision of OHE.

Two studies, both carried out within a similar time frame, explored the views of dentists and dental professionals in Wales. Anderson, Treasure and Sprod (Anderson et al. 2002) explored views of oral health promotion via a self-completion survey sent to dentists and a number of dental professionals registered with the Wales Deanery. Eighty-eight percent of respondents indicated that oral health education was part of their professional role. However, 80% of those also reported spending less than two hours on such activities in a

typical week, with much of this activity spent on managing or preventing dental caries and gum disease. Tomlinson and Treasure (2006) revisited dentists' provision of preventive work, including OHE, across Wales using a quantitative postal questionnaire sent to a random selection of practising dentists coupled with analysis of all the Dental Practice Board (DPB) claims for remuneration over a 12-month period, ending in October 2002. The dentists surveyed strongly agreed with delivering OHE (95%) and with providing advice against sugary and erosive foods (85%). However, analysis of the DPB claims codes showed low numbers of claims for all types of prevention work, including OHE, and variety across different health boards across the country. For example, rural areas such as Dyfed-Powys and North Wales submitted 20 times more claims, by more dentists, than urban areas such as Cardiff. However, it is possible participants may have been engaging with OHE but not claiming for it owing to its low remuneration levels. Whatever the reason, both studies indicate a mismatch between a positive view of OHE and evidence of its actual provision.

A more recent study explored the reasoning behind some of these viewpoints towards provision of OHE. Witton and Moles (2015) conducted a Q sort study with 26 NHS dentists, exploring how the *Delivering Better Oral Health* (Public Health England 2017) guidelines are being implemented, and the barriers to its implementation in practice. Factor analysis revealed three profiles of responses with at least six participants loaded on to each one. Table 2.1 provides the three highest rated and three lowest rated statements for each profile.

While each factor represented a generally favourable view of OHE/prevention, there were differing approaches to its provision. The first profile characterised a dentist who was

motivated to provide OHE and believed that it was effective, but financial considerations and time issues were a deterrent.

Table 2.1: Three dentist "types" identified by Witton and Moles (2015)

	Most agreed with	Most disagreed with
Profile 1	<ul style="list-style-type: none"> • If I worked to 'Delivering better oral health' I would be financially disadvantaged • There is not enough time to follow every bit of guidance in 'Delivering better oral health' • I want to apply 'Delivering better oral health' in practice but my dental contract does not allow me to 	<ul style="list-style-type: none"> • 'Delivering better oral health' is the first place I look when I have to devise a prevention strategy for my patient • I do not believe that prevention works • It is not my role to deliver prevention
Profile 2	<ul style="list-style-type: none"> • 'Delivering better oral health' is the first place I look when I have to devise a prevention strategy for my patient • It is not worth offering prevention to unmotivated patients • I want to apply 'Delivering better oral health' in practice but my dental contract does not allow me to 	<ul style="list-style-type: none"> • 'Delivering better oral health' is a threat to my clinical autonomy • It is not my role to deliver prevention • I need to see an example of 'Delivering better oral health' working in practice before I decide if I will apply its recommendations
Profile 3	<ul style="list-style-type: none"> • There should be a patient version of 'Delivering better oral health' to improve compliance with prevention • 'Delivering better oral health' has changed my practice for the better • I want more support from the health service in implementing the recommendations in 'Delivering better oral health' 	<ul style="list-style-type: none"> • I am paid to treat disease and not to provide prevention • It is not worth offering prevention to unmotivated patients • It is a waste of resources to offer prevention to all patients

The second profile represented a dentist who was motivated to follow the guidance but was cautious of implementing it in their practice and were selective in their use based on judgements of their patients. The final profile reflected a "health-focused" professional who was keen to work to the guidance with all patients, but who desired greater engagement from patients and support from the health service to achieve this. Whilst primarily relating to guidance implementation, these three profiles illustrate how social and practical factors may influence views on OHE provision in practice.

Alongside dental professional viewpoints, the acceptance and provision of OHE sometimes varied based on the subject area of the advice. Several studies have explored dentists' views on providing advice on wider health issues and the findings uncovered a range of opinions. The provision of alcohol guidance was accepted by dentists in some studies (Dyer and Robinson 2006; Shepherd et al. 2010) but was less supported in others (Warnakulasuriya and Johnson 1999; Anderson et al. 2002; Dyer and Robinson 2006; Tomlinson and Treasure 2006; Fox 2010a; Yusuf et al. 2015). Dietary advice and smoking prevention or cessation were mostly accepted as relevant to the dental role but often only as far as the issues directly related to oral health (Warnakulasuriya and Johnson 1999; Dyer and Robinson 2006; Yusuf et al. 2015), for example providing post-operative advice on smoking following extractions or other procedures (Watt et al. 2004).

Several survey studies focused on smoking cessation provision by the dental team and provided insight into both attitudes and provision rates. Chestnutt and Binnie (1995) surveyed 448 Scottish dental practitioners; 54.7% thought smoking cessation counselling was part of the dentist role with only 21.2% reporting that it was outside their remit. Regardless of attitude, 85.6% indicated that they discussed the topic with patients "at least occasionally". Around one quarter of USA-based dentists surveyed reported discussing smoking cessation at every appointment (25.5%). However, only half of those had a specific approach that they used with patients (Albert et al. 2002). In a Welsh study, Tomlinson and Treasure (2006) found that their dentist participants were slightly more accepting of offering smoking cessation advice (59%) than of dietary advice beyond oral health issues (51%). Stacey et al. (2006) reported some of the highest positive attitudes towards providing smoking cessation advice with 82% of dentists, 91% of hygienists, and 28% of dental nurses

surveyed in the Northern Deanery, UK agreeing that it had a place in their role.

Unfortunately, the percentages dropped greatly when reporting actual provision (dentists: 63%; dental hygienists: 55%; and dental nurses: 21%). A similar pattern of attitudes and reported rates of provision was also shown in an electronic survey study exploring the smoking cessation views of dentists (n=725) and dental hygienists (n=701) in California (Chaffee et al. 2019). The majority of dentists (73%) and dental hygienists (80%) reported asking about and recording patients smoking status, but far fewer reported regularly offering cessation advice (dentists: 10%–31% and hygienists: 27%–49%). Despite a relatively small sample of dental professionals in the north of England, a survey based on a study by Ahmed et al. (2018) indicates a more positive approach to providing smoking cessation with 100% of dental hygienist and dental therapists, 81% of dentists, and 67% of dental nurse respondents indicating that they offer smoking cessation advice during appointments (Ahmed et al. 2018). These studies did not offer any suggestions for the gap between positive opinion of OHE and actual provision which raises questions about what prevents or discourages provision.

2.3.3 A delegated task?

The variation between different dental team members' viewpoints outlined above (Stacey et al. 2006; Ahmed et al. 2018) may reflect a view that it is the responsibility of other dental team members rather than a part of their own role. While Templeton et al. (2016) found that all dental team members indicated that OHE and prevention are part of each team members' role, other studies have reported dentists viewing OHE as better suited to dental care professionals (DCPs). Their reasons included a positive view of DCPs' abilities (Dyer and Robinson 2006; Jensen et al. 2014), DCPs' better relationships with patients (Watt et al.

2004), or more pragmatic reasons such as longer appointment times or passing on unrewarding (personally or financially) tasks (Dyer and Robinson 2006; Jensen et al. 2014; Leggett et al. 2021).

Dyer and Robinson (2006) reported on dentists' views on the use of a teamwork approach to general health promotion, gathered via a combination of qualitative interviews and quantitative postal surveys. There was agreement that a team approach is becoming more important to provision of general health advice in dental practices. Respondents were positive about DCPs providing smoking prevention/cessation, and alcohol or dietary intake. Opinions were divided on provision of skin cancer prevention and blood pressure monitoring. There were queries on whether dentists would have more influence over patients, who may take the information less seriously from DCPs. Others reported DCPs to have better improvement outcomes. Some dentists were keen to delegate both oral and general health-focussed preventive work either because of positive views of DCPs' abilities (*"The oral hygiene in my patients improved enormously thanks to the hygienists rather than to me"*, p48), others because they perceived DCPs to have more time during appointments (*"To be honest they will take more time than I might because they have got much more time booked"*, p48). More pragmatic motivations were given by others; health interventions were considered a poor use of dentists' time but acceptable for DCPs within the team as *'loss leaders'* or from a desire to pass on *'unrewarding'* tasks. The limited number of DCPs available in practices was discussed as a downside to their involvement in health improvement: *"There are few enough of them, why would you want to allocate their time away from their trained skills?"* (p48). However, it was noted that the majority of discussion

revolved around the use of dental therapists and hygienists, with oral health educators (OHEs) discussed only occasionally and dental nurses less often.

Three studies explored perceptions of which dental professional role was the most appropriate to provide smoking cessation and results varied. Watt et al. (2004) interviewed dentists, dental nurses, and one dental hygienist about providing smoking cessation OHE and found many of the interviewed agreed that dental hygienists were in an “*ideal position*” to provide smoking cessation advice/support. This was mirrored by Stacey et al. (2006) who reported that around 90% of those surveyed indicated that dental hygienists were best placed to offer smoking cessation advice. This was highly agreed with across all dental roles (dental hygienists: 91%; dentists and dental nurses: 89% each). Watt et al. (2004) explained how the views were based on participants’ relationship with patients. While some felt that as dentists were held in higher esteem by patients that they should be responsible for OHE, others had the view that as patients were more at ease with DHs than with dentists, they were in a better position to have potentially sensitive discussions with patients. Stacey et al. (2006) noted that only 4% of dentists had received smoking cessation training as an undergraduate and 26% as a postgraduate compared to a total 45% of dental hygienists reporting training but did not go as far as suggesting that this may have shaped their views.

In a more recent study, Ahmed et al. (2018) found that overall, their respondents favoured the dentist as the preferred role for offering smoking cessation advice (96%), compared to dental hygienists and therapists (analysed as one group) (86%), and dental nurses (56%). However, all dental hygienists and therapists, 95% of dentists, and 45% of dental nurses indicated that they should be offering smoking cessation advice as part of their own

professional role. This pattern was reflected in the reporting of activity across the dental team as 100% of dental hygienists and therapists routinely offered smoking cessation advice compared to 81% of dentists and 67% of dental nurses. Again, dental hygienists and therapists also reported higher incidences of training (79%) compared with dentists (50%). The higher acceptance rates are encouraging but again no information was provided as to whether training or other factors were the reason for the discrepancy between perceived role and actual provision.

2.3.4 Influences on views and approaches to OHE

2.3.4.1 Professional education and socialisation

An early influence in the shaping of dentists' professional identity occurs during their undergraduate training. The way that OHE was taught (content, by whom) during undergraduate education was said to shape views and later peer group opinions. As a surgical profession, a large proportion of training focusses on the clinical paradigm of treating disease, and the technical and technological aspects of the role (Schwendicke and Giannobile 2020). However, this is often at the expense of the social determinants of health care and preventive dentistry (Metz et al. 2015) where coverage may be minimal.

Marginalizing these topics has been suggested to lead to the perception that prevention education is not part of everyday practice activities (Calderón et al. 2007; Autio-Gold and Tomar 2008; Pakdaman et al. 2010; Garcia and Sohn 2012; Morgan et al. 2013) or is something that meets a requirement but is not valued as an activity (Leggett et al. 2021). Morgan et al. (2013) surveyed 98 fourth- and fifth-year UK dental undergraduates and dental hygiene and dental hygiene-therapy trainees and found that the dental students attached less importance to oral hygiene advice than the hygiene and therapy students.

Despite both groups identifying high confidence levels in their ability to provide oral health advice, 37% of dental trainees reported that they had not received sufficient training in preventive care. Within the dental school at that time, OHE was taught by different tutors for the two groups and the authors posited that the hygienist/therapists were taught by tutors with a more preventive hygiene/therapy background may be a contributory factor. Even as recently as 2021, training focussed on treatment was indicated to be behind difficulty adopting a preventive focus in their work for dentist participants from the UK, Hungary, and the Netherlands (Leggett et al. 2021).

Neglecting to teach prevention in favour of restoration was suggested to represent a shortcoming of educational obligations (Metz et al. 2015). Existing research supports a need to present a holistic view of health in the undergraduate curriculum to foster a culture of prevention (Dyer and Robinson 2006), encouraging students to reflect on their own assumptions of the social influences on oral health and how to address them (Bedos et al. 2018). Efforts to integrate prevention and motivational methods are being made in the UK and the USA (Anderson et al. 2002; Bedos et al. 2018; Tiwari 2018). As outlined in *Chapter 1: Introduction*, the General Dental Council (GDC) now require dentists and all other members of the dental team to be proficient in various aspects of oral health promotion (General Dental Council 2015). This move is seen to be supported by students (Rindlisbacher et al. 2017). In their Brazilian/American review, Suga et al. (2014) concluded that dentists who more regularly engage with continuing professional education (CPD) are also more open to the changing demands of the role and are more willing to provide OHE and prevention.

As well as providing knowledge, dental training shapes the journey from lay person to dental professional (Freeman 1999a). These changes have been said to occur through a process of socialisation. Exposure to the attitudes and behaviours of their family is an individuals' first source of influence (primary socialisation). This is followed by learning through interaction with friends and peers during childhood and adolescence (secondary socialisation) (Baric 1977; Freeman 1999b). The third form of influence (tertiary socialisation) is from wider social groups and institutions. One form of tertiary socialisation is the influence of dental education on the dental professional identity (Locker 1989). Termed the hidden curriculum, these unintended and unofficial messages are key in understanding the development of a professional identity (Hafferty and Franks 2004; Whitman 2014). During dental training, the individual comes to identify with other dental health professionals and be shaped by their social norms, their attitudes, and behaviour. Social recognition of the individual's knowledge and expertise reinforce the professional identity and affords the individuals a power to influence other's dental health attitudes and behaviours (Locker 1989; Freeman 1999b). Through these informal processes, the culture of the individual's dental training influences both what it means to be a dental professional and their approaches to dental practice.

2.3.4.2 Psychosocial influences

The social networks of dentists have also been suggested as key in influencing dentists' professional role identity. In an Australian qualitative study, peer and social networks were reported to provide more influence on participants' knowledge and practice than academic evidence or guidelines and having preventive-focused practice leadership influenced practice (Sbaraini 2012). In another study by the same authors, dentists who identified

themselves as having a preventive-focussed approach reported that they believed “*most dentists*” were supportive of such an approach (Sbaraini et al. 2013). Positive patient outcomes following OHE were identified as a source of personal satisfaction for dental professionals owing to a concern for their patients’ best interests but were also a motivator as a way to demonstrate their skills and good practice to their colleagues (Jensen et al. 2014).

A London-based study also reported that dentists with positive views of providing preventive advice also perceived that their colleagues were as equally involved in provision (Yusuf et al. 2015). A Dutch study concluded that dental professionals who perceived support from their dental team members, peers, and the dental organisations reported more engagement with smoking cessation advice (Rosseel et al. 2009). Working in a practice where smoking cessation (Andersson et al. 2012) or OHE for periodontal disease prevention (Stenman et al. 2010) was supported by management was also observed as a facilitator for DHs in two Swedish studies (Stenman et al. 2010; Andersson et al. 2012). A UK systematic review concluded that lone practitioners and those who perceived a lack of support from their practice team identified more barriers to offering OHE (Lala et al. 2017). A mixed methods study explored caries prevention measures, including OHE alongside actions such as determining and planning care according to patient risk, and the application of fissure sealants and fluoride varnish, found that dental teams tended to reflect the dentists’ beliefs about prevention. Practices performing low levels of preventive work were more likely to report few benefits to prevention, to identify greater barriers such as lack of time and patient expectations and were less likely to see prevention as part a key part of their role (Templeton et al. 2016). The learning and adoption of knowledge and opinions from dental

practice cultures and social networks may help explain some of the variation in views and practice of oral health education and prevention.

Studies have shown that dentists' own beliefs and experiences influence their OHE messages (Tomlinson and Treasure 2006; Threlfall et al. 2007; Holmes 2016; Kay et al. 2016; Aziz et al. 2019). For example, in a survey of New Zealand dentists, Aziz et al (2019) found that OHE delivered in appointments was influenced by the professionals' own oral health care patterns. While most respondents reported providing toothbrushing advice (modified Bass technique), recommendations for the use of fluoridated toothpaste, daily flossing, or use of interproximal cleaning aids, and the use of mouthwash were all higher in those that also reported regularly including such actions in their own daily routine. Over half of the respondents agreed that their own oral health status influenced patient adherence to advice and over one-third agreed that dentists were important models in oral health. Lala et al. (2017) found that dental professionals who smoked were less likely to report raising the topic of smoking cessation with patients than non-smoking participants. Conversely, Chestnutt and Binnie (1995) recounted how dentist participants who were former smokers were more likely to engage in smoking cessation advice. These findings are supported by previous research that suggested that dentists give more advice and adopt a positive approach when it allies with their personal attitudes and beliefs (Chestnutt and Binnie 1995; Holmes 2016).

2.3.4.3 Practitioner confidence in their abilities

Greater confidence in their ability to offer OHE and in the perceived efficacy of such interventions have been concluded to increase the frequency of offering OHE (Kay et al.

2016), for example smoking cessation advice (Albert et al. 2002). Nearly 60% of Watt et al. (2004) survey participants reported *“Lack of confidence in ability to incorporate smoking cessation activities into consultations”* as a barrier to providing smoking cessation advice. Lack of training in smoking cessation support (Chestnutt and Binnie 1995; Warnakulasuriya and Johnson 1999; Stacey et al. 2006; Andersson et al. 2012; Ahmed et al. 2018) and in OHE in general (Kay et al. 2016), was identified as a barrier to providing OHE in several studies.

A number of studies indicated that while dental professionals may report a lack of training in OHE and prevention, this does not necessarily correlate with low ratings of their confidence in their OHE skills. High levels of confidence in delivering preventive advice was reported by Yusuf et al. (2015), despite identifying a lack of some core preventive knowledge. Similarly, most of the dentists Dyer and Robinson (2006) interviewed spoke of feeling inadequately trained to lead health interventions, particularly training in their communication skills. However, fewer questionnaire respondents in the same study indicated this as a barrier to undertaking health interventions. As part of a 121-question self-completion survey on UK dentists' general dental practice working environments and activities, Burke et al. (2019) included two questions about oral health education and preventive dentistry. When asked, only just over half (65% of the 388 respondents) reported that they possessed the *“knowledge and skill to apply behavioural interventions aimed at behavioural change in your patients”*. Conversely, 94% reported that they had *“the knowledge and skill to meet the preventive dentistry needs and expectations of the older patient”*. While it is difficult to draw conclusions from just two questions from an extensive questionnaire covering many topics, lower feelings of preparedness for general behavioural change may reflect the variation in attitudes towards the different topics of OHE as noted

earlier in this chapter. For example, while the majority of the 15 participants who completed Kay et al's (2003) self-completion survey believed that they were able to influence effective brushing techniques and fluoride toothpaste use, they were less confident in the role of diet counselling (Kay et al. 2003).

Several papers noted that while dental professionals may be confident in delivering OHE advice, they may be less confident in initiating discussions on topics beyond oral hygiene for fear of intruding or prying (Watt et al. 2004; Dyer and Robinson 2006). The literature highlighted practitioners' concerns about alienating patients by '*overstepping their mark*' or being intrusive in their questioning of their oral hygiene habits (Jensen et al. 2014) or lifestyle, and uncertainty regarding the boundaries of the dental role (Watt et al. 2004; Dyer and Robinson 2006). This was a concern for dental nurses and dentists when discussing smoking cessation in Watt et al's study (2004) who felt that it was "*not their business*", particularly as the intervention was characterised as "*nagging*", "*preaching*", or "*lecturing*" patients about behaviour change. Dentists reported similar reluctance in Dyer and Robinson's (2006) paper on providing alcohol consumption advice. Patients' perceived lack of insight into the relevance of such questioning about their oral health was thought to potentially alienate patients: "*They might think it was prying and not actually something that is anything to do with their mouth and teeth – which is what they expect a dentist to be asking about.*" (p48). These findings were echoed by Shepherd et al. (2010) who also reported low dentist confidence in providing alcohol consumption advice arising from concerns about disrupting their relationship with the patient or causing them embarrassment or offence which may have knock-on financial implications for the practice e.g., through loss of patients.

Opinions regarding the efficacy of prevention has some influence on practitioners' view of oral health education. Leggett et al. (2021) found that some dentist participants did not see prevention as part of their role, something the authors attributed to the participants' mind-set rather than the systems that they worked within as the participants were from six different countries. Leggett et al. (2021) also noted that those who did not see prevention as part of their role also did not believe it benefitted patients' oral health or spoke of becoming demotivated following experiences of patients not following their advice. Others noted a lack of measures to monitor whether prevention had been effective for patients left them with little incentive to provide it. While participants had previously spoken about prevention as lacking kudos and not being fun, these negative experiences and lack of clear outcomes may also have influenced their perceptions.

2.3.4.4 Previous experiences of OHE

For some dental professionals, opinions on efficacy may not necessarily be based on reliable evidence but rather on personal experience or shared anecdotes amongst peers. A survey-based study exploring the implementation of prevention guidance in general dental practices found that participant opinion was split on whether patients followed their advice (Witton and Moles 2013). Three studies (Dyer and Robinson 2006; Sbaraini 2012; Sbaraini et al. 2013) reported that decisions on the impact of prevention and oral health education were based on anecdotal information rather than evidence, with professionals valuing results observed in their own patients or in their practice over academic research:

"I probably trust my own clinical experience more than anything, because, after all you keep doing something that is not working, you are going to stop, aren't you? My own clinical experience is what I trust the vast majority of the time." (Sbaraini 2012).

Limited reflection on their delivery of interventions and the wider influences on the patient outcomes that they were intending to elicit may lead to disappointment and scepticism about future attempts if patients do not follow advice (Richards and Filipponi 2011; Weinstein et al 2004 cited in Gao et al. 2014). Watt et al. (2004) found that participants reported mainly negative views on smoking cessation and of wider oral health prevention activities, most strongly identified by dental nurses, as a result of frustration from lack of behaviour change. Andersson et al. (2012) explained how frustration and negative feelings sometimes impacted on some of their DH participants' ability to remain motivated and positive when promoting smoking cessation while others reported trying out different approaches at the next appointment with the patients. As well as impeding satisfaction with their work, perceived poor efficacy and enjoyment of OHE was identified as a barrier to the effectiveness of future OHE efforts (Kay et al. 2016). Unlike restorative care, behavioural preventive changes may be difficult to measure or only be achieved by a small percentage of patients; dental professionals are recommended to adopt a wider practice or public health definition of success than solely on an individual case basis (Chestnutt 2010; Richards and Filipponi 2011).

2.3.4.5 Perceptions of their patients

As oral health education and preventive dentistry are by nature interactive, how the dentist views the patient and their responsibility for their oral health care are factors in the way that they conceptualise prevention education. For example, while some dental professionals enjoyed working with challenging patients (Jensen et al. 2014), there are several studies on dentists' communication with patients and preferences for different patient 'types' (Lahti et al. 1996a; Brennan and Spencer 2006; Dharamsi et al. 2007). Lahti et al. (1996a) reported

that *'manageability'* was the characteristic most associated with that of the *'ideal patient'*.

In a survey of English dental surgeons, Mellor and Milgrom (1995) found that lack of communication, patient non-compliance and patient control were the causes of frustrating aspects of appointments. Manageability and compliance of patients were also important to dentists in other studies (Rouse and Hamilton 1991; Brennan and Spencer 2006).

Despite reporting having the patients' best interest at heart, a Swedish interview study exploring dental professionals' views on offering toothbrushing advice also indicated that judgements and interaction with the patient during the appointment influenced their OHE activity (Jensen et al. 2014). For example, the patient's level of interest in the appointment or poor chemistry between dental professional and patient also impact on OHE efforts.

Some participants also reported that a patient's social status, cultural group, level of education, their perception of the patient's ability to make changes influence the interaction or affect the professionals' confidence to offer OHE (Jensen et al. 2014).

Perception of a lack of patient interest has been cited as a barrier to OHE (Redford and Gift 1997; Campbell et al. 1999; Andersson et al. 2012; Jensen et al. 2014; Ahmed et al. 2018; Leggett et al. 2021). In a paper on providing smoking cessation, Watt et al. (2004) found that dental professionals were of the opinion that patients were not interested in receiving smoking cessation when they attended their dental appointments. In particular, adolescents were thought to be just not interested and pregnant women were considered the most difficult groups with which to initiate such conversations for fear of causing offence. Some participants were concerned that approaching it at the wrong point or if handled incorrectly would alienate patients: *"Some people take offence if you start talking about giving up*

smoking, you know, they say to me, 'who do you think you are?'." (p99). Long-standing patients, with whom the professionals had already developed a relationship were considered the most appropriate for initiating smoking cessation discussions. Andersson et al. (2012) also noted that having a good respectful relationship with patients made discussing smoking cessation easier.

Witton and Moles (2015) Q method study, discussed earlier in this chapter (See Table 2.2), suggested a type of dentist who was motivated to deliver prevention education but who had ideas about the type of patient who should receive it. Patients who had previously displayed efforts to maintain their oral health (for example, those with regular attendance, or who had adopted previous recommendations) were thought to be those who would benefit from preventive activity. Similar findings have been reported for the delivery of oral health advice to children of parents considered to be '*motivated*' (Threlfall et al. 2007) and in treatment decision making, patients viewed as cooperative and '*bright*' were offered a wider range of treatment options and general interaction (Redford and Gift 1997). Conversely, '*unreliable*' patients who were judged not to take responsibility for their own oral health were seen as frustrating and unlikely to benefit from prevention, with a restorative approach being the only one offering perceived '*value for money*' for the patients (Sbaraini 2012). Patients from socially disadvantaged backgrounds were viewed by dentist participants from six European countries to give low priority to oral health, possess lower oral health knowledge, to be more likely to engage in health-risk behaviour, and to be concerned with the cost implications of prevention (Leggett et al. 2021).

Perceived patient willingness to pay for OHE/prevention was similarly a factor in the Tomlinson and Treasure (2006) survey in Wales. Around half of their participants noted it as impacting on decision making regarding the delivery of prevention; the authors reasoned that this explained the finding that prevention remuneration claims (including OHE) amongst the sample were most frequently linked to NHS payment exempt patients. Jensen et al. (2014) again reported their Swedish participants' views that patients would not be willing to pay for OHE and how some did not charge patients for advice and instruction. Their participants reflected OHE was easier to offer with patients with dental insurance where costs were not an issue.

How well dental professionals' understood and could relate to their patients has also been highlighted as either a barrier or facilitator to OHE effectiveness (Kay et al. 2016).

Perceptions of the personal responsibility of patients for their lifestyle and health care behaviours has been little explored (Corah et al. 1982; Albertsen 2012). Jensen et al. (2014) found that their participants emphasized the importance of patients' responsibility for their own oral health but also spoke of their own responsibility for providing information and the outcome. An international systematic review meta-summary by Suga et al (2014) on caries prevention identified common explanations that dentist participants held for patients' lack of adherence to preventive measures: lack of understanding of the benefits of preventive measures was the most frequently associated factor, followed by lack of motivation to make changes, then participant age - having small children (i.e. adult patients with limited free time from child care). Fear, embarrassment, and treatment costs were identified at lower levels of frequency. Parental motivation was the most frequently identified reason for patient adherence. This review had a broad inclusion remit which included a wide range of

topics around the area of caries prevention, studies with both children and adults, and studies carried out in a range of settings. However, the results reflect similar issues raised in OHE-specific papers.

2.3.4.6 Practice factors

Practical barriers to the provision of OHE as part of preventive dentistry have been similarly noted in several studies (Watt et al. 2004; Tomlinson and Treasure 2006; Sbaraini et al. 2013; Yusuf et al. 2015). These barriers included inadequate remuneration for the task (Watt et al. 2004; Dyer and Robinson 2006; Csikar et al. 2009; Sbaraini et al. 2013; Yusuf et al. 2015), practice time demands (Watt et al. 2004; Sbaraini et al. 2013; Yusuf et al. 2015), practice space and facilities (Watt et al. 2004; Sbaraini et al. 2013), and patient factors (Watt et al. 2004; Yusuf et al. 2015). These factors are explained in more detail.

Possibly the most frequently reported barrier to providing OHE is the potential financial impact owing to remuneration systems (Watt et al. 2004; Dyer and Robinson 2006; Stacey et al. 2006; Sbaraini et al. 2013; Yusuf et al. 2015; Leggett et al. 2021). Lack of remuneration by the UK system was highlighted by McCann et al. (2000), Watt et al. (2004), and Ahmed et al. (2018) as a key barrier to providing smoking cessation, particularly by dentists compared to DCPs (Ahmed et al. 2018). Dyer and Robinson (2006) and Tomlinson and Treasure (2006) both found that NHS fee-per-item system payment amounts and claim code restrictions were inadequate and were the main factor said to discourage dentists from carrying out OHE/prevention. Even amongst dentists with a positive view of OHE/prevention, these activities were limited in order to enable them to meet business responsibilities: *“It’s a fine*

balance where you don't want to overstep the mark and become unprofitable" (Dyer and Robinson 2006, p.48).

In a questionnaire study of 386 dental practitioners in West Yorkshire, Csikar et al. (2009) explored differences in smoking cessation and health promotion provision between privately-orientated practices (POPs) and NHS-orientated practices (NHSOPs). They found no significant difference between the two practice types regarding reported levels of smoking cessation advice provision (POP: 42%, NHSOP 37%). POPs did report providing significantly more advice on diet and nutrition (POP: 67%, NHSOP: 54%), recording this activity in patients' notes, and referring patients on to an NHS smoking cessation service. POPs also reported fewer barriers to provision of advice than NHSOPs who indicated '*no incentive*', '*lack of expertise*', and particularly, '*lack of time*' as obstacles.

In an Australian grounded theory interview study of 23 dentists and one dental hygienist (Sbaraini et al. 2013), some participants highlighted that dental professionals have an ethical and moral responsibility to provide preventive care, even if they are not being reimbursed for the time.

"On the whole, most dentists are conscientious and put the patient first, which means you must practice preventively. At the end of the day, we probably gain monetary wise from performing restorations and more complex treatments, rather than preventively, because we are not paid for the time that we spend doing prevention. But, ethically and morally, we have to; and most dentists do." (p405)

Agreeing that insufficient remuneration for prevention provided little incentive, the UK system structure was also noted as a barrier to time for prevention by Dentists from the UK

and Ireland (Leggett et al. 2021). Policy makers were also said to be uninterested in putting money into prevention, even though, as Irish participants highlighted, it would lead to cost savings in the future. Perceptions of 'vague' guidelines and contracts, of being on a 'treadmill' owing to their contracts and feeling unsupported by NHS dental commissioners were also reported by UK dentists. The authors observed that an interplay of varying system barriers were detailed by participants from all six participating countries, suggesting that there was no one system that facilitated prevention successfully (Leggett et al. 2021).

Another practical impact of providing OHE is the potential impact on appointment timings (Watt et al. 2004; Sbaraini et al. 2013). Watt et al.'s (2004) participants were concerned that starting a discussion with their patients about their smoking habits would lead to a long conversation which would impact on diarised appointment times. Lack of time in appointments was also internationally noted as a barrier to OHE (Chestnutt and Binnie 1995; Jensen et al. 2014; Kay et al. 2016; Lala et al. 2017; Ahmed et al. 2018). Stacey et al. (2006) found that this was more frequently reported by dental hygienists, than by the dentist or the dental nurses in their study. Currently, dental hygienists and dental therapists are not employed in all practices and those employed part-time might mean that access is limited to one or two hours a week (Tomlinson and Treasure 2006). The Swedish DHs in Andersson et al.'s (2012) study talked of being flexible in their approach, and adapting to each patient. They managed the tight appointment timeframes by viewing the smoking cessation advice as an ongoing interaction, initial sessions may just "*sow the seed*" with opportunity to follow up at later appointments.

Alongside concerns around patient compliance (Yusuf et al. 2015), the issue of the dental practice environment and disrupting patient expectations and routine was suggested as a barrier. Finding appropriate practice space to carry out additional practical instruction or confidential OHE appointments was suggested to cause problems in some practices (Watt et al. 2004; Sbaraini et al. 2013). Watt et al. (2004) outlined how participants observed that patients are typically reluctant to spend any more time in the practice than necessary to receive their expected treatment, particularly those who are anxious about attending:

“People they just want to come to the dentist, get their treatment done and get out the door, they want to spend as little time as possible, they don’t want the staff giving them lectures on smoking and everything else, they just want to get in and get out.” (p99)

2.3.5 Summary

Although there is a relatively small selection of papers available on dental professionals’ views on their role in delivering OHE and that which is available is often discussed via specific health interventions such as smoking cessation or as part of a wider preventive approach to oral health care, several key messages can be identified from the body of literature. Firstly, what is encouraging is that most dental professionals were accepting of doing at least some version of OHE. Issues impacting on their level of acceptance of the activity included whether they view dentistry as either disease or health focussed. However, questions remain regarding the complexity and detail of how dental professionals view all aspects of OHE within their professional role.

The way that OHE was taught (content, by whom) during undergraduate education was said to shape views and later peer group opinions. Experiences in practice (own or others’

successes and failures) and their own oral health habits and beliefs continue to have an impact in their working life. However, that variation in the content and idiosyncratic delivery methods may not be reflected upon when evaluating anecdotal evidence and observed effectiveness is a concern. Judgements of efficacy, and of patients' motivation and capacity for change may be made without considering the different factors that may have influenced the OHE interaction and its outcomes for the patient. Additionally, dental professionals may not adopt a practice/population view of any behavioural interventions and may underestimate the impact of minor, individual changes.

Wider health OHE interventions such as smoking cessation, alcohol consumption, and weight management received mixed opinions. In addition to the influencing factors for oral maintenance OHE, wider health interventions raised uncertainty regarding the boundaries of the dental role: where does oral health care end? Practitioners' concerns about their own ability to manage behavioural change were accompanied by concerns about alienating patients owing to '*overstepping their mark*' or being intrusive. The extent to which concern regarding patient reaction relates to the dental professionals' own view of their professional role are unexplored.

Furthermore, views on patient preference and suitability for OHE, such as a perceived lack of patients' interest in OHE or only providing OHE to 'motivated' patients, were raised as barriers to use. Practical practice-based issues also affected the importance that dental professionals attached to providing all forms of OHE, and if/how it is implemented.

Practitioners may be motivated to provide OHE but owing to the nature of dental practices, they need to ensure they operate as businesses as well as healthcare providers. Lack of, or

insufficient remuneration for OHE tasks impact on their use within the NHS. Time-pressured appointments may also deter professionals from initiating OHE conversations for fear of extending diarised appointment time. The adoption of a team approach to OHE was suggested as one method of overcoming some of the discussed problems. However, this model is still affected by NHS governance and remuneration issues and requires innovation in ways of working to make it 'work' for the practices. The Welsh General Dental Service Contract Reform programme is piloting an adapted NHS dental contract that emphasizes team-working to deliver, and appropriately remunerate, preventive care (Welsh Government 2017d) – if, or how, this model affects dental professionals' views and understanding of OHE requires more consideration.

2.4 Patient perceptions of oral health education

This section addresses the literature on the acceptability of interventions and importance of the professional-patient relationship. It explores how patients' view dental professionals' role and their own role in oral health self-care, the provision of oral health education. This includes expectations of the dental appointment, characteristics of the dental professional providing the advice, and the acceptability of different topics of oral health education.

2.4.1 The available literature

Similar limitations were found with the literature on patient views on OHE in general dental practices as with the dental professional literature search – mainly small studies, quantitative measures with little detail or exploration of the findings, and studies exploring OHE within a broader frame of prevention or as a minor part of an RCT or process

evaluation of an intervention. The literature focuses on studies of specific health interventions such as smoking cessation, alcohol consumption, and weight management, usually delivered by the dentist. Again, papers reporting subjective experience or understanding of other OHE topics such as toothbrushing and diet are lacking from the body of knowledge on OHE. For example, a trial of a toothbrushing intervention that acknowledged the importance of patient factors in OHE outcomes but did not explore them in any detail (e.g., Feil et al. 2002). A small number of qualitative studies explore patients' views on adapting to preventive-focussed dental care, which includes OHE but is not specifically the focus, and their reflections on efforts to follow preventive care protocols. Papers exploring general dental professional-communication and what is important in the provider-patient relationship were included where they provided insight to other findings from relevant studies.

2.4.2 Expectations of dentistry and the acceptability of oral health education

Patients' perceived acceptability of oral health education is situated within the context of how they perceive wider dental provision. Newton (2015) explained that patients' perceptions of acceptability of care extends beyond the practitioners' clinical competence and reflect their ideal, predicted, and normative expectations of care (gathered from friends, family, or societal norms). Dyer et al (2016) highlighted that acceptability is influenced by whether the experience matched previous encounters of similar care ('experiential acceptability') and whether it matches social principles, values, rules, and regulations ('social acceptability').

A key expectation of dental care, is whereas patients visiting a doctor or other health care professional may expect to receive an examination, followed by either advice or a drug prescription, dental patients expect tangible clinical intervention from dental professionals following diagnosis of oral disease (Asimakopoulou and Daly 2009; Sbaraini et al. 2012). This expectation may shape other judgements on what the patients views as acceptable care during the dental appointment. In Fox's (2010b) review, the author highlights the nuances in attitudes towards preventive expectations and dental attendance reported in the Finch et al. (1988) study. While some patients may see appointment attendance as an 'insurance policy' against poor oral health, others may view it as an active measure in promoting good oral health and/or out of concern about potential negative effects of unchecked oral disease. Some patients may attend out of habit or because it's seen as the 'done thing', an attitude Finch et al. (1988) found participants often associated with 'higher' or 'aspiring higher' classes. These findings reflect variety in patient expectations of dental care compared to other types of health care and their own passive, active, or habitual role. These viewpoints may, in turn, influence the acceptability and reception of oral health education within general dental appointments for patients.

Two American papers explored attitudes towards dental care using the longitudinal Florida Dental Care Study (Gilbert et al. 2000; Riley et al. 2006). Gilbert et al. (2000) looked at the differences between regular and problem-only dental attenders and found that problem-only attenders displayed a more fatalistic approach to prevention believing that nothing could be done to prevent oral health problems. The problem-only attenders also reported more negative dental attitudes, were more likely to be smokers, and had more oral disease. Riley et al. (2006) examined the data of 873 participants from the Florida Dental Study and

reported four attitudes towards professional dental- and self-care (See Table 2.2). Those with *'favourable attitudes about dental care'* had the highest levels of oral health and were the most frequent attenders for preventive and restorative care. Conversely, those with *'negative attitudes and cost concerns'* were associated with the lowest levels of preventive care and the poorest oral health, with cost being a barrier to seeking treatment. The other two groups *'frustrated believers in dental care'* and *'pessimistic about personal and professional oral care'* displayed more negative views of oral health care. While the *'pessimistic'* group had the poorest attendance and oral health, their views on oral health care were not based on previous experience unlike the *'frustrated believers'* who had experienced instances of unreliable dental work. Despite having good access to oral health care and positive views of preventive care, people in the 'frustrated' group were more likely to wait until any oral disease had become severe before seeking treatment. Some groups showed some correlation with certain socioeconomic variables, for example the *'favourable attitudes'* group were more likely to be white and have higher educational attainment levels while the *'negative attitudes'* group were mostly Black, holding lower educational levels, and be in rural areas. However, the other two groups shared similar demographics with the *'favourable attitudes'* group. Riley et al. (2006) also highlight that differences within-group were often greater than between the groups emphasising the need to understand each patients' pattern of attitudes and social influences rather than draw conclusions based on sociodemographic information. These two studies (Gilbert et al. 2000; Riley et al. 2006) are focussed on general attitudes towards dental care which includes the reception of clinical intervention and so may reflect very different opinions than would be reported towards OHE. They are also USA-based, which has a different dental and wider healthcare system than the United Kingdom and so the viewpoints expressed are framed within a different

context. However, while they may not transfer to the system in place in England and Wales, OHE directly, they have been included as they provide an example of the relationship between opinions and beliefs and oral health care engagement. Anagnostopoulos et al. (2011) found that the more seriously their participants viewed oral disease, the greater they rated the benefits of toothbrushing and identified fewer barriers to regular toothbrushing. They concluded that health beliefs were multidimensional and incorporated beliefs about the condition and perceived self-efficacy in managing the conditions.

Table 2.2: Patient attitudes towards dental care (Riley et al., 2006)

Attitude	Characteristics
Favourable attitudes about dental care	<ul style="list-style-type: none"> • Positive ratings of recent dental care, • Dental care is important in maintaining oral health, • Cost had not delayed dental treatment.
Frustrated believers in dental care	<ul style="list-style-type: none"> • Moderately cynical about dentists, • Believe that dental care is important to maintain oral health.
Negative attitudes and cost concerns	<ul style="list-style-type: none"> • Rated the quality of recent dental care as poor, • Holding negative attitudes about dentists, • Costs have delayed dental care, • A belief that oral decline is inevitable.
Pessimistic about personal and professional oral care	<ul style="list-style-type: none"> • Believe personal and dental care is not effective in maintaining oral health, • Not frustrated by poor care in the past.

Adapted from (Riley et al. 2006, p293)

2.4.2.1 Acceptability of OHE

2.4.2.1.1 Smoking cessation

Three studies exploring dental patient views on smoking cessation have been conducted using modified versions of the same tool in Australia (Rikard et al. 2003), Northern Ireland (Terrades et al. 2009), and India (Sood et al. 2014). All three found that the majority of

patients expected dentists to take an interest in their patient's smoking status: 73% (Rikard et al. 2003); 82% (Terrades et al. 2009); 78% (Sood et al. 2014) and to discuss the impact of smoking on oral health with them during appointments: 61% (Rikard et al. 2003); 83% (Terrades et al. 2009); 95% (Sood et al. 2014). When sorted by smoking status of respondents, the authors found that smokers reported more negative views on smoking cessation provision; these findings were only significant in one study (Rikard et al. 2003). Generally, smokers were less in favour of dentists providing smoking cessation advice, had lower expectations and lower evaluations of the practical advice on quitting that was given. When asked if they would try to quit if their dentist recommended it the results varied across the three studies, from 30% for Rikard et al. (2003), to 69% for Terrades et al. (2009), to 88% for Sood et al. (2014). These findings raise the question whether opinions towards smoking cessation by dental professionals became more favourably viewed over time or whether they reflect a change in public opinion towards smoking itself over the time period between the first paper (Rikard et al. (2003) which was based on data gathered between 1999-2000 and Sood et al. (2014) study based on data from 2011. In two papers, around one third of all respondents were unsure whether their dentist had the skills to encourage patients to stop smoking: 34% (Rikard et al. 2003); 29% (Terrades et al. 2009) (this was not addressed in the Sood et al. (2014) paper). These papers suggest that smoking cessation provision by dentists is generally acceptable to patients but there are mediating contextual factors that need to be further explored.

A Canadian telephone interview survey of 3,088 patients (Campbell et al. 1999) found no difference in responses between smokers and non-smokers. Instead, they found that male and younger participants were more favourable towards dental offices providing smoking

cessation advice (61%, 70% respectively) than the female and older participants (57% both). They also noted that patients who had expressed an interest in quitting were more positive towards smoking cessation advice than those who had no plans to quit (60%, 40%). Overall, 60% of participants agreed that smoking cessation should be routinely discussed in dental visits. Interestingly, the paper also reported that 62% of dental professionals surveyed believed that their patients did not want to receive smoking cessation advice and noted it as a barrier to provision.

Ford et al. (2016) surveyed 726 Australian dental patients attending clinics at a university dental clinic and four private dental practices and found more positive attitudes towards smoking cessation provision. In their study, the majority of patients surveyed, regardless of smoking status, were in favour of dentists enquiring about patients' smoking status (96%), and that dentists were qualified to offer advice on smoking cessation (96%). Seventy-eight per cent of smoker-participants reported that they would be comfortable discussing their smoking and that provision of cessation advice was appropriate if it were affecting their oral health. However, 17% of smokers indicated that they might not be honest about their smoking behaviour and less than half (47%) would be motivated to quit if advised.

Mismatches between dental professionals and patient reporting of smoking cessation advice were noted in some studies (Brink et al. 1994; Rikard et al. 2003). For example, one study found that only 7% of their smoker participants reported receiving smoking cessation advice in their dental visits, while 41% of dentists indicated that they advised smokers to quit (Brink et al. 1994).

A more negative view was reported by Andersson and Johannsen (2016) who found that only 16% of their 167 smoker participants from specialist dental care clinics in Sweden wanted smoking cessation support from their dental team, preferring to do it by themselves. Andersson and Johannsen (2016) note that this might result from a lack of awareness of the support the dental team can offer, but this was not explored with their participants in this study. Sood et al. (2014) noted that some participants reported shame and embarrassment about their smoking which may contribute to this disparity and the low acceptance rates reported by Campbell et al. (1999); Andersson and Johannsen (2016); and Ford et al. (2016).

2.4.2.1.2 Alcohol consumption

One questionnaire study explored patients attending a walk-in emergency dental clinic based on a University campus in South Carolina, USA (n=408) views on the acceptability of dental teams discussing alcohol consumption (Miller et al. 2006). Over 75% of respondents agreed that dentists should ask patients about their alcohol consumption and should provide advice on reducing their drinking if it was warranted. Over 90% of participants also indicated that if asked about their drinking habits, they would give an honest answer. There were no differences between the patients' views when analysed by age, sex, or alcohol consumption rates. However, it must be questioned whether the results from the study setting (a walk-in emergency clinic on a University campus) would transfer to general dental practice. The participants may have a different relationship with the dentist there than when regularly attending a general dental practice and whether such high acceptability rates and indicated honesty would be affected by the different relationship.

2.4.2.1.3 *Diet and weight management*

Education about maintaining a healthy weight has also been explored in general dentistry. Wijey et al. (2019) surveyed patients attending four private dental clinics in London and Hampshire and found that the majority were favourable to receiving information on healthy weight and Body Mass Index (BMI) screening during dental visits. Participants classed as overweight or obese while still favourable, reported significantly less favourable responses than participants within healthy weight ranges. The study was conducted with patients attending private practices in one geographical region so it must be questioned how well these findings would transfer to patients from NHS-funded general dental practice contexts in other areas of the UK.

While highlighting the lack of information available on how patients view basic oral hygiene advice, the literature does suggest general approval of the acceptability of OHE on oral health risk factors such as smoking cessation. However, the views vary across the studies between smokers and non-smokers, and regarding whether the dentist has the skills to motivate them to stop smoking (Rikard et al. 2003; Terrades et al. 2009). Newsome and Wright (2000) found that patients' evaluation of dentists is multifactorial, including their perceptions of the dental professional and their prior expectations and beliefs regarding the dental role. This suggests that there are more complex factors influencing both acceptability and motivation to quit smoking, and in OHE in general, than appraisal of the role and OHE skills of dentists. The quantitative data in these papers has uncovered some factors that appear to influence the patients' views of OHE acceptability. For example, the patients' smoking status and the possible feelings of embarrassment associated with this status may also explain lower acceptability ratings for smoking cessation OHE. These findings, coupled

with the different expectations and attitudes towards oral health care and self-care that patients were said to display (Finch et al. 1988; Gilbert et al. 2000; Riley et al. 2006; Anagnostopoulos et al. 2011) highlight the interplay of context factors in patient judgements of OHE. It should be noted again that the literature so far has mainly focussed on the acceptability of dentist-offered OHE and has not discussed patient views towards provision by other members of the dental team in any depth.

2.4.3 Patient-provider communication and view of individual professional

There were few papers reporting patients' views of oral health education interactions. Most papers on the topic either represented dental professionals' views on the patient perspective or addressed patients' views on their own oral health or interactions with dental professionals in general. For example, while the study did not address OHE communication specifically Chenery and Treasure (2011) reported that most patients (93-97%) indicated that they were given explanations for treatment and their questions were answered in a way that they understood, that their dentist treated them with dignity and respect, and that they had confidence and trust in their dentist. Patients have previously identified toothbrushing and cleaning as the most important action for caries prevention; while few participants had received hands-on demonstration of cleaning techniques many perceived that it would be beneficial (Templeton et al. 2016). Patients from six European countries welcomed more advice on prevention as they did not feel well-informed about how to take care of their oral health. Dentists were said to be not interested in giving this advice or provided mixed messages or advice that contradicted health promotion advertisements (Leggett et al. 2021).

Two studies explored patients' experiences of preventive dental care (Sbaraini 2012; Sbaraini et al. 2012) and the influence of provider-patient communication on oral health status (Fico and Lagoe 2018). Both studies concluded that the experience of the dental professional-patient interaction was the factor with greatest influence. Interested in exploring patients' experience of dental care, the authors interviewed Australian general dental patients from two dental practices that had participated in a previous randomised controlled trial (RCT) of a preventive care intervention (toothbrushing with high fluoride toothpaste and diet advice). One paper explored dental professionals' and 40 patients' experiences of implementing the RCT protocols (Sbaraini 2012), and the other on 17 patients' experiences of preventive dental care and OHE (Sbaraini et al. 2012). Despite the patients' different clinical outcomes following the RCT, the authors found similar patterns of experiences for each group on attending practices with and without a preventive focus, the barriers and enablers for prevention, and the importance of the dental professional-patient relationship (Sbaraini et al. 2012). Participants reported the contrast between their experiences at their current, preventive-focused, practice and previous experiences at what the participants described as 'old school', 'drill and fill' practices (Sbaraini 2012; Sbaraini et al. 2012). Participants described such practices as engaging in little communication or offering preventive options instead preferring to offer fillings or other restorations. Attending these practices led to a feeling of being trapped in a cycle of 'degenerating teeth' where patients were stuck in a pattern of paying money for dental care but experiencing continued poor oral health that required more care at each visit.

Participants reported wanting to 'keep their teeth' but had become used to receiving repeated interventions and losing motivation with their oral hygiene. In contrast, after

engaging with preventive-focused practices participants reflected reinforcement from oral health improvements made them feel more in control over their oral health and understood that long-term oral health improvement required increased input on their own part. The transition was attributed to gaining new information, forming new clinical relationships, and establishing lifestyle changes and new oral health practices. In a USA-based study, Maupomé et al. (2004) also found that oral health that was perceived more poorly was associated with greater use of restorative services compared with preventive options.

For Sbaraini et al's (2012) participants, making the transition to a preventive model of oral care involved overcoming three main barriers. Patient participants reported initial uncertainty about the preventive treatments, they were also seen as an additional demand on their time and were of low priority. Changing current behaviours were also noted as difficult. Enablers were reported from the engagement with a preventive dental practice such as the acquisition of new knowledge and insights into how preventive behaviours could benefit their oral health, having more treatment options than restorations, and a good relationship with their dentist. The authors emphasize that the context of the relationship between the patient and the dental team is a vital component of changing patient behaviour. The preventive approach involves communication with patients regarding their self-care behaviour and such interactions led to participants viewing their dentists as 'caring' and 'treating them like a person'. Participants valued the perception that dentists were working with them, listening to their concerns, reassuring them, and avoiding conveying blame for their oral health status (Sbaraini et al. 2012). However, it worth noting that Sbaraini et al. (2012) found similar accounts from participants regardless of their oral health status so while the factors identified greatly improved the patients' relationship with

the dental professional and attitude towards their oral health, there are still factors outside the practices' control that influence their patients' oral health such as their motivation for self-care and contextual factors which either facilitate or inhibit attempts at change.

In a paper exploring how dental professional-patient communication influences oral health outcomes, Fico and Lago (2018) noted that little is known about how subtle differences in the message content or delivery may influence oral health outcomes. Using an online survey, they explored 267 participants' perceptions of instances of positive and negative communication with dentists and dental hygienists. Participants who reported having a regular dental provider were recruited from across the US. The authors found that participants valued attempts to manage their anxiety or physical comfort during the encounter, having treatment options and procedures described clearly with anticipated outcomes or potential side-effects accurately explained. Non-treatment related aspects of communication such as engaging in rapport building with the patient and validating the patients' attempts to care for their oral health or avoiding negative communication (e.g., causing embarrassment or shame) for any adverse conditions were also valued. Negative encounters included disregard for the patients' comfort during the interaction or their wishes for treatment.

The style of language used was also highlighted as an aspect of negative encounters, for example the use of inappropriate language or communication style such as being sarcastic, rude, condescending, or 'preachy', and judgemental comments blaming the patient for any oral conditions or devaluing attempts made. While talking about dental professional-patient communication in general, the style of language discussed here can potentially provide

further insight into the lower acceptance rates for OHE from smokers compared to non-smokers (Rikard et al. 2003; Terrades et al. 2009; Sood et al. 2014), and by women smokers (Campbell et al. 1999), and to the lower acceptance of weight management advice from overweight or obese participants (Wijey et al. 2019). Too much conversation or discussing irrelevant or inappropriate topics were also cited as examples of negative experiences that impact on the outcome of the dental interaction. While only reported by a small number of participants, this finding highlights the complexity of the dental professional-patient interaction; relaxed friendly conversation was noted to be valued by patients in other studies (Finch et al. 1988; Sbaraini 2012; Sbaraini et al. 2012) but too much, or talking about an 'irrelevant' topic could also be off-putting (Fico and Lagoe 2018).

These findings are consistent with other research on patients' confidence and satisfaction with dental professionals. Confidence and patient satisfaction have also been reported to be more to do with the characteristics of the dentist than their technical competence (Finch et al. 1988; Sondell and Söderfeldt 1997; Newsome and Wright 1999; Newsome and Wright 2000). The importance of characteristics such as kindness, avoiding patient-blaming for conditions, and practitioners who take time to explain procedures in a patient-focussed way have been noted to inspire confidence (Finch et al. 1988; Lahti et al. 1996b; Newsome and Wright 1999; Fox 2010b; Dyer et al. 2016). Research in other areas of dental-patient communication concluded that poor communication may lead to patient mistrust of the dental professional (Riley et al. 2002), which may then lead to patients' withholding important information about risk factors in their lifestyles (Robinson et al. 1994). Brennan and Spencer (2006) found that patients interacted more with dentists who were perceived more favourably for their examination style and ability to relate to patients. These findings

have led authors to suggest that previously 'uncooperative' patients may become more cooperative in the context of such positive professional-patient relationships (Sbaraini et al. 2012).

Fico and Lagoe (2018) also noted that communication forms varied by dental provider. While both dentists and dental hygienists were highly associated with positively managing anxiety and physical discomfort, dental hygienists were most frequently identified in descriptions of judgemental language or behaviour and dentists with experiences where patients' expressed feeling were disregarded. Öhrn et al. (2008) had earlier reported that overall participants recalled more positive responses towards dental hygienists than dentists, apart from in situations which may elicit feelings of shame or guilt such as discussing oral hygiene efforts, smoking, and other lifestyle factors. All of these situations are key aspects of the dental hygienists' preventive oral health care role. Fico and Lagoe (2018) also posited explanations for these findings, noting that dentists are generally perceived as having the highest authority in the dental team and that therefore they may be more readily recalled or viewed as more important than messages provided by those in other dental roles. They also suggested that while patients may attend appointments with more than one dental hygienist-therapist in the practice, they are more likely to see the same dentist at each appointment potentially leading to a better developed relationship.

In a Finnish interview and survey-based study of 4076 patients, Raittio et al. (2018) found that the majority of participants reported receiving adequate information on their oral health and options, that they felt listened to, and that they had influence over their treatment decisions. Variations in responses were identified by patient characteristics.

Satisfaction with their ability to influence treatment decisions was lowest among participants aged 29 to 45, and 75 and over. Those aged between 29-45 years were the most likely to report feeling that they were not listened to. Single participants, those who had to make “*considerable compromises in consumption*” (p.3), or those who struggled with their income were less satisfied with the level of information provided, felt not listened to, or reported low influence over treatment decisions. Those who had attended a private dentist within the previous 12 months, were less satisfied with all three aspects than those who had visited a public dentist.

Patients with a high self-perceived need for oral health care, patients in pain, or with problems chewing reported lowest rates of adequate information, influence over treatment decisions, and being listened to by dental professionals. Patients who reported being somewhat frightened of visiting the dentist also reported not receiving adequate information or being listened to. While addressing general satisfaction with dental provider communication rather than focussing on OHE, these findings highlight how the patient’s situation influences their perceptions of dental professional-patient interactions. These findings also emphasize the need for understanding the patient’s context (e.g., behavioural, lifestyle, and socioeconomic factors) and the development of collaborative relationships in oral health education and promotion, particularly within contexts of social and economic deprivation (Martino 2011; Kay et al. 2016).

2.4.4 Summary

This section outlined how patients’ understanding of dentistry and expectations of dental appointments differ. Importantly, how patients’ view their own role within dental

appointments vary. These different viewpoints and patient needs highlight the importance of dental professionals working to ensure that patients feel listened to and valued. Addressing the differing needs requires a different skill set than was necessary in 'traditional', intervention-based dentistry. When the main focus of the dentists' role is tackling oral disease with little preventive options then their clinical skills are at the forefront. While this approach tackles immediate oral health needs, the literature suggests that it can lead to patients feeling left out of their oral health care process and fosters a fatalistic view of a lack of control over their own oral health. A wider practice context of preventive care assists patients to feel part of the process and encourages a shared approach to improving their oral health.

Communication skills have been noted as key in the preventive professional-patient relationship. Patients reported valuing being informed about care options. Communicating information about self-care without implying judgement or blame for poor oral health was found to be vital to avoid alienating patients. The patient's health context and feelings regarding their oral health influenced their perceptions of the information provided (content, by professional role), which in turn was suggested to influence the patient experience of OHE and their ability to recall the information provided. This highlights the need for personalised communication with patients rather than rote-delivered information which may be misinterpreted. The interaction of factors that influence patients' experience needs to be further explored to fully understand some of the findings, for example the contradictory findings that patients value friendly conversation but are also put off by too much talk from providers.

Variation in acceptability and recall of advice was explored in the research regarding smoking cessation and weight management advice. While the studies suggested that advice on these topics was generally acceptable activity for the dental team, there was a lack of evidence on other types of oral health education such as routine oral hygiene advice.

2.5 Summary of the literature and the aims of the study

The themes from the literature explored in *Chapter 1*, and the preceding two sections of this chapter (2.2 and 2.3) were used to generate a conceptual diagram, visually plotting the different factors influencing the delivery of oral health education and its reception (see Figure 2.2). The narrative review helped guide and refine the study research questions, shaped participant sample decisions, and informed later data gathering instruments. A description of the conceptual model and the narrative review of outcomes were drafted and published in *Community Dentistry and Oral Epidemiology* (Barnes et al. 2021).

While acknowledging the methodological limitations of some of the literature reviewed, the findings highlighted how factors influence the OHE process before, during and after the educational interaction. Factors that were identified related to the wider social and policy context (macro), community-level factors (meso), the individual practitioner and patient (micro), factors that influenced the nature of OHE interaction and any resulting behaviour change, and how the outcomes of the process influence future OHE interactions for both parties. These factors feed into OHE, with each party's experiences, expectations, and interactions during the appointment and afterwards impacting on outcomes. The resultant conceptual model acknowledges the influence of wider 'upstream' factors alongside

interpersonal and individual influences which should be taken into consideration when developing OHE interventions (Barnes et al. 2021).

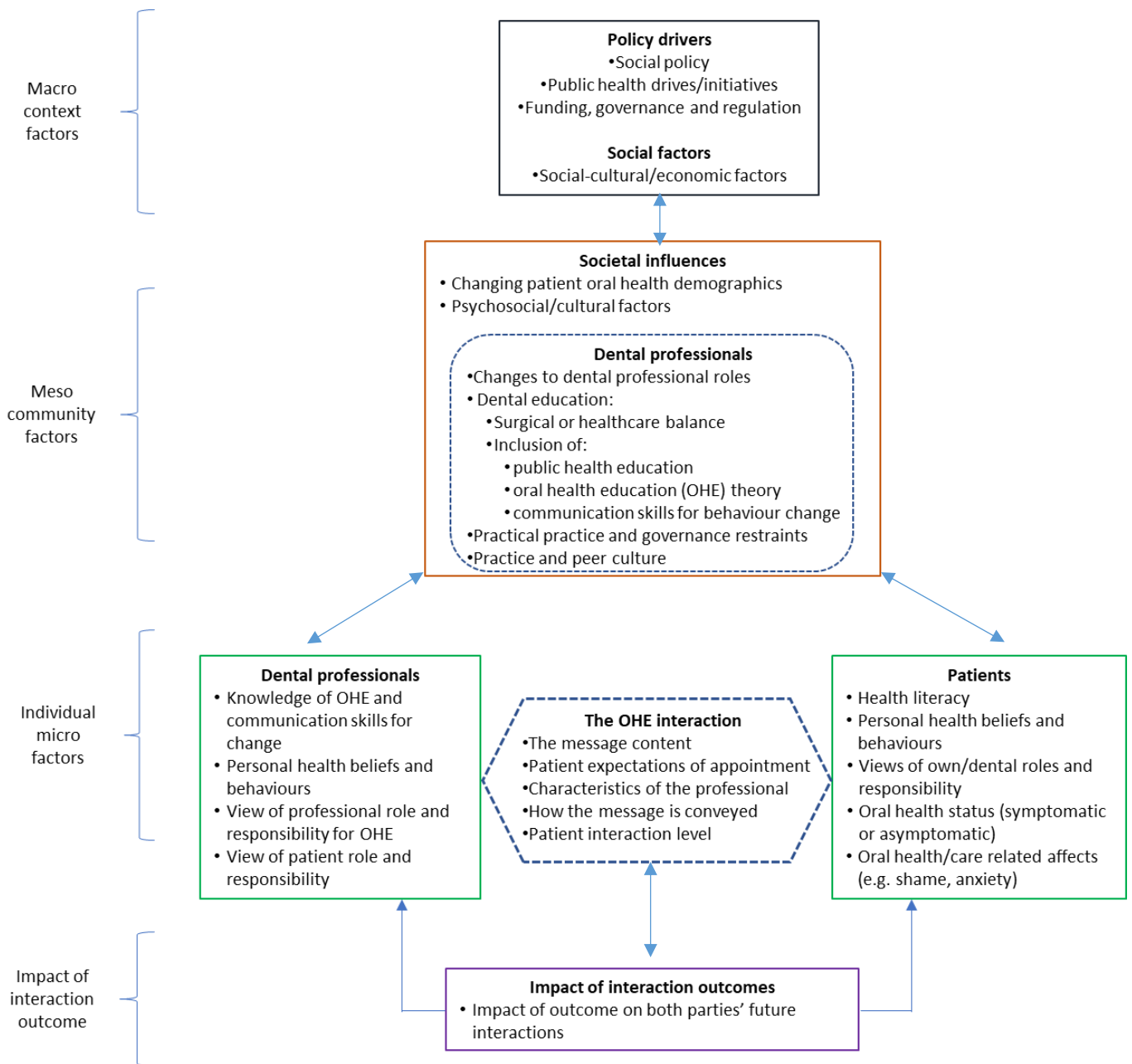


Figure 2.2: Interaction of influencing factors in the OHE process

Section 2.2 showed that while many of dental professionals' abilities are based upon on a core of scientific knowledge (biology, surgical treatment knowledge), cultural professional beliefs also influence role identity, and the organisation, delivery and financing of dental care (Davis 1980; Sbaraini 2012). These cultural traits are influenced by broader social, economic, and political factors (for example, remuneration, working environment).

The age of many of the papers reviewed means that they may reflect views typical of dentistry and society at the time and may not reflect the views of dental professionals today. Some of the papers were from the early days of current policies promoting the use of OHE and prevention and their influence may not have been felt at the time of the older studies. Additionally, the policy changes may have fostered changes to dental education that have shaped more recently trained dental professionals. Alongside the age of some of the papers, they also cover a range of countries with different dental care systems. Even small regulatory and financial system differences may be enough to influence dental professionals' views and experiences of OHE. By focussing on the Welsh context, this study will source knowledge on contemporary views and experiences of OHE which will reflect the current policy and educational context.

The review also highlighted that little is known about how dental professionals define prevention and how it is applied in practice. The literature provides some understanding of dental professionals' views on providing OHE in specific topics (e.g., smoking cessation and alcohol consumption) or interventions, but little on their views on basic oral hygiene advice such as toothbrushing which would appear to be a basic cornerstone of an oral hygiene

routine. To dental professionals this work may be so routine and tacit as to go unquestioned but as someone without dental training but this will be explored in this study.

There is also little on *how* OHE is incorporated into everyday practice. The barriers and enablers of OHE are identified in the literature but there is little explanation of how dental professionals manage to overcome or accommodate these barriers to engage in OHE during appointments. This study will explore dental professionals' views on the routine delivery of OHE and how it is incorporated into everyday work. The interviews will also provide insight into the perceived value of providing OHE in practice for patients, and the barriers and facilitators to its provision.

There is also little evidence on dental professionals' motivation for delivering prevention within the current NHS dental services contract (Witton and Moles 2015). Understanding how the context of dental health care impacts on individual practitioners' perception of their role and motivation to provide oral health education is key in optimising efforts to promote patient self-care and avoiding widening inequalities (National Institute for Health and Care Excellence (NICE) 2015). This study will explore how dental professionals working in general dental practices view their role in the provision¹ of oral health education (OHE), how dental professionals view the patient's responsibility for maintaining their own oral

¹ In this report, terms such as "offered", "delivered", and "provided" will be used as a shorthand for dental professionals' engagement with OHE activity and "received" and "reception" for patients. These terms are used with the caveat that they are not intended to suggest a unidirectional flow of information with the dental professional as the sender and the patient as a receiver. Rather than a provision of information to a listening patient, the interaction involves judgements and adjustments based on each party's action and reaction, perceived or real.

health, their perceptions of what limits patients from following recommended advice, and what influences dental professionals' provision of OHE to individual patients.

Section 2.3 also concluded that little is known about patients' views on OHE offered by the dental team. Studies that explored the acceptability of OHE on certain topics such as smoking cessation and alcohol consumption highlighted the mediating influence of patient context in patient perceptions. As Newsome and Wright (2000) point out, patients' evaluation of dentists is multifactorial, and includes perceptions and expectations of the dental professional, and beliefs regarding the dental role. Patient perceptions of dental and self-care were also found to be influenced by the clinical approach taken by the professional (Sbaraini 2012; Sbaraini et al. 2012) and personal attributes of the dental professional such as their communication skills (Finch et al. 1988; Sondell and Söderfeldt 1997; Newsome and Wright 1999; Newsome and Wright 2000). Understanding what influences patients' experiences of dental care is vital. Similarly to the dental professional literature, the literature is older and may not reflect contemporary context of dentistry and whether patient expectations have also shifted and also reports on patient views of dental care in countries other than England and Wales.

A more recent study, while still focussed on a general preventive approach rather than OHE specifically, painted a more favourable view of OHE and prevention than reported in older studies in this review which may potentially suggest that patients' expectations may have adapted over time. The literature provided an insight into what patients consider acceptable in terms of OHE but the findings tended to be quantitative ratings of acceptability with little exploration or discussion of the reasons for their responses. Qualitative descriptions were

drawn from studies that focussed on general views on patient – dental team communication or the practices’ preventive focus rather than the OHE interaction itself.

The multi-level interaction of factors (individual, social, and interactional) that influence patients’ experience needs to be further explored to fully understand patients’ experiences and understanding of OHE and oral health self-care. This study investigates patients’ perceptions of the acceptability of different OHE topics and their expectations of OHE provision. This study also explores patients’ understandings of the patient – dental team relationship moving beyond communication styles to provide insight into how patients view both the dental professionals’ role in OHE provision and how they view their own responsibility for their oral health and their reasons for not following recommended advice.

3 Methodology

This chapter describes the study methodology as it was originally conceived and how it was altered owing to the impact of Covid-19. Firstly, the study design is described, and the concept of case studies and qualitative interviewing is introduced as well as the conceptual framework underpinning the study. Next the chapter describes the data gathering processes, detailing the samples and how participants for the study were identified and recruited. This is followed by a section outlining the data gathering and analytical processes. The chapter concludes with a discussion of the ethical issues raised in the study.

3.1 Design

This is a qualitative study, which adopts a case study design incorporating one-to-one semi-structured interviews: face-to-face and remote with members of the dental team and via telephone with patients. The case studies comprised general dental practices where data were gathered using interviews with the dental teams and interviews with a selection of patients attending these dental practices. Later data gathering encompassed semi-structured telephone interviews with remotely recruited dental professionals (dentists, DTs, and DHs) and patients.

As this study was concerned with the exploration of dental professionals' and patients' understanding of the role of OHE and their lived experiences of OHE interactions, qualitative approaches were considered the most appropriate method for data gathering. Quantitative research is most typically associated with a positivist approach, employing characteristics of the scientific method such as elimination of bias, quantifying or measuring phenomena,

statistical analysis, and generalisable findings (Denzin and Lincoln 2000; Thomas 2006). In contrast, researchers using interpretive qualitative methods are interested in the context and nature of a subject, exploring the factors that underlie such phenomena, and with identifying new theories or plans of action (Richie and Spencer 1994). Of particular interest to qualitative researchers is the exploration of phenomena in their natural settings and understanding them on the basis of the subjective meanings people hold about them (Denzin and Lincoln 2000).

Qualitative research methods were appropriate to address the research questions as they allow exploration of peoples' meanings, their thoughts, attitudes and perceptions, to ask "why" questions, and to provide rich description rather than to examine cause and effect (Hollway and Jefferson 200; Stewart et al. 2008; Lichtman 2014). Qualitative research can also provide explanations for quantitative findings (Grypdonck 2006). For example, this study aims to provide greater insight into the quantitatively expressed views and opinions reported in the literature reviews in the previous two chapters.

While qualitative research originates from a different theoretical position than quantitative research, the adoption of criteria that resonates with quantitative approaches can help convey trustworthiness of qualitative evidence (Pope and Mays 2004). To ensure transparency and aid credibility, the account of the methodology was informed by the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong et al. 2007) checklist. The checklist outlines 32 items of information that are deemed necessary for the comprehensive reporting of qualitative research, across three domains: 1. *Research team and reflexivity*, 2. *Study design*, and 3. *Analysis and findings* (see Appendix 2 for the full checklist). Details of the researchers' background, skills, and understanding are be explored

in the next section (3.1.1 *Conceptual underpinnings*) and how her decisions shaped the delivery of the study are reported throughout the description of the data gathering processes. The study design, including the approach to analysis is detailed later in this chapter. The findings of the analysis, including participant quotes, comprise *Chapters 4, 5, and 6*.

3.1.1 Conceptual underpinnings

3.1.1.1 The researcher's background and influence

The study was designed and conducted as a piece of work for the researcher's Doctor of Philosophy studentship. With a background in sociology and psychology led by an interest in both individual and social processes, the researcher completed an MSc in Qualitative Research Methods. The course inspired an interest in using qualitative methods to bring together an array of complex experiences and stories to explore how people understand their world and how their accounts reflect different aspects of the(ir) wider social world. Following the MSc, the researcher embarked on a research career studying areas of health and social care, focussing on exploring experiences of care provision and perceived care needs from the perspectives of both the professionals and the clients. Alongside patient/client interviews, often with potentially vulnerable participants, the researcher conducted interviews with healthcare professionals and healthcare commissioners of high status. These studies reinforced the researchers' viewpoint that each persons' 'reality' is constructed slightly differently depending on their previous experiences, understandings, and beliefs (Gall et al. 1996).

At the time of the study, the researcher had over ten years' experience of research in the field of dentistry and had explored different aspects of the education and work of dental professionals, for example continuing professional education, workplace activities, skill-mix, and teamwork, and had spent considerable time in dental practices. Despite not having a dental background, dental practices and the work of dental professionals were therefore not new experiences to the researcher but were also not so familiar that the processes had become tacit or unquestioned routines. Insight into how *some* practices worked allowed observation of differences and similarities across dental practices, dental teams, and their contexts. It was also during this time that she had worked on studies in collaboration with leads from Aneurin Bevan and Cwm Taf Morgannwg University Health Board Research and Development departments who would later kindly agree to act as company partners for her KESS PhD studentship.

It was during a period spent recruiting patients in dental practice waiting rooms for a survey study (Barnes et al. 2018), that the researcher observed that several patients across different practices joked that they were off "*to be told off*" when they were called into their appointment. While there were many patients who disclosed that they did not like seeing the dentist, these jokey comments were also made by patients who had previously commented that they had been with that dentist for many years and spoke highly of them. This led her to question how dental professionals and patients both understood the OHE interaction during the appointment. For example, do patients really view OHE as being told off and if so, what about the interaction made them feel that way? Or was this another negative stereotype of dentistry that was used in a light-hearted way in an informal chat?

Similarly, the researcher questioned how dental professionals viewed their OHE attempts and how they understood their own OHE provision.

The researcher adopted a social constructionist approach to the study. The research questions, derived from a review of the literature, align with the approach's emphasis on subjectivity, the importance of social context, and of the social influence on dental professional and patient experiences and behaviours. Social constructionist research involves exploration of the processes that influence how people construct and account for their reality and their implications for experience and social practice (Gergen 1985; Willig 2013). Within qualitative research, when participants describe their experiences and their understandings, they are demonstrating ways of talking about the world and how they position themselves within the world (Willig 2013). Potter (1996) explains that participants' talk is active, with descriptions created to perform particular actions or achieve particular effects. For example, the way a patient talks about their oral health not only impacts on the response of the dental professional but also reveals something of their values, how they wish to be viewed, and their sense of their place in the world.

Berger and Luckman (1991) argued that knowledge and meaning formation is an interpersonal, rather than intrapersonal process. They contend that people create models of the social world and how it works, and that language is essential to establishing these models of reality. According to Berger and Luckman (1991), cultural products (values, beliefs, norms) are created through interaction and are externalised beyond those who create them. These products become independent from those who created them and

through objectivation take on a reality of their own. These objective facts are reproduced through interaction and socialisation to become the ways of society.

The researcher recognises that while objects, phenomena and “facts” exist in our world, their meaning is a construction, based on interaction and language. Rather than using language to describe an observed environmental reality, understanding arises from the discourses guiding how we understand the world (Edley 2001). These knowledges are shaped historically, culturally, and linguistically and therefore different observers may have different understandings of their world (Cojocarú et al. 2012; Willig 2013; Galbin 2014). This study adopted what Willig (2013) termed a “*moderate*” version of social constructionism as the interest was in the effects of the sociocultural context and “*localised reality*” on how participants understand OHE and oral health care behaviours. For example, the researcher was interested in how the “*dominant discourses around health care behaviour position people*” (e.g., health beliefs and the perceived role of dental practices) and the influence of “*social, cultural, economic and material structures such as institutions, laws and customs, as well as economic and financial relations*” such as the structure, regulation, and the culture of dentistry (Willig 2013).

This study also drew upon the socio-ecological model of behaviour (McLeroy et al. 1988; Berben et al. 2012; Golden and Earp 2012). This framework is useful for exploring health behaviour as it addressed both individual and social environmental influences (McLeroy et al. 1988). Multiple levels of influence work interactively to shape and reinforce norms and behaviour. In turn, these levels can be shaped by changes in the members within each group (McLeroy et al. 1988). The levels include the wider social and policy context (macro),

community- and healthcare intervention-level factors (meso), and the individual intrapersonal and interactional factors (micro) (Berben et al. 2012). The socio-ecological framework mirrors conclusions in the literature that while the individual has influence over their behaviour there are factors in their communities and wider societies that constrain or facilitate oral health behaviours (Sabbah et al. 2007; Watt 2007; Golden and Earp 2012). See figure 3.1 for an illustration of the different levels and their influences.

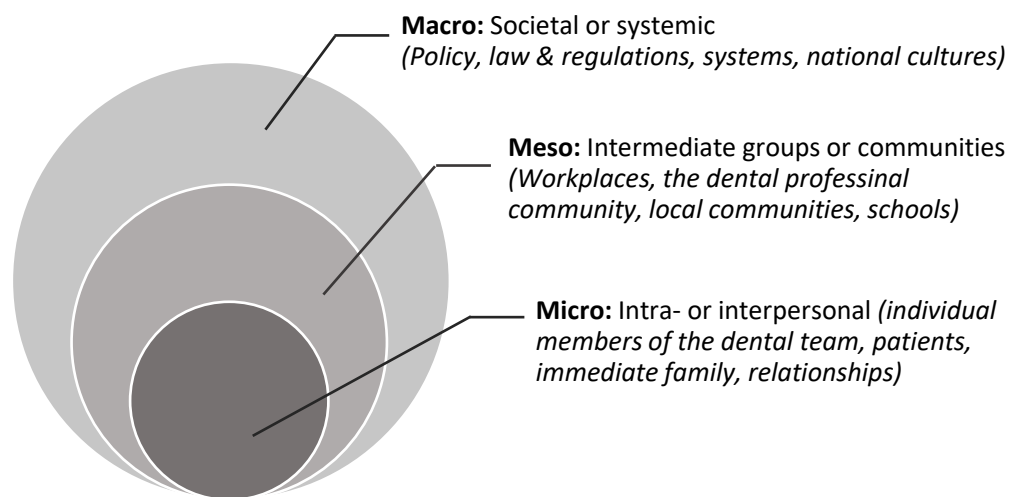


Figure 3.1. Macro, meso, and micro levels of social influence

These levels influenced the development of the conceptual diagram (Figure 2.2 in *Chapter 2*) (Barnes et al. 2021) which visually illustrates how these different levels influence OHE for both the dental professional and patient.

3.1.1.2 The COM-B and TDF frameworks

As this study aimed to provide rich description of participant views and experiences, the study also adopted the Capability-Opportunity-Motivation-Behaviour Model (COM-B) framework (Michie et al. 2011), and the Theoretical Domains Framework (TDF) (Cane et al.

2012) to provide a clearer view of the results. These frameworks have previously been used in studies of oral health interventions (e.g., Templeton et al. 2016; Gallagher et al. 2020; Buchanan et al. 2021) and has been suggested to be useful in exploring healthcare professionals engagement in opportunistic behaviour change interventions (Keyworth et al. 2020). COM-B has also been used in the recently published edition of the Delivering Better Oral Health toolkit (Public Health England 2021) to explain the different factors that impede or facilitate patient behaviour change in the recommended intervention advice. Use of the COM-B and the TDF also allows influences on behaviour to be classified in a consistent manner, that link interventions to both individual and policy-level influences across different research settings and designs, and allows for identification of recommendations for improvement (Michie et al. 2011; Templeton et al. 2016; Buchanan et al. 2021).

COM-B refers to a 'behaviour system' comprising three component factors that are seen as essential to generate behaviour: Capability (C), Opportunity (O), and Motivation (M) (Michie et al. 2011; Michie et al. 2014). In other words, individuals need to be sufficiently capable to perform the behaviour, have suitable opportunity as well as the motivation to do it. In the COM-B model, each component is broken down into two elements, with Capability including *Psychological* aspects such as possession of the necessary knowledge and the ability to understand its application, and *Physical* aspects such as the skills to carry out the intended change (Michie et al. 2011; Templeton et al. 2016; Buchanan et al. 2021).

Motivation comprises *Reflective* processes such as planning and goal setting, and *Automatic* processes such as the influence of habits and emotions (Michie et al. 2011; Templeton et al. 2016; Buchanan et al. 2021). Opportunity factors are external to the individual and include *Physical* factors which are environmental, such as access to resources and materials, or

Social factors which are social norms or behaviours that support or inhibit attempts at the behaviour change (Michie et al. 2011; Templeton et al. 2016; Buchanan et al. 2021). The COM-B system is depicted using a ‘behaviour change wheel’ (BCW) (see Figure 2.2) which shares some similarities with the micro, meso, and macro influences on behaviour depicted in Figure 3.1.

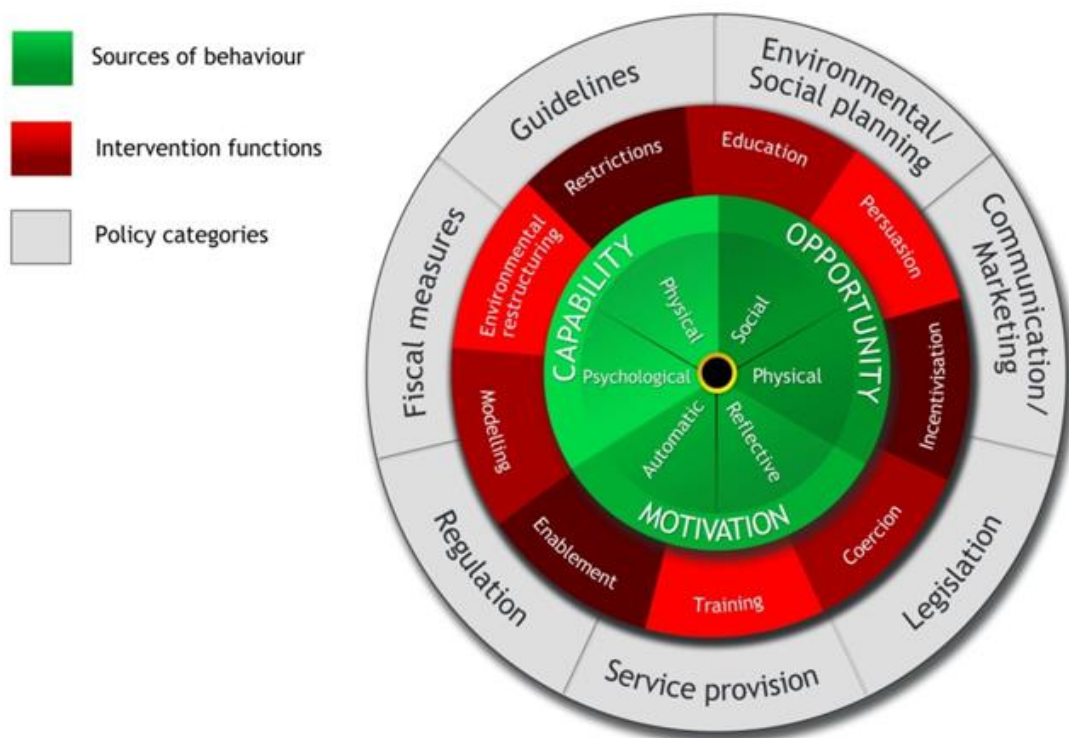


Figure 3.2: The COM-B behaviour change wheel (Michie et al. 2011, p.7)

The individual is located at the centre of the BCW, with the type of intervention carried out acting as a meso influence. On the outside perimeter of the wheel are the different policy (macro) factors which influence the interventions. Asimakopoulou and Newton (2015) explain how OHE may focus on developing the patients’ Capability by improving their knowledge and manual skills but does not traditionally take Opportunity into account.

However, if the patient has the Capability and Opportunity then Motivation may be the reason for difficulties changing and maintaining behaviour change.

Related to the COM-B model is the Theoretical Domains Framework (TDF) (Cane et al. 2012; Atkins et al. 2017). The TDF was designed by a team of psychologists and health service researchers, to further inform implementation interventions and identify influences on health professionals' behaviour. The framework synthesises common elements from behaviour change theories into a series of 14 domains and 84 component constructs (Cane et al. 2012; Atkins et al. 2017; Buchanan et al. 2021). A full list and description of each of the fourteen TDF domains can be seen in Appendix 3. These domains and constructs broadly map onto the three COM-B domains (See Table 3.1).

For example, the domains 'Knowledge', 'Skills', and 'Memory, Attention and Decision Processes' all fall within the COM-B "*Capability*" domain. Domains such as 'Social influence' and 'Environmental context and resources' mirror the 'Social' and 'Physical' aspects of Opportunity, respectively. The TDF domains can be used alongside the COM-B domains to explore influences on behaviour in more detail (Atkins and Michie 2015).

The socio-ecological model informs the study's exploration of both the broadness and proximity of potential influences on participants' views and behaviours. Adoption of the COM-B and TDF frameworks encouraged the researcher to maintain a broad view of the participants' views and experiences, avoiding unintentionally focussing on factors within one sphere of influence. The frameworks helped to structure the interview schedule and ensured coverage of key areas of influence on opinions on and provision of OHE, and

behaviour following the OHE interaction. The COM-B model was chosen for this study to frame the design of questions and a secondary analysis of the data as, like the socio-ecological model it “places no priority on an individual, group, or environmental perspective—*intra-psychic and external factors all have equal status in controlling behaviour*” (Michie et al. 2011). While the TDF is a framework of behaviour change it is synthesised from theoretical constructs relevant to implementation and behaviour change providing “*a theoretical lens through which to view the cognitive, affective, social and environmental influences on behaviour*” (Atkins et al. 2017).

Table 3.1: The COM-B and TDF domains

	COM-B	TDF domains
Capability	Psychological	Knowledge Skills Memory, Attention and Decision Processes
	Physical	Behavioural regulation Skills
Opportunity	Social	Social influence
	Physical	Environmental context and resources
Motivation	Reflective	Social/Professional role and Identity Beliefs about capability Optimism Beliefs about consequences Intentions Goals
	Automatic	Social/Professional role and Identity Optimism Reinforcement Emotion

(Cane et al. 2015; Buchanan et al. 2021)

While the two frameworks are widely used in healthcare research, they are not without issue. While their broad, generic content is praised for its completeness, it has also been noted to lead to an inaccurate perception of simplicity of the frameworks (Ogden 2016) with

some studies focussing only on a specific selection of the domains that they considered relevant for their phenomenon (Buchanan et al. 2021). Despite drawing on behaviour change theories, both COM-B and TDF, like other behaviour change taxonomies, are descriptive frameworks rather than theories and do not explain the mechanisms operating between domains therefore it is not possible to conclude testable hypotheses of behaviour (Francis et al. 2009). Ogden (2016) points out that the 'gaps' in such frameworks do not account for patient variability and flexibility. Ogden (2016) explains that specifying that certain interventions are most appropriate for certain behaviours ignores:

“the need for flexibility, variability and change according to not the type of behaviour, or the type of intervention or even the type of patient but how that individual patient happens to feel, think, look, behave or respond at any particular time” (p.248)

Recognising these limitations, Teixeira (2016) recommends studies' *“efforts to synthesise and integrate information must be balanced with preserving depth, detail and diversity”* (p. 271).

As the study sought to explore detailed descriptions of participants' accounts rather than create testable hypotheses, the two frameworks were selected to complement the complexity of the thematic analysis and assist with distilling the findings into more readily accessible information in a format that should be familiar for dental professionals.

3.1.2 Data gathering methods

Case studies were considered appropriate for the study as they are a design suitable for gathering in-depth, multi-perspective information to explore, describe or explain a complex event, behaviour, or interaction in everyday, real-life contexts (Anthony and Jack 2009; Yin

2009; Crowe et al. 2011). They have been used in studies of the real-life practice in health care and dentistry (Sbaraini et al. 2011; Brogan et al. 2019). The design emphasizes the role of interaction in generating knowledge (within and between cases, and between participant and researcher) (Lincoln et al. 2011; Harrison et al. 2017) reflecting the '*Social*' aspect of '*Opportunity*' in the COM-B (Michie et al. 2011; Michie et al. 2014), and the '*Social influence*' domain in the TDF (Cane et al. 2012; Atkins et al. 2017). Case study design has multi-disciplinary origins (Harrison et al. 2017) and as such, is not intrinsically allied with any specific research paradigm (Luck et al. 2006) or method.

Case study methods have been characterised as three broad types: intrinsic, instrumental, and multiple/collective case studies (Stake 2005; Creswell et al. 2007). Intrinsic case studies are an in-depth exploration and understanding of a single case. The case could be an individual person or an organisation or event, but it is considered of interest in and of itself rather than because it represents any theoretical or generalisable understanding.

Instrumental case studies on the other hand may involve the study of a single case but it is undertaken with the intention of understanding a broader issue or phenomenon. Multiple or collective case studies, as the name suggests, entails exploration of several cases to investigate an issue or phenomenon from multiple perspectives. Exploring the particularities of multiple cases to add depth of understanding to a phenomenon of interest (Stake 2005; Creswell et al. 2007). This sometimes presents the challenge of defining precisely what is the 'case' being studied in designs which involve multiple layers of areas of interest. One example of such difficulty are nested case studies where there may be cases being explored within a wider case, for example individual cases working within an organisation which is also of interest as a case.

This study most closely aligns with the multiple or collective case study as it employed a comparative process (Dul and Hak 2008), exploring multiple individual (micro) cases within their differing meso (practice level) and macro (social-environmental) contexts to explore understandings of OHE. Practice-level cases provided information on the meso-level context within which the individual cases operated. This meso-level context gives insight into the immediate peer influence and practice culture (Sbaraini 2012; Sbaraini et al. 2013; Yusuf et al. 2015), and practical governance/regulatory issues (Watt et al. 2004; Dyer and Robinson 2006; Sbaraini et al. 2013; Yusuf et al. 2015) which were reported as influences on dental professional behaviour in the literature. While macro and meso-level contexts are vital to understanding phenomena, the micro-social processes by which individual's experience and interpret them also need to be explored (Stake 1995; Gerson and Horowitz 2002).

Interviewing individual dental professionals and patients within each practice also allowed insight into idiosyncratic understandings of oral health education and behaviour and reflection on the roles and activities of different dental professional groups within and across the case-study practices. Furthermore, semi-structured one-to-one interviews with all team members and a number of patients within each case practice ensured that the data reflected *"not just the voice and perspective of the actors, but also the relevance of groups of actors and the interaction between them"* (McAndrew and Warne 2005, p174).

The selection of cases that will provide rich data that will enable the researcher to answer their research questions is an example of rigor in qualitative methods (Patton 1999).

Conversely, selection of participants may be hampered by a study that is not clear in its focus and therefore there is not enough information on which to base an informed purposeful sample. In selecting case studies of dental teams, the aim was to include

diversity (staffing profile, geography, socio-economic areas) within mainly NHS-funded practices, rather than attempt to provide matched cases for comparison. Additionally, the practices selected were informative *examples* of the different practice “*types*” and not intended to represent all practices within their grouping. Like Lichtman (2014), the intention was to recruit “*informative participants rather than statistically-representative participants.*” (p. 197). As a qualitative method, the richness of information and participants shared, or variations in, understandings were more important than aiming for generalizability. As Patton (1999) explains “*Keeping findings in context is a cardinal principle of qualitative analysis.*” (p1198).

The use of multiple cases and different practice types allows exploration both within and across cases and contexts (Stake 2006). Multiple cases permit generation of both similar and contrasting perspectives providing insight into variation in practice and understandings (Sbaraini et al. 2011). Including multiple data sources also acts as a form of triangulation of data and analysis. Patton (1999) asserted that triangulation can assist with credibility of qualitative analysis. They proposed that triangulation can be achieved through four approaches: using different data gathering methods (e.g., by using a mixed methods approach); using different sources (e.g., analysis of data from participants with different perspectives on a topics); use of multiple analysts (e.g., double coding of data); and using multiple perspectives and theories (Patton 1999). By gathering data from multiple sets of participants (Stake 1995), the researcher can look for consistency across the accounts (Tellis 1997) and also for competing perspectives from different contexts (Patton 1999).

Triangulation of data sources was used in this study as the researcher collected data from both dental professionals and from patients. Although data was gathered using semi-structured interviews, the modifications in approach arising from Covid-19 restrictions also provided a form of additional method-based triangulation. Differing methods of data gathering may result in slightly different accounts as a result of different "*real-world nuances*" (Patton 1999). These variations can increase confidence in the analysis of individual cases by shining light on how the case is influenced by specific contexts (Miles and Huberman 1994). In this study, data was gathered both face-to-face and remotely with dental professionals and patients were recruited using both in-person and remote methods which may have subtly influenced the different interview interactions through opportunities for rapport building or the availability of non-verbal cues.

Additionally, the multiple layers of coding and analysis employed in this study also provided multiple perspectives on the data. For example, the narrative coding and description of participants experiences of providing or receiving OHE on different topics provided one perspective. This was supplemented by the thematic analysis which explored their accounts from another perspective. Finally, the application of the theoretical frameworks provided another perspective from which to understand the data.

See Figure 3.3 for an overview of the original research plan.

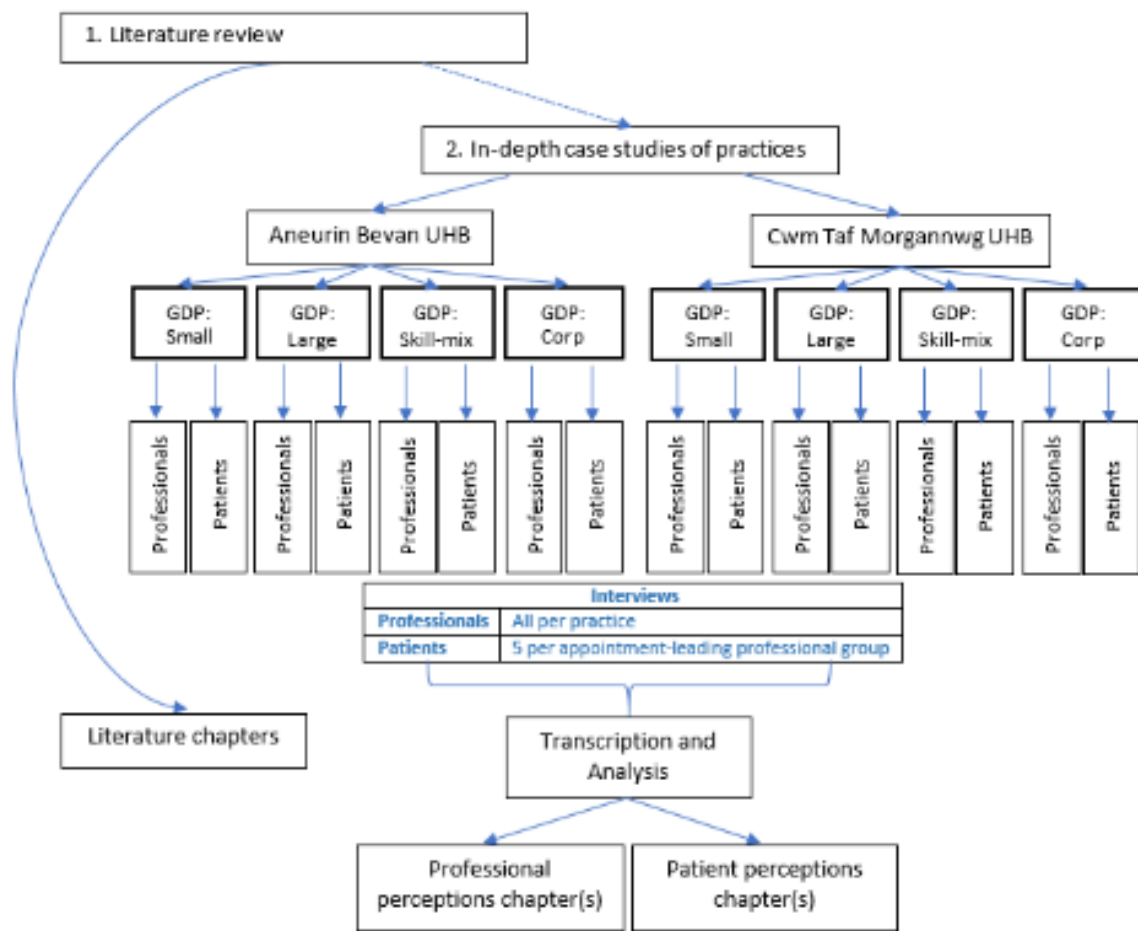


Figure 3.3: The original research plan

3.1.2.1 Semi-structured qualitative interviews

Interviews are typically used in research to gather participants' accounts of their knowledge, attitudes, and beliefs of a specific topic or area (Fielding 1994). A simplistic definition of semi-structured interviews is as a "conversation with a purpose" (Burgess 1984). An established qualitative method in dental research (Gill et al. 2008), semi-structured interviews are most appropriate for topics where little is known or to explore individuals' subjective perspectives and experiences (Pope and Mays 1995; Stephens 2007; Gill et al. 2008).

Semi-structured interviews were used as there were a series of specific research questions that the study was seeking to address. The interview guide and follow-up prompts was designed to elicit detailed responses pertinent to the research aims (Stephens 2007).

Although the questions directed the course of the discussion, the semi-structured nature of the interview also allowed interviewees to introduce new directions for the discussion. If the study had been taking a broader, more in-depth approach to a phenomenon then an unstructured in-depth interview may have been more appropriate. Asking questions makes it more likely that the interview provided topic-relevant information without taking up a lot of participant time; unstructured interviews are typically far longer in duration than other formats.

As participants were discussing topics that they may not have considered or articulated before (e.g. experiences of OHE and perceived roles and responsibilities), knowledge was being co-constructed during the interaction between the interviewer and the interviewee (Lichtman 2014). As people's understanding of the social world is informed by everyday experiences, (Mason 2002), it was important to provide a context within which the interviewees could situate their accounts; in this case the context was their most recent dental appointment. Questions and prompts can help participants make explicit their tacit understanding and social norms about a phenomena (Stephens 2007).

Interviews provide participant accounts of the topic, i.e. what people say about a topic rather than necessarily objective reports about behaviour (Green and Thorogood 2018). In this study, alongside discussion of their subjective views and experiences, dental professional participants were asked to report their oral health education behaviours and

dental patients were asked to reflect on behaviour changes made following OHE. The behaviours reported by participants are best understood as accounts rather than objective reporting of activity.

If the study were exploring actual OHE interactions, then this information could be supplemented by observation of dental appointments. Observation of health care interactions can be useful in gaining an understanding of health care practice and the patient and professional interaction (Pope and Allen 2020). Observation of interactions and behaviour have the potential to bypass the biases of interviews, such as participants' portraying themselves in a positive light or providing accounts based on what they think the researcher wants to hear, or omitting information or altering their accounts based on their recall of events (Fielding 1994; Mays and Pope 1995).

However, the simple knowledge of their actions being observed can also lead to conscious or unconscious changes to participants' behaviours and routines, known as the "Hawthorne effect" (Roethlisberger and Dickson 1939) or cause participants to reflect on and modify previously tacit routines and behaviours (Mays and Pope 1995). For example, if observations were conducted in this study there is the possibility that dental professionals may discuss OHE more or in a different way than they would have if the researcher was not observing. Similarly, patients may alter their response to OHE efforts to portray themselves or the dental team member in a positive light. In such instances there would have been little added benefit from the additional investigation as their behaviour was no closer to the 'truth' of their actual practices than in their interview accounts. Practical challenges further limit the potential use of observations as a data gathering method in this study. Observation of

dental appointments would necessitate several layers of consent, firstly finding dental practices willing to allow their appointments to be observed and then the need to seek consent from each dental professional within the practice and from each patient. When observing multiple appointments over a time period there is also an ethical issue of assuming that initial consent is sufficient for the prolonged engagement of dental professionals who may become frustrated with being observed. Dental practices may also not have the space for an additional person in small dental surgeries or be small spaces where awareness of the presence of the researcher may be even more heightened.

Interviews suited the aim of this study which was designed to explore subjective understandings and experiences of OHE and perceived roles and responsibilities rather than an objective study of its delivery and effectiveness. Therefore, interviews were an appropriate method for gathering accounts of individual understanding and normative expectations of professional role and/or personal responsibility for oral health care.

3.1.2.2 Telephone semi-structured interviews

The interviews with patients were conducted via telephone. Telephone interviews were considered the most appropriate approach for patient interviews as they offered a convenient way to access participants and provide a perceived level of anonymity (Fenig et al. 1993; Carr and Worth 2001; Sturges and Hanrahan 2004; Oltmann 2016). Such methods have previously been used in dental research, for example, to explore patients' recall of advice on smoking cessation received during their dental appointment (Campbell et al. 1999).

There were also practical reasons for conducting the interviews via telephone. During previous experience of recruiting patients in dental practices (e.g., Barnes et al. 2018), the researcher had observed that patients attending a dental practice during the day are likely to be scheduling the appointment around other activities and are therefore unable, or are just unwilling, to remain at the practice for the time taken to be interviewed. The dental practice may also not be a suitable place to hold an interview; the practice is likely to be busy with little available private space, or patients uneasy at attending their appointment at the dental practice may not wish to remain there for longer than necessary. In addition, they may feel reluctant to comment on their dental care providers whilst still on the premises as they do not wish to risk any influence on their future dental care.

In qualitative interviews, rapport is key to encouraging relaxed interaction and stimulating participants to speak freely and openly (Hermanowicz 2002; Shuy 2003). The quality of rapport achieved is said to affect the quantity and quality of interview responses (Sweet 2002). A face-to-face encounter prior to the interview where both parties 'break the ice' by engaging in politeness routines such as small talk or jokes are thought to aid rapport and to ease later conversation (Shuy 2003; Gillham 2005). Vogl (2013) noted that differences in responses between interviews face-to-face and telephone interviews were more likely to be owing to the personality of the interviewee rather than the modality of the interview and that telephone interviews create a more balanced power distribution between researcher and participant encouraging more open disclosure on sensitive topics. Importantly, Trier-Bieniek (2012) noted that establishing rapport is not guaranteed in interviews of any modality.

Another criticism of qualitative telephone interviews is that their remote nature leads to a loss of non-verbal communication such as facial expressions, gestures, or general body language (Miller 1995; Hermanowicz 2002; Gillham 2005; Opdenakker 2006; Kvale and Brinkmann 2008; Novick 2008; Oltmann 2016). During telephone interviews, interviewers are not able to rely on visual cues to monitor whether participants are confused, frustrated, or losing interest in the discussion (Chapple 1999; Carr and Worth 2001; Sturges and Hanrahan 2004). Instead, interviewers have to pay more attention to what the participant is saying in order to judge understanding of the questions and direct the discussion with appropriate prompts (Hermanowicz 2002; Trier-Bieniek 2012). A lack of visual cues may be of benefit in telephone interview studies where interviewers can focus on actively listening and questioning (Sturges and Hanrahan 2004). In telephone interviews, short utterances such as “*ok*”, “*yeah*” or, “*right*” can perform similar functions without interrupting the flow of discussion (Irvine et al. 2012).

Practically, telephone interviews incur less of a disruption on participants’ routines. They are easier to schedule as they do not require the participant to be present at a specific location, if they are using a mobile telephone. Their remote nature also makes both cancelling and rescheduling easier for both parties (Chapple 1999; Musselwhite et al. 2007), potentially improving final response rates. Alongside convenience, telephone interviews create an additional feeling of privacy for participants compared to face-to-face discussion (Carr and Worth 2001; Sturges and Hanrahan 2004; Vogl 2013). Discussion of their own oral health self-care behaviours may be a sensitive topic for some participants and the remoteness of the telephone conversation may make the interaction more comfortable (Chapple 1999; Sturges and Hanrahan 2004; Opdenakker 2006). As noted in previous chapters (see *Chapter*

1), oral health acts as a social signifier as well as a health issue and being removed from observation and perceived judgement may encourage participants to be more open to speak.

3.1.3 Design modifications owing to Covid-19

Owing to the impact of Covid-19 (coronavirus) on social contact and the associated restrictions on general dental practices' operation, the ongoing case study recruitment ceased during data gathering in mid-March 2020 following the completion of data gathering at two dental practices. In their place, individual telephone interviews were sought from dental professionals. For the reasons outlined in the discussion of the case study interviews, (e.g., convenience, and additional perceived privacy and anonymity), telephone interviews were considered an appropriate alternative for data gathering with individual dental professionals whilst maintaining social distance during Covid-19 restrictions. See Figure 3.4 for the amended research plan.

3.2 Data gathering procedure

3.2.1 Sampling

3.2.1.1 Case studies

A list of NHS-registered dentists was compiled from a publicly-available NHS website (National Health Service Wales 2019) for Aneurin Bevan and Cwm Taf Morgannwg University Health Boards (the company partners in the study funding). A web search of practice websites, publicly available NHS information, and Healthcare Inspectorate Wales (HIW) practice reports (Healthcare Inspectorate Wales 2019) established information on the

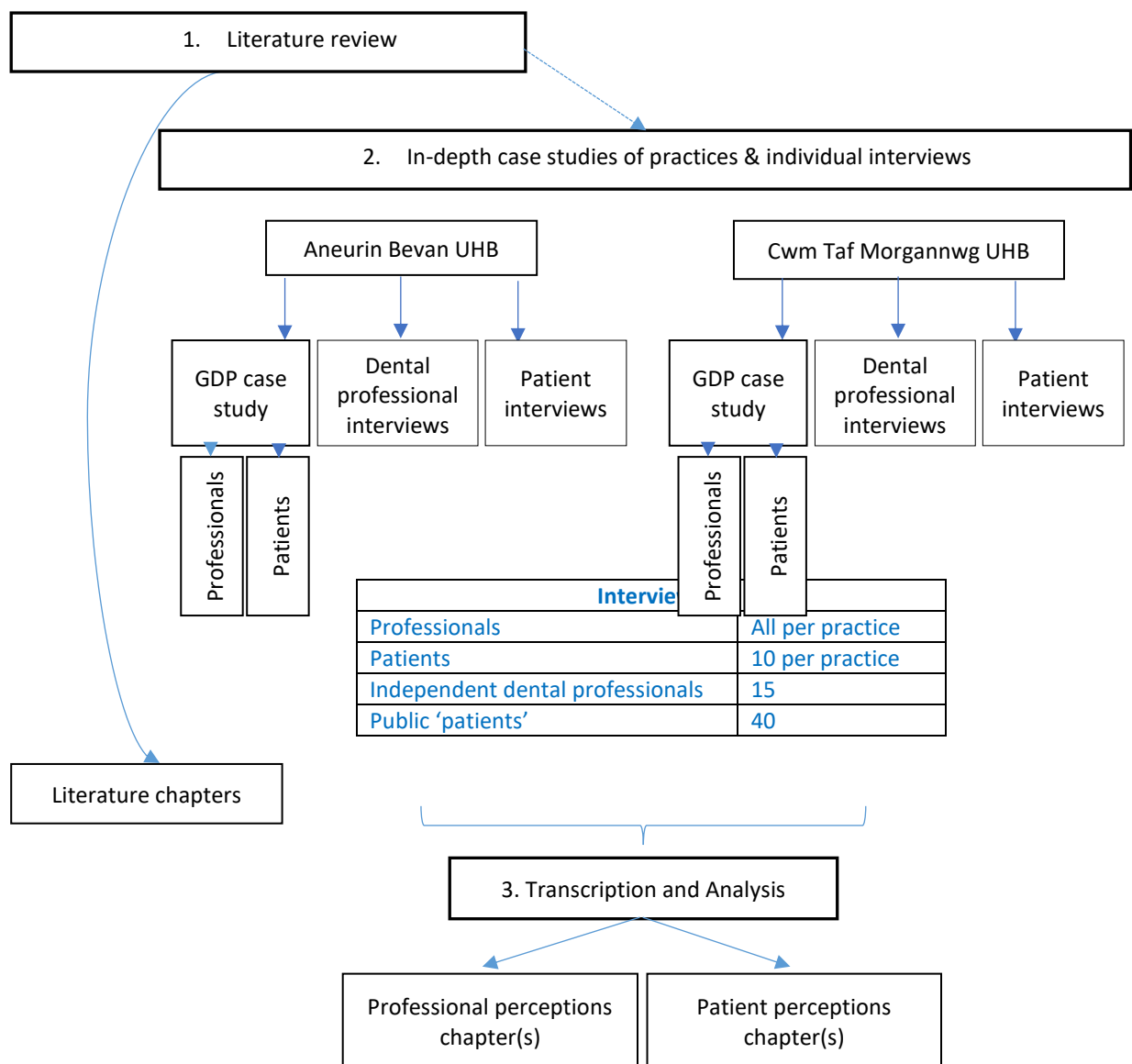


Figure 3.4: The amended research plan

practices' such as their staffing profiles and their NHS or private workload. Practices reported to consist of lone practitioners, practices reported to carry out only/mainly private work, or those only accepting children for NHS treatment were excluded. Lone practitioners were excluded from the case studies as it was judged that they would not provide sufficient insight into how dental teams operate.

Drawing upon some of the influencing factors identified in the literature review, the practices were sorted into four broad 'types': small dentist-only practices; larger dentist-only practices; skill-mix practices with dental hygienist(s), dental therapist(s), and/or oral health educators; and corporate practices. It was acknowledged that these categories would not be mutually exclusive for many practices, so additional information gathered from practice websites/HIW reports were taken into consideration.

A shortlist of general dental practices representing each of the four 'types' in each of the study funding partner University Health Boards (UHBs) was drawn up as potential case studies. The shortlist of identified practices was discussed with representatives from Public Health Wales and the two health boards Aneurin Bevan UHB and Cwm Taf Morgannwg UHB. This discussion sought to confirm the staffing profiles of the practices and their fit within the four 'types' and whether it was inappropriate to approach any of the practices at that time, for any reason, e.g., if they were currently subject to a fitness to practice review.

Nested within the practice case study sites, data were gathered on adult patients' views on OHE and their own/dental professionals' responsibilities for oral health education and promotion. Patients attending the case study practices for an appointment on the days that the researcher (EB) was on the premises were invited to take part in the study. During the study period, the aim was to interview at least five patients from each dental professional undertaking patient appointments (e.g., five seeing a dentist, five seeing a dental hygienist/hygienist-therapist, five seeing a dental nurse or oral health educator, as appropriate at each practice). Patient numbers were chosen to provide diversity (age, gender, appointment types) and based on professional experience of the number of

interviews required to reach data saturation when conducting similar research studies. To reflect the larger sizes and complexity of the practices, 10 patients were recruited from the large dentist-only practices. This provided between 5 – 15 interviews per practice, and 80 overall (see Table 3.2).

Table 3.2: Intended case study patient sample

	Practice types			
	Small dentist-only	Large dentist-only	Skill-mix	Corporate
Interviews per practice type	5	10	15	10
Total	10	20	30	20

Only adults (18 and over), who are able to provide consent were asked to participate.

Patients attending for emergency appointments at the practice were excluded, as it was understood that they were likely to be experiencing pain or discomfort.

3.2.1.1.1 Post-March 2020 sampling

Drawing on the list of general dental practices compiled earlier in the study, dental professionals (dentists, DTs, and DHs) who were working in general dental practices that carried out mainly NHS work and who were based within the two company partner health boards (Aneurin Bevan and Cwm Taf Morgannwg UHBs) were approached to take part in semi-structured telephone interviews. The researcher decided to target these professional roles as they lead their own appointments and therefore were most likely to have the most hands-on experience of OHE to discuss in the interview. Dental practices who had previously been approached to take part in the case studies were excluded from the list of practices; all others on the list were contacted in turn. A total of 15 participants was sought to match the

estimated number of dental professional interviews if the case studies had continued as planned.

The situation surrounding Covid-19 restrictions was uncertain when the dental professional modifications were planned, and it was hoped that case study recruitment may be able to resume later in 2020 and patient recruitment continue. However, the changes to dental services made case study recruitment of patients impossible within the study period.

Instead of recruiting face-to-face as originally planned or going through dental practices, recruitment was conducted through HealthWise Wales (Hurt et al. 2019), a national register of members of the public interested in participating in health care research. The organisation was used in a previous dental study by one supervisor (IC) and proved to be the better option for public recruitment compared with other options such as social media advertisements.

The use of HWW to recruit patients led to the later telephone interviews reflecting the views of a different sample of dental patients to the initial face-to-face case study recruited participants. The HWW participants potentially reflected a different demographic with the majority being older and with a number voluntarily disclosing that they were from professional careers. Additionally, they were a sample that self-selected to participate by responding to a widely disseminated email request in comparison to those who consented when personally approached by the researcher.

While acknowledging the potential bias in the recruitment population, owing to the time and resources available, HealthWise Wales were considered the best option to recruit an

adequate number of participants. A total of 40 participants was initially sought, the number that would have been recruited if the case studies had been completed. Patients who lived within the two partner UHBs (Aneurin Bevan and Cwm Taf Morgannwg University Health Boards) and had attended a dental appointment within the previous twelve months or who self-identified as a regular attender were invited to participate in a telephone interview.

3.2.2 Recruitment and Consent

3.2.2.1 Case studies sites

Negotiating access to study sites and to research participants is a critical and time-consuming part of the research process, with the researcher needing to convince a number of 'gatekeepers' of her credibility and trustworthiness (Devers and Frankel 2000). To convey such characteristics and to provide a human element to the process, EB made the decision to deliver in person letters inviting practices to participate. It was intended that attending in person gave EB the opportunity to provide practices with more information on who they would be trusting to come into their practice and also demonstrate her commitment to the data gathering process, compared with a 'faceless' letter. It was also hoped that being able to demonstrate that EB was local to the areas and understood the communities may help foster trust compared with the prospect of being studied by an 'outsider'. While it was acknowledged that EB was unlikely to be able to meet with many lead dentists by attending the practice in such a manner, it was hoped that being able to talk with other members of the team may make it more likely that the invitation to participate may be passed on to the lead dentist. In many health care services, receptionists or practice managers act as 'gatekeepers' negotiating between the demands of the clinical teams and patients and

prioritising actions based on importance (Hammond et al. 2013) so it was anticipated that research requests may be handled similarly.

During October and November 2019, EB hand delivered a letter and information sheet to the dental practices shortlisted for recruitment and asked to speak with the lead dentist or to the practice manager to explain the study in person and answer any questions they may have. If neither were available, then EB explained the study to the reception staff and asked them to pass the letter on to the appropriate person (see Appendix 4 and 5). This visit was then followed-up with a telephone call to discuss the study a few days later. After seven attempts this approach proved to be too time consuming as the practices were spread out across the two UHB areas and despite several staff members initially appearing positive about participating it resulted in the recruitment of only one of the case studies. Case study one was based in Cwm Taf Morgannwg and was a dentist-dental nurse practice that was engaged with the contract reform pilot.

Later, contact was made with nine practices by a letter sent in the post, followed by a telephone call a few days later to the lead dentist or practice manager to assess potential interest in involvement. If EB was able to make contact and the practice indicated potential interest, EB explained the study and its requirements in more detail and requested consent. To raise awareness of the study amongst general dental practitioners, emails were sent by the secretaries of Bro Taf and Aneurin Bevan Local Dental Committees to all practices while letters were being mailed out, alerting them to the project and providing information sheets. Professional contacts of EB and IC, one of the doctoral supervisors, were approached (a local educational leads and a small corporate practice chain director) to recommend

dental practices that would be likely to participate. Three practices were approached with no success. The second case study practice was recruited during a telephone call following up a letter of invitation. Case study two was a skill-mixed practice in Aneurin Bevan that was also engaged with the contract reform pilot.

Owing to the slow recruitment of practices by letter and a general difficulty contacting members of the dental teams, EB also attended an independent training session for dental professionals run by Health Education and Innovation Wales (HEIW) in early March 2020 to provide a short informal summary of the study, what participation would involve, and seek the contact details of attendees interested in finding out more about participating in the study. Representatives from four practices indicated that they were interested in discussing participation in the study with EB, but the Covid-19 restrictions were put into place the week following the meeting.

3.2.2.2 Dental professionals

When the researcher had secured participation from a dental practice, consent was additionally requested from each staff member prior to interview (see Appendix 6). In both study sites, the lead dentist had let their teams know that the researcher was coming in to do the research study. When approaching each team member, EB again explained the study and answered any questions. The researcher was conscious that the dental professionals may assume that she was from the Dental School and so made sure to highlight that she did not have any dental training and was interested in their views and experiences. This was done partly to put the participants at ease that she was not assessing their OHE skills or compliance with the guidelines. It was also done to help shape participants' framing of the

interview, that EB was asking the questions from a social science perspective and was more interested in their views and experiences than the technical, dental side. In this instance, 'othering' herself was beneficial as it let participants know that she was not completely familiar with the tacit understandings and routine practices of dental work and that such things might need to be explained and elaborated on. Conversely, EB's indications of familiarity with the toolkit and OHE schemes avoided her being seen as completely naïve about dentistry and may have given some credibility to her role.

3.2.2.3 Patients

Patients were recruited face-to-face by the researcher in the dental practice waiting room. The researcher spent the day in the waiting room and attempted to approach all adult patients attending for an appointment. After the patient had notified the practice receptionist of their arrival and settled in the waiting room area, EB approached them and provided both verbal and written information on the study (Appendix 7), invited them to take part in a telephone interview, and answered any questions.

When introducing herself, EB identified herself as a student from Cardiff University. While the link to a university may have added legitimacy and credibility to her request for help, there was a concern that this may also place EB as an 'outsider' and impact willingness to participate. Being visibly older than the stereotypical student, having a Valleys accent and letting participants know that she was local to the area during the 'chat' with participants while they completed the consent form or were waiting to be called for their appointment may have mitigated some of her outsider status. Additionally, when explaining the study, EB emphasised that she was not 'checking up' on the practice and reaffirmed the position that

she was a student, did not have a dental background, and wanted to find out about the types of OHE that dental patients may be given in appointments. It was made clear that participation was voluntary. Those patients who consented, were invited to complete a consent form in the practice waiting room, provide their contact information and identify the best time to contact them (Appendix 7). They were given a copy of the consent form and an information sheet to take with them.

EB contacted the participants by telephone at the identified times to arrange a time for the interview. Those who changed their mind about being interviewed or did not respond to three attempts to contact them were withdrawn from the study and their consent forms were destroyed. Consent to participation was re-confirmed verbally prior to the interview.

Twenty-nine patient participants were recruited from the dentist and dental nurse-only practice (CTM1) to achieve the 10 telephone interviews. Twenty-five patient participants were recruited in the mixed-role practice (AB1) to achieve the required 10 telephone interviews.

See Figure 3.5 for an overview of the stages of consent for both dental professionals and patients in the case studies.

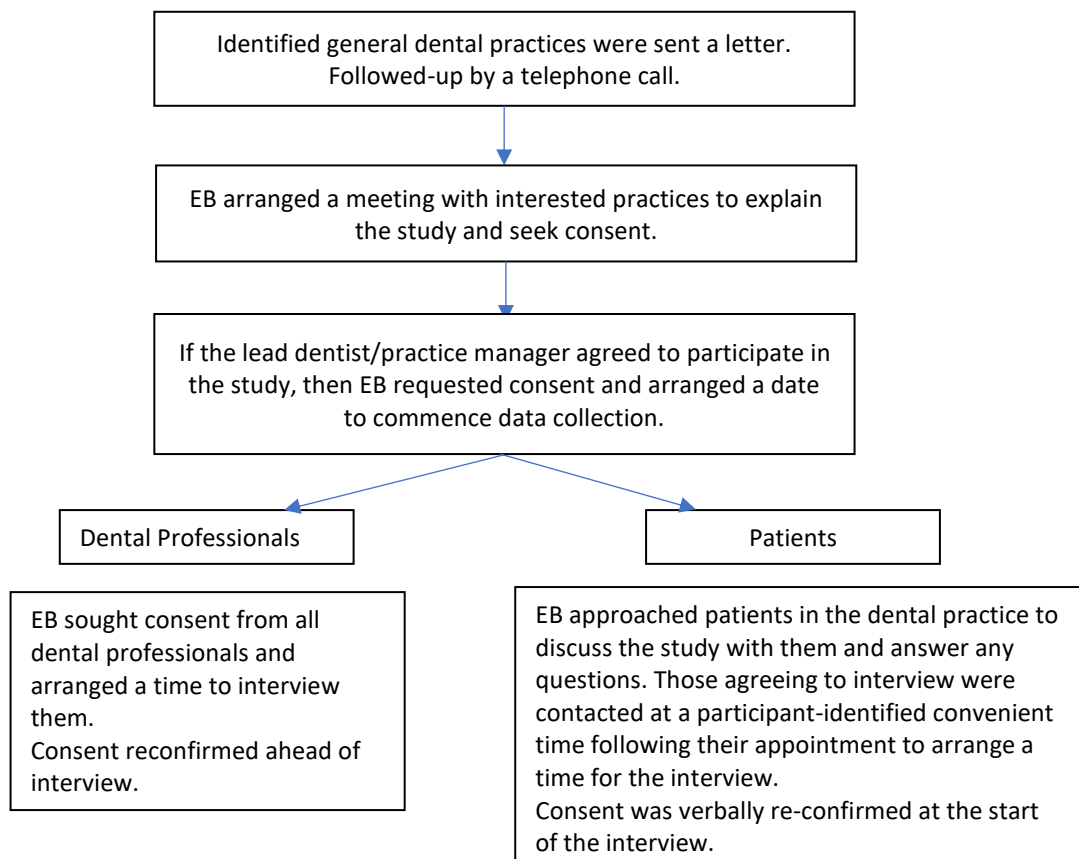


Figure 3.5: The case study consenting procedures

3.2.2.4 Post-March 2020 recruitment and consent

3.2.2.4.1 Dental professional recruitment

Dental professional recruitment used a combination of convenience and snowballing sampling methods to identify potential participants including personal contacts, social media, and telephoning dental practices. Participants were sought by emailing the researcher's professional connections requesting personal recommendations of potential participants. A message was also posted on Twitter asking for volunteer participants which was retweeted by the contacts and relevant dental organisations. From these tweets and retweets, representatives from dental groups and pages on Facebook also posted messages about the study following viewing the Twitter post, e.g., British Society of Dental Hygiene &

Therapy, and two ‘closed’ dental hygienist and dental therapist Facebook discussion groups. See Appendix 8 for the social media adverts. These methods were supplemented by the researcher telephoning dental practices and asking to speak with dentists, DTs, or DHs to discuss the study and seek potential participants. All of those interviewed were also asked to nominate additional potential participants.

Those identified through personal recommendation or who responded to adverts on social media were either emailed a letter and information sheet, followed-up by a telephone call, or received a telephone call to discuss the study and then sent the information sheet and consent form via email. Those interviewed completed the consent form electronically (Word document) and returned it to the researcher via email. Consent to participation was re-confirmed verbally prior to all interviews. See Figure 3.6 for an explanation of the recruitment and consenting procedures.

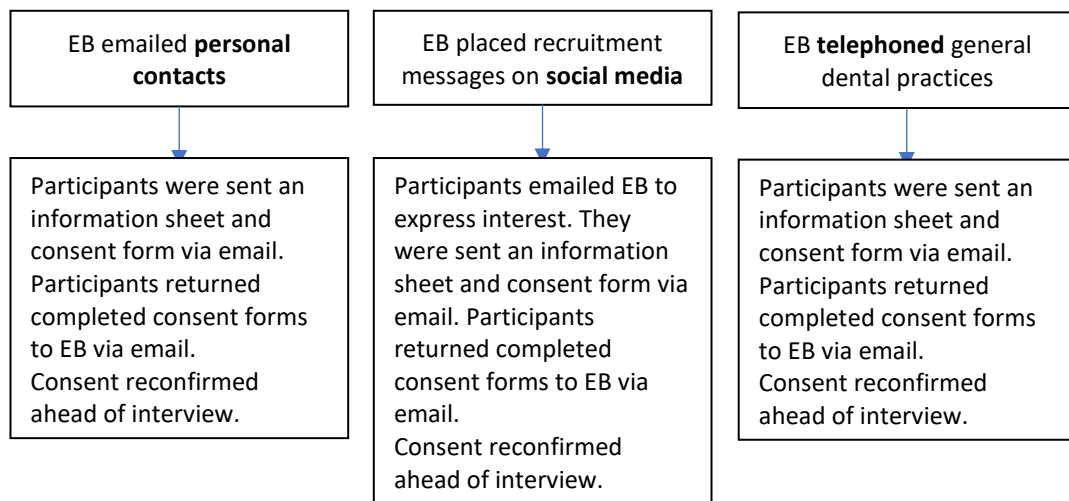


Figure 3.6: The consenting procedures

3.2.2.4.2 *Patient recruitment*

Owing to the difficulty in recruiting patients arising from the dental practice restrictions, the most appropriate way to recruit patient/public interviewees was through HealthWise Wales (Hurt et al. 2019). HealthWise Wales sent out recruitment invitation emails to all registrants who lived in Aneurin Bevan and Cwm Taf Morgannwg UHBs - 9,141 participants in total. The email was drafted by EB with the aid of HealthWise Wales graphic design team (see Appendix 9). The email gave a short study summary and invited participants who either identified as regular dental attenders (i.e., regularly attended their 6- or 12-month check-ups) or those who had attended a dental appointment for any reason in the previous 12 months to take part in the study. Participants had the option of either emailing the researcher (EB) directly or emailing HealthWise Wales for more information. Consenting then followed the same email procedure as used with dental professionals; all respondents were sent an information sheet and consent form prior to arranging an interview, completed consent forms were returned to the researcher (EB) by email, and consent was reconfirmed ahead of the interview.

The recruitment email issued by HealthWise Wales received 91 responses from one email mailout (n=9,141). Five respondents were excluded prior to interview - two did not meet the study criteria (one was from outside Wales, and one had received hospital dental care only), two solely had queries about their dental care, and one had a comment/query on the study method and research questions. Seventy-three respondents were contacted by email to arrange an interview time, 18 did not respond. One withdrew from the study before interview. Sixty-seven participants were interviewed in total. No additional mailouts were considered necessary.

3.2.3 Data collection

3.2.3.1 Case studies

A convenient date to commence data gathering was negotiated with the two consenting practices. Unprompted by EB, the practices tended to select dates when the majority of team members were in practice, and then subsequently selected days when others were working to ensure EB was able to meet with all or as many team members as possible during the data gathering. They also prioritised dates where they had a greater number of shorter examination appointments as well as courses of treatment to help maximise patient recruitment opportunities.

Case study data were collected from two dental practices prior to the Covid-19 restrictions that were introduced in March 2020. One practice was classified as a dentist and dental nurse-only practice, the other comprised a mixed-role team.

A dentist and dental nurse-only practice: The dentist-only practice (CTMs1) was located in the centre of a small 'valleys' town in Cwm Taf Morgannwg UHB in a row of shops comprising two empty retail properties, and several bars and takeaways. There were another three NHS dental practices located within the town. A part-time orthodontist, a part-time associate dentist, and three dental nurses were also employed at the practice but were not in the practice on the days that the researcher attended. The practice was in an area of high deprivation and reported seeing a large number of NHS payment exempt patients and high-needs patients. During the time EB was in the practice there were several families attending together for appointments. The practice carried out mainly NHS work but

also offered a payment plan and additional services such as teeth whitening and dental implants.

The practice was participating in the contract reform pilot and all members of the dental team spoke favourably of offering OHE and preventive care. In the waiting room there were posters explaining the Assessment of Clinical Oral Risks and Needs (ACORN) and the red, amber, green risk assessment system (Public Health Wales 2019a) and Designed to Smile posters providing oral hygiene advice for children (Welsh Government 2017a). The principal dentist held regular staff meetings with the team, one of which was used to go through the Delivering Better Oral Health toolkit (Public Health England 2017) with the team. All team members were encouraged to go on training and all dentists had attended smoking cessation courses. Although they did not operate a mixed-role team, the practice was in the process of training dental nurses to independently run fluoride application and oral health education sessions as part of the pilot. Two of the three had nearly completed their training and were getting the rooms ready to start booking appointments.

The researcher (EB) attended the practice for two days (4th December 2019, 2nd March 2020) and interviewed three dentists: one principal, one associate, and one foundation dentist who opted to be interviewed together; and 3 dental nurses, also interviewed together. Two group interviews/focus groups were conducted at CTMs¹, one with dentists lasting 58.16 minutes and one with dental nurses lasting 42.27 minutes. A total of 100.43 minutes of interview data was gathered.

A mixed-role team:

The mixed-role practice (ABs1) was based in a town in Aneurin Bevan UHB area.

EB spent three and a half days in practice gathering data (13th December 2019, 8th, 9th, and 14th February 2020). All clinical members of the dental team were interviewed: three dentists (two co-principals and one foundation), three dental therapists, four dental nurses (interviewed together). The dental professionals interviewed reported doing little to no private work in the practice and did not offer cosmetic services such as teeth whitening. The practice served a mix of patients, some from the relatively financially prosperous rural areas nearby but also a number of NHS exempt patients from neighbouring Valleys towns. They noted that they were not taking on new patients, and had not been for some time, which meant that they had a stable patient group.

The practice was taking part in the contract reform pilot and had previously taken part in the first pilot (Public Health Wales 2013). One principal who was at the practice during the first pilot reflected that they had seen patient improvement during their participation. One dental nurse who was also working in the practice during that time, held OHE qualifications and had previously run her own OHE sessions as part of the first pilot. These sessions ceased and they returned to working in the clinics when the pilot ended as the practice could no longer afford to pay for another nurse to cover appointments. The three DTs worked part-time so that there was always at least one in practice at all times. One DT held NHS direct access sessions for patients with gum disease which was said to provide longer-term opportunities for OHE with patients. In the corridor leading to some of the clinics was a large poster-wall of information on oral hygiene, dietary advice, and smoking cessation that the team had curated.

The one-to-one interviews lasted an average of 21.82 minutes (minimum:16.34, maximum: 30.52 minutes), and the group interview/focus group lasted 13.02 minutes. A total of 143.96 minutes of interview data was gathered.

Case study data were gathered with all participants via semi-structured interviews. EB was present in each practice throughout the day recruiting patients and dental professionals. All dental team members' interviews were conducted face-to-face at the practice, typically within treatment rooms or staff rooms, at a time suited to the dental team. The timings of each interview were opportunistic, with EB approaching different team members as the chance arose throughout the workday. The majority of interviews were conducted at lunch time or during the workday if the dental professional had a free appointment period (e.g., if a patient had failed to attend).

One practice set aside a one-hour appointment slot for the dentists to be interviewed as a group (CTMs1). In both practices, the dental nurses were also interviewed as a group, by their choice. While the use of *ad hoc* combinations of methods may negatively impact on the trustworthiness of a study (Morse 2003), qualitative research is a flexible method with decisions on methods sometimes being based on practical and pragmatic reasons (Lambert and Loiselle 2008). Being interviewed as a group meant that the interview sessions were closer to focus groups than semi-structured interviews or group interviews. Where group interviews largely involve question and answer interaction between the researcher and the interviewer only, focus groups incorporate interaction between the participants themselves (Gibbs 2012). In this study, participants expressed their own opinions and experiences but also commented on the responses of other participants.

Molzahn et al. (2005) asserts that while interviews are best suited to discussing personal experiences, focus groups are better suited to exploring understandings and opinions about a topic. Focus groups can provide rich information highlighting the similarities and differences in the participants' views (Lambert and Loiselle 2008). The participant interactions within focus groups create a context within which the data is generated (Hollander 2004; Lehoux et al. 2006). While the contexts of some groups may facilitate openness amongst participants, it may have the opposite effect in others and impede participant willingness to share certain information or views (Kidd and Parshall 2000; Hollander 2004).

Leading a group discussion also necessitated the researcher adopting a different approach and using different skills than when conducting a one-to-one interview. Bloor et al. (2001) explain that as well as facilitating the discussion and making sure it remains on topic, they also need to ensure that all members have an equal chance to contribute. Focus groups are not solely a consensus method, and disagreements of opinion should also be explored (Kitzinger 1994). The moderator should also encourage different views and disagreements to be discussed openly and fairly (Kitzinger 1994; Bloor et al. 2001). When moderating the focus group, the researcher was mindful of including all members of the group and asked the group whether anyone else had any reflections or comments on any topics that had just been raised if it appeared that one person was leading the discussion.

Patients were interviewed via the telephone at a time as soon after the appointment as was suggested as convenient by the participant. The patients typically replied from their own homes or from their cars. The researcher conducted all telephone interviews either from

her private office in Cardiff University, or from her own home (following-Lockdown). The interviews were conducted using a project-specific, University-owned mobile phone (iPhone 7) set to speakerphone, and a digital audio recorder.

Dentist and dental nurse-only practice (CTM1):

The mean age of CTM1 patient participants was 47 years of age. There was an equal spread of males and females interviewed in CTM1 (5 each). One participant was on a payment plan; all the others interviewed were NHS patients. The participants' evaluations of their own oral health showed some slightly negative viewpoints with around half judging it as "*pretty good*", "*fine*", or "*medium*", with the other half viewing it as "*poor*", "*not great*", "*not the best*", or pointing out that they had "*mostly dentures*". Interviews lasted an average of 9.29 minutes and ranged from six minutes to 16.58 minutes in length. A total of 95 minutes of interview data was gathered.

Mixed-role practice (AB1):

All participants interviewed from AB1 were NHS patients. Only one participant indicated that their most recent appointment (i.e., the one they were interviewed following) was with a dental therapist. The average age of the participants in the AB1 case study group was 67 years. There were no participants in the 25-35 or 35-44 age groupings with 40% being 45 to 64 (45-54=2, 55-64=2) and 60% being 65 and older (65-75=3, 75 and over=3). The participants were mostly female with only three males being interviewed. Participants perceived their oral health to be in a good state, or at least at an acceptable state e.g., "*adequate*", or "*okay*". Interviews lasted 11.26 minutes on average and ranged from six

minutes to 18.36 minutes in length. A total of 114.32 minutes of interview data was gathered.

3.2.3.2 Post-March 2020 data collection

The researcher conducted all telephone interviews from her own home using the same equipment as before (a university-owned iPhone 7 set to speakerphone, and a digital audio recorder). DTs who were recruited through social media were telephoned at the time they had identified as convenient and responded from their own homes as they were not working in practice owing to the Covid-19 restrictions. Again, the timings of the interviews of those working in practices were largely opportunistic with EB working through the list of practices previously drawn up for selection of the case studies throughout the working day.

Fourteen participants were recruited, three DTs and eleven dentists. Interviews lasted 33.73 minutes on average (minimum: 19.08, maximum: 44.04 minutes). A total of 130.93 minutes of interview data was gathered. Participants' practices were in a range of towns across the South Wales valleys such as within the Caerphilly, Cynon Valley, Merthyr Tydfil, and Torfaen regions, and two in a large city. Most of the dental therapists were employed part-time in more than one practice. Some worked in other general practices, some private, or based in England, while one worked in the community dental service alongside their general practice work. Some dentists also worked in other practices or organisations. Some worked for the same practice group but across two different sites, while one also held teaching positions and clinical hospital roles.

Six dentist participants worked in practices without a DH, DT or OHEd. Another participant did not work alongside dental hygienists or dental therapists but had access to an OHEd within their practice. Participants talked of seeing a range of patients, with most reporting seeing NHS-exempt patients with high oral health care needs.

The majority were working in independent practices, with two working in corporately owned practices. One participant worked in a general dental practice that also had a community dentist as part of an outreach programme. Few practices were solely NHS funded, with most doing a combination of NHS and private work. However, this balance varied with some only carrying out a very small amount of private work to practices where the dental therapists or dental hygienist operated on a private basis. Only three were not participating in the Welsh contract pilot programme². As described in Table 1 these practices were CTMi-01, CTMi-06, and CTMi-08.

The HWW-recruited patient participants established, via email, a mutually convenient time for the researcher to telephone them. Patient-public participants were mostly interviewed from their own homes for the interviews conducted while Wales was on a short *“firebreak”* lockdown, and later from their own homes or locations of their choosing.

² Providing UDA flexibility within the current contract to offer opportunities for greater patient-centred, evidence-based preventive care. A treatment plan is designed based on the patients’ risk level, which is assessed using the Assessment of Clinical Oral Risks and Needs (ACORN) form, and agreed with the patient.

In total 67 participants were interviewed. Interviews lasted 18 minutes on average (minimum= 6 minutes, maximum= 42 minutes) with a total of 20 hours and 20 minutes of interview data gathered.

Participants were mostly female (female=41; male=26) and their average age was 63 years. Nearly three quarters of HWW respondents were aged between 55 and 74 (74%; n=48) Fourteen participants were receiving private dental care while the remaining 53 were NHS. This group of participants tended to rate their oral health positively or as at an acceptable level, although some reported issues with their oral health, and others indicated that it had improved in recent years.

Several had been with their current practice many years and had stayed on with a new dentist when their original one retired. Some had been with the same dentist for many years and moved practice with them. Some private patients had previously been with NHS dentists but could not secure a place at a new NHS practice when their previous one closed or the participant moved out of the area. Some NHS participants had changed their dentist as their previous NHS practice had become private. Thirty-two participants attended practices in ABUHB (identified by the participant code ABp) and 35 attended practices in CTMUHB (identified by the participant code CTMp).

3.2.3.3 The interview schedules

3.2.3.3.1 *The case study interview schedules*

Interview schedules were drafted to address the research questions and guide the interview discussions; one for dental professionals and one for the patient participants. Both the dental professional and patient interview schedules were informed by the research

questions and the outcomes of the literature review completed earlier in the study. The dental professional schedule was additionally guided by aspects of the COM-B model (Michie et al. 2011) to ensure the interviews addressed issues influencing workplace practice. Namely, did they feel that they had the necessary skills to deliver oral health education or self-care advice (Capability), did their everyday role provide the Opportunity, and did they report a Motivation to deliver it. The COM-B domains were chosen rather than the TDF (Cane et al. 2012) domains as the researcher wanted to avoid directing the interview discussion too much in the direction of the frameworks, preferring to take a light touch to the three broad COM-B domains to maintain space for open discussion.

Initial versions of the schedules were discussed with the study supervisors. Versions of both schedules were piloted with one appropriate external participant (a PhD student from a non-dental academic discipline) and transcribed. Following piloting, the interview transcripts were discussed within the team and amendments were made to both interview schedules (detailed in the relevant sections below).

The schedules broadly followed Lichtman's (2014) five types of interview questions (see Figure 3.7 below).

1. *Grand Tour* – A general, opening question.
2. *Concrete Questions* – Asking about specific events or information.
3. *Comparison/Contrast* – Asking the participant to consider other times/place/events and to draw comparison with them.
4. *New Elements/Topics* – Carefully introducing new topic areas.
5. *Closing* – Indicating a closing of the interview by asking the participants for any final comments on the topic.

Figure 3.7: Lichtman's (2014) Five Types of Interview Questions

3.2.3.3.2 Dental professional interview schedules

The professional's guide opened with a 'grand tour' question (*Please tell me a bit about your role*) in order to open the interview in a way that was 'safe' for the participant while also gathering some context information. After piloting the schedule, this question was followed up with a series of concrete context questions (*"What year did you qualify?"*, *"Where did you qualify?"*, *"How long have you worked at this practice?"*). Context questions were considered important to gather information that may underpin participant accounts. For example, when they were qualified gave an indication of the participants' age and experience level, and where they were qualified was asked as participants who qualified overseas may have had a different education outside of the UK system. While the analysis was not looking for differences between accounts that may be influenced or explained by such factors, it was considered important to be able to provide readers with some background information on the participants and allow participants' accounts to be located within their individual contexts.

Other concrete questions followed; some asked them to consider specific events or examples (e.g., *"Thinking about patients that you have seen over the previous week or so, what type of preventive advice did you give to those patients?"* and *"Do you use to any supporting materials to deliver OHE/self-care advice? (e.g., demonstration, leaflets, instruments, referral to the internet)"*). Others gathered their reflections and understanding of providing oral health education and self-care advice (e.g., *"What influences the content of the OHE/self-care advice you give?"* and *"How do you decide whether to give OHE/self-care advice to a patient?"*).

'Comparison/contrast' information was sought via questions such as *"What do you think about giving advice on: toothbrushing/sugar or diet/smoking cessation/alcohol?"* and *"Have you changed how you give OHE/self-care advice over time?"*

The interview guide included two sets of 'new elements/topics questions', moving the discussion on to the topic of their patients and also their views on the general barriers and enablers of providing oral health education and self-care advice (*"What are the barriers to offering OHE/self-care advice?"* and *"What would help you promote patient self-care?"*). Regarding their views on their patients, a series of concrete questions invited reflection on patients' responsibility for their own oral health care (*"What do you think patients should be doing to look after their oral health?"*), why patients may or may not follow advice, how it made them feel when they did not (*"How does it make you feel when patients don't follow self-care advice?"*), and how they thought patients' viewed their role (*"Do you think patients see your role as preventive or restorative/interventionist?"*). The interview schedule concluded with a general closing question – *"Is there anything else you think we should know about OHE/self-care advice?"*.

A broadly similar schedule was used in the non-case study telephone dental professional interviews with a few amendments. As the individuals were being interviewed remotely and with little knowledge of their dental practice, several context questions were added at the start of the interview. Like the case study questions, the amended schedule asked about the respondent (current role, when and where they qualified, and how long they had worked in their current practice). Additional questions explored their practice context (the practice team composition and skill-mix, whether it was an independent or corporate practice, the

balance of NHS and private work undertaken, and the type of patients served). The remaining questions were left unchanged aside from the removal of the question “*Do you make a decision about which patients to spend time with on OHE and other’s not?*”. This was omitted as the question was often covered in other questions in the case study interviews and led to repetition that added little new understanding.

For the full original and amended dental professional interview schedules, see Appendix 11.

3.2.3.3.3 Patient interview schedules

The patient interviews again drew upon the three broad COM-B domains (Michie et al. 2011). Questions asking whether they felt that they had the knowledge to maintain their oral health or whether they had any knowledge gaps (Capability). Questions on the reasons that they had previously followed advice or if there were any reasons that they had not been able to were anticipated to provide both Opportunity and Motivation-focussed responses. Unlike the dental professional interview schedules, the patient schedules opened with a series of concrete questions rather than a broad, open question. This was intended to help ease the participants into the interview with questions that they were more easily able to answer to help build rapport before moving on to move abstract questions (Britten 1999; Gill et al. 2008). The questions gathered context information on their appointment:

- *What was your appointment for? (check-up/treatment)*
- *Who was your appointment with?*
 - *Have you seen them before?*
 - *How long have you been seeing them?*
 - *How long have you been with this practice?*
 - *Approximately how often do you attend?*

- *Do you have your care on the NHS or privately, or is it a mixture of both? (Added post-piloting)*
- *How would you describe your general oral health?*

The participant was then asked to indicate if they received any self-care advice at their most recent appointment and whether they were able to implement any recommended changes (*“Thinking about your appointment with (ROLE/NAME) the other day, what advice were you given by (ROLE/NAME) on looking after your oral health?”*, *“Were you able to ask questions about the advice?”*, *“Were you able to change what you do after getting advice from (ROLE/NAME)?”*). Included in this section were more reflective questions on why they may or may not follow the advice (*“Have you ever been given advice that you haven’t been able to follow?”*). Follow-up questions invited the participant to explore their response to each question in more detail.

These were followed by another series of questions on instances of oral health education/self-care advice focussing on previous instances of receiving oral health education or self-care advice (*“Can you remember any advice that they have given you in the past?”*). When participants could not recall being given advice in their most recent appointment these questions allowed their experiences of previous oral health advice interactions to be investigated. For those who had already answered the first set the comparison/contrast questions provided greater insight into previous experiences and their accounts of why they had or had not changed their behaviour as guided.

Moving on from discussing their experiences of receiving oral health education, the schedule then asked about their views on the acceptability of being given advice on a range of topics that comprise core elements of oral health education (e.g., sugar/diet, smoking, alcohol consumption). A question on medication and an open question about other health issues were added to the list following piloting. An additional question inviting suggestion of topics that they would like to discuss with their dental professional but have not had chance was also added to this section. A comparison/contrast question explored other sources of oral health education that they may have experienced and if/how that advice had changed their behaviour (*“Have you ever made any changes to what you do to look after your teeth or mouth because of information from any other sources other than (ROLE/NAME)?”*).

The final set of questions focussed on aspects of responsibility for looking after their oral health; what activities the dental professionals were responsible for and what were the patients’ responsibility. A closing question provided a final opportunity for the participant to present any information that they felt relevant to the discussion (*“Is there anything you would like to add?”*).

Following the changes to recruitment and data gathering owing to Covid-19, amendments to the patient interview schedule mainly involved removal or re-ordering of questions.

Additional questions asking about appointments with dental hygienists or dental therapists were also added. One context question was to determine whether they had ever had an appointment with a dental hygienist or dental therapist, and later questions to establish whether they had any preference as to which member of the dental team they would like to receive advice from and their reasons for that preference. The original schedule centred around their most recent dental appointment followed by asking about any other advice

they had even been given. This was no longer appropriate as their most recent appointment may have been up to 12 months prior to the interview. Instead, questions opened with a more general question about receiving OHE “*Can you remember any instances where you’ve had advice from your dentist or hygienist/therapist during your appointments?*”. An additional follow-up question “*What motivated you to make those changes?*” was added to the question “*Have you ever changed what you do after getting advice from your dentist / hygienist / therapist?*” as a reminder to explore the topic in more depth if it had not already been raised by the participant.

For the full original and amended patient interview schedules, see Appendix 12.

3.2.4 Analysis

A two-stage process of inductive descriptive thematic analysis, and qualitative content analysis using pre-determined codes (TDF domains) were the chosen methods of data analysis.

Thematic analysis method involves “*identifying, analysing and reporting patterns (themes) within data*” (Braun and Clarke 2006, p79). Analysis followed the six-step procedure outlined by Braun and Clarke (Braun and Clarke 2006; Braun and Clarke 2013; Braun and Clarke 2019). The six steps are summarised in Figure 3.8.

1. Familiarisation with the data
2. Generating initial codes
3. Generating themes
4. Reviewing potential themes
5. Defining and naming themes
6. Producing the report

Figure 3.8: The six-phase analytical process in thematic analysis

All audio recordings were transcribed verbatim by a transcription company (VirtuType). The researcher checked each transcript against the original audio recording and anonymised any potentially identifiable information. The audio checking also allowed the researcher to refamiliarize and immerse herself in the interview transcript and to make preliminary notes and reflections prior to the formal coding stage.

After repeated reading and re-reading of the transcripts, initial reflexive coding was carried out with each transcript in turn. Initial codes were generated on Microsoft Word by adding short descriptive codes and comments to sections of text within the interview transcripts using the *Comments* function. This allowed for novel codes or reflections to be generated based on the text while working through each document and avoided prematurely narrowing down the codes, as might happen if using a programme such as NVivo (QSR International Pty Ltd 2018). Once all transcripts had been coded, the codes were collated and similar comments were combined and added as coding 'nodes' within NVivo (QSR International Pty Ltd 2018). The interview transcripts were then re-coded within NVivo with codes being amended and additional new codes being added as coding progressed and new insights were generated after reading subsequent transcripts.

While mindful of being informed solely by the data in this initial coding, it must be acknowledged that the researcher's (EB) understanding of the topic was also shaped by the three domains of the COM-B of Capability, Opportunity, and Motivation (Michie et al. 2011) and the different levels of influence (macro, meso, and micro). For example, the language used when assigning codes and in writing the narrative may have reflected some of the

concepts included in the frameworks (e.g., capability, motivation, etc) but was not intended to directly relate to these concepts at this stage of the analysis.

Codes can be generated at both the semantic and latent level (Braun and Clarke 2006; Braun and Clarke 2013; Braun and Clarke 2019; Byrne 2021). As Braun and Clarke note *“thematic analysis can be a method that works both to reflect reality and to unpick or unravel the surface of ‘reality’”* (Braun and Clarke 2006, p. 81). Semantic-level analysis provides a descriptive summary of recurrent patterns in the content as relating to the research questions while latent-level analysis explores the underlying conceptualisation or ideologies that shape the content. This study aimed to capture the complexity of participants accounts of OHE and coding was mostly conducted at the semantic level to reflect the detail that risked being lost in more latent-level coding.

Sections of text were then collated for each code and organised into initial themes. Themes are patterns of meanings, observations or interpretations that capture something about the data as it relates to the research question (Braun and Clarke 2006; Joffe 2012; Willig 2013). In this sense, the same topic might be raised several times during the interview but may not be coded the same way each time according to the context and meaning associated with each instance. The themes were grouped by similarity of message to provide a narrative of the different aspects in each and the complexity within. The analytic process continued through writing up the themes. New understandings and associations were generated during the process of drafting the narrative and the themes were refined as required until no new insight was gained (saturation).

Braun and Clarke note that coding is “*the researcher’s reflective and thoughtful engagement with their data and their reflexive and thoughtful engagement with the analytic process*” (Braun and Clarke 2019, p.594). As coding and theme generation is conducted through the lens of the researchers’ understanding then double-coding of the data or attempting to measure consensus between coders is not recommended (Byrne 2021).

Alongside the thematic analysis coding, the interview transcripts were coded according to the topic of the advice. This method was chosen to retain detail regarding delivery of different aspects of OHE that may have potentially been lost within the thematic analysis. A descriptive narrative summary was used to present the participant contextual information and to provide an account of the dental professionals’ approaches to the delivery of the different OHE topics recommended in the *Delivering Better Oral Health* toolkit: keeping the mouth clean, diet, smoking cessation, and alcohol consumption (Public Health England 2017). While this does result in some repetition of detail, it allows the data to be seen in both the context of participants’ own accounts of their work and at a more abstract interpretive level.

Following write-up of the thematic analysis, the dental professionals’ and patients’ results narratives were re-coded in NVivo to explore how the results mapped onto the domains from the TDF and COM-B. As well as gaining additional insight by exploring the results through a theoretical framework, the findings from the mapping also assisted with identifying practical recommendations for optimising OHE. The resulting narratives were coded according to the fourteen domains in the TDF (Cane et al. 2012; Cane et al. 2015) and then mapped on to the three COM-B domains (Michie et al. 2011) (see Table 3.1 above).

3.2.5 Ethical considerations

Cardiff University acted as sponsor for this study (ref: SPON 1755-19) and HRA ethical approval was obtained (North West - Greater Manchester West Research Ethics Committee, ref: 19/NW/0568, 6th September 2019). Owing to changes to the protocol arising from Covid-19, two category C substantial amendments were submitted to the sponsor and the two participating University Health Boards. These amendments related to the inclusion of remote recruitment and telephone interviewing of individual dental professionals (April 2020) and patients (October 2020). See Appendix 13 for all ethical approval documents.

This study was thought to not impose any significant potential pain, discomfort or distress on the participants involved. However, there was an element of inconvenience for participants. Being a case study, dental practices were likely to incur some inconvenience in terms of the time taken to be interviewed by a member of the research team. Time demands were lessened by going to their practice premises and completing the interviews at a time to suit staff and that minimised disruption to smooth running of the practice. As a thank-you for participating, all practices were offered £100 in high street vouchers when data gathering was completed.

Asking patients to participate in an interview was an additional demand on their time. Interviews were arranged for a time that was most convenient for the patient and the study did not require questions of a sensitive nature. Some patients may have felt reluctant to discuss their oral hygiene behaviour, but the interviews focussed on their sense of responsibility for self-care and what they think would be helpful from the dental team. In addition, participants were reminded that all interviews were voluntary, would be kept

confidential and anonymised, and that they had the option to decline to answer questions or withdraw from the interview completely. Each participant was allocated an ID number, which was stated at the beginning of each interview recording. This allowed the researcher to identify individual recordings (participant, which dental professional group they saw, and within which case study site, if relevant) while maintaining patient anonymity and to ensure that the correct recording could be deleted if the patient later wished to withdraw from the study. Seeking consent and gathering data via telephone interviews allowed patients to decline to take part remotely, without having to face the researcher.

Personal risks to the researcher were minimal. All fieldwork was carried out in the dental practice and via telephone either from their office or from their own home. Although data gathering took place in a dental practice, the practices are required to operate standard cross-infection protection measures. The researcher posed, or was at risk of, the same minimal level of risk as any attending patients. Cardiff University guidance for lone researchers was followed - the researcher informed others of their whereabouts and intended time of return. The researchers did not meet with participants in any private locations. A mobile phone was purchased for the researcher carrying out the telephone interviews (EB) so that they did not have to share their personal contact details.

3.3 Summary

This chapter has highlighted how the researcher adopted a qualitative constructivist approach in this study. The research questions developed were chosen to explore the socially-influenced and individually constructed perspectives of the two main participants in an OHE interaction – the dental professional and the patient. The approach sought to not

privilege the internal over the social worlds of the participants and adopted a socio-ecological understanding of the influences on their accounts, later distilled using the COM-B (Michie et al. 2011) and TDF (Cane et al. 2012) frameworks.

A key aspect of this data gathering was the acknowledgement that the study would be exploring accounts of both parties' understanding, experiences, their own behaviours, and their perceptions of the other parties' role in OHE. Initial plans to explore these accounts through case studies were shaped by the literature on the influence of peers and dental practice culture on dental professionals' views and opinions. Recruiting patients from within these case studies would assist the researcher to understand the context of the OHE provision they may have received and allow for greater insights into their accounts. However, recruitment issues and the impact of Covid-19 on general dental practices necessitated a change of procedure. Remote telephone interviews were instead carried out with both patients and dental professionals from a wide range of dental practices and with patients from potentially different demographics than originally anticipated. The interview schedules were designed to explore aspects of Capability, Opportunity, and Motivation (Michie et al. 2011) for OHE and oral health behaviours.

The gathered data underwent three levels of analysis. Analysis aimed to provide a narrative account of both participant groups' accounts on OHE advice, a thematic description of the recurring themes within their accounts, and finally an application of the theoretical frameworks to distil the descriptive narratives into a more accessible format.

The following two chapters present the analysis of the data gathered from dental professionals and patients and Chapter 6 details the outcomes of the application of the COM-B and TDF frameworks.

4 Results – Findings from interviews with dental professionals

This chapter opens with an overview of the dental professional participants interviewed. Their demographic information and workplace context is summarised. The findings of the dental professionals' interviews begin with a descriptive summary of participants' accounts of the four main OHE topics outlined in the *Delivering Better Oral Health* toolkit. This is followed by an explanation of the five broad themes that were generated during analysis of the interview data: OHE responsibility and capability, being a good clinician or being a profitable business, dynamic ways of offering OHE, and perceptions of patient 'types', and the motivating factors and their influence on behaviour change.

4.1 Overview of the dental professional participants

A total of thirty dental professional participants were interviewed. Including trainees and foundation roles, these comprised seventeen dentists, seven dental nurses, and six dental therapists. Twenty-one of the participants were female and nine were male (all dentists). The dental professional interviews lasted between 13 to 44 minutes, with an average length of 30.9 minutes, and a total of 716.38 minutes of interview time. The three group interviews lasted between 17 to 58 minutes, with an average length of 37.49 minutes total of 113.27 minutes seconds of interview time.

A full summary of the participants is provided in Table 4.1.

Table 4.1: Summary of dental professional participants

Participant	Male or Female	Years qualified	Place qualified	Role	NHS or private	Time in current role	Team members	Independent or corporate(s)	Work in other practices	Pilot scheme?	Interview length (mins)
ABs1-01	M	9	England	(Co) Principal Dentist	NHS	4	2 dentists, 1 Associate, 3 DTs, 4 DNs	Independent	No	Yes	19.22
ABs1-02	F	23	England	(Co) Principal Dentist	NHS	18	"	Independent	No	Yes	24.24
ABs1-03	M	9	England	Associate Dentist	NHS	1 month	"	Independent	No	Yes	16.34
ABs1-04	F	22	Wales	Dental Therapist	NHS	4	"	Independent	2 (1 Community)	Yes	30.52
ABs1-05	F	6	England	Dental Therapist	NHS	4	"	Independent	-	Yes	23.38
ABs1-06	F	12	Wales	Dental Therapist	NHS	12	"	Independent	2 (1 other as a DH)	Yes	17.24
ABs1-07	F	22	Wales	Dental Nurse	NHS	18	"	Independent	No	Yes	13.02
ABs1-08	F	8	Wales	Dental Nurse	NHS	4	"	Independent	No	Yes	
ABs1-09	F	In training	Wales	Dental Nurse	NHS	4 months	"	Independent	No	Yes	
ABs1-010	F	6	Wales	Dental Nurse	NHS	8	"	Independent	No	Yes	
CTMs1-01	F	2	Wales	Dental Nurse	NHS	3.5	3 DNs, 1 Principal, 1 Associate, 1 Foundation dentist	Independent	No	Yes	42.27
CTMs1-02	F	In training	Wales	Dental Nurse	NHS	3	"	Independent	No	Yes	
CTMs1-03	F	1	Wales	Dental Nurse	NHS	<1 month	"	Independent	No	Yes	

CTMs1-04	F	18	India	Principal Dentist	NHS	7	“	Independent	2	Yes	58.16
CTMs1-05	M	8	EU	Associate Dentist	NHS	5	“	Independent	No	Yes	
CTMs1-06	M	6 months	England	Foundation Dentist	NHS	3	“	Independent	No	Yes	
ABi-01	F	10	Wales	Dental Therapist	Mix of NHS and private	6, 5, and 2 years	1 other DH in private practice, 2 other DTs in NHS mixed	Independent	3 (1 private, 2 NHS)	Yes, in 2 NHS practices	39.21
ABi-02	F	10	England	Dental Therapist	NHS & some private	2	1 principal, 2 Associates,	Independent	2 (1 in England)	Yes	38.54
ABi-03	F	8	Wales	Associate Dentist	NHS	8	4 dentists, 2 DNs, 2 DTs	Independent	No	Yes	29.04
ABi-04	M	26	EU	Senior Community Dentist	NHS	15	1 dentist, 2 DNs, 1 OHED	Independent & Community	No	Yes	35.4
ABi-05	M	22	Wales	Principal Dentist	“80%” NHS	5	2 principals, 1 Associate, 1 DT	Independent	No	Yes	30.44
ABi-06	F	4	England	Associate Dentist	“99.9%” NHS	10 months	3 dentists	Independent	3	Yes	43.05
CMTi-01	M	25	England	Associate Dentist	“99%” NHS	1	7 dentists (p/t)	Corporate	No	No	26.55
CMTi-02	F	32	Wales	(Co) Principal Dentist	NHS	28	5 dentists, 1 DH, upskilling DNs)	Independent	No	Yes	42.03
CMTi-03	F	30	England	(Co) Principal Dentist	NHS	24	2 Principals, 5 DNs, 3 DTs, 1 DH, 2 Dental surgeons	Independent	3 (1 Hospital, 1 Teaching Unit)	-	39.16
CMTi-04	F	1	Wales	Foundation Dentist	“80-90%” NHS	9	6 dentists	Independent	No	Yes	28.09
CMTi-05	M	7	Wales	Associate Dentist	Mix	3	4 dentists	Independent	No	Yes	19.08
CMTi-06	F	6	EU	Associate Dentist	Mainly NHS	3	2 dentists	Corporate	No	No	24.26

CMTi-07	M	4	Wales	Associate Dentist	NHS	1.5	Principal, 2 Associates	Independent	2	Yes	44.04
CMTi-08	F	8	Wales	Dental Therapist	NHS	-	2 dentists, 3 DTs, 1 DH	Independent	2 (1 in Community)	No	33.38

The participant codenames reflect their recruitment group and which UHB they were located within. Codes beginning with AB were recruited from Aneurin Bevan University Health Board and those with CTM were from Cwm Taf Morgannwg University Health Board. The inclusion of “S1” in the codename refers to a case study practice, while “i” stands for an independent participant, i.e., a later participant recruited from outside of a case study.

4.2 Summary of approaches to OHE by topic

Participants were asked for their views and experiences on delivering the different areas of OHE outlined in the *Delivering Better Oral Health* toolkit – keeping their mouth clean, diet, smoking, and alcohol. This section provides a narrative description of the ways in which they raised the subjects, how they provided the advice, and their experiences of providing such guidance.

4.2.1 Guidance on keeping their mouth clean

All dental professionals named cleaning and oral hygiene as the main component of the advice that they provide to patients:

“So, when we talk about oral health, we talk about obviously toothbrushing, interdental cleaning, but also fluoride” (ABi-01)

It was pointed out that many adult-age patients would not have received direct advice on how to look after their mouth or even on how to brush their teeth. As a result, dental professionals talked of working with patients with differing levels of knowledge about the importance of oral health and most talked of starting off with the “basic things” or oral health care.

“Just explaining to people actually why they need to brush their teeth because a lot of them don’t really understand the role of plaque in gum disease, tooth decay. So, you have to really go back to basics to start off.” (ABi-02)

Guidance on equipment, optimal cleaning techniques, and noting areas in need of additional attention were discussed as information that formed the “basics” of oral health care for them.

“I give people toothbrushing advice, so as part of the exam I ask what patients are doing to clean their teeth and then if there’s any sort of things where I think a good sort of improvement could be made, I’ll sort of give them some information on that.” (ABs1-03)

Equipment advice often included the recommendation of an electric toothbrush, the importance of fluoride toothpaste, and the correct size of interdental brushes or floss type for each patient. Advice on optimal cleaning technique included brush handling and cleaning techniques, to spit rather than rinse following brushing, and when to brush. Areas in need of additional attention were areas of plaque, decay, or gum disease that resulted from missed areas in the patient’s current cleaning routine. Advice ranged from telling patients that they need to pay more attention to their brushing or brush for a longer period, to pointing out specific areas in the patients’ mouths.

“There’s ways of doing it: ‘You’re doing reasonably well but there are areas that you can improve’, ‘These areas that you can’t see directly you’re obviously missing’”. (CTMi-02)

When providing cleaning advice, most participants spoke of how they demonstrated equipment such as electric toothbrushes or interdental brushes. For example, when recommending or checking use of interdental brushes or floss they checked for the correct sizing and demonstrated how to use them either on the patient themselves, or on a demonstration model. Select participants preferred showing patients on a model so that they could see the techniques being used while some preferred to use the equipment on the patient themselves (either with or without a mirror) so that they would know which areas to use it and how it should feel in their mouth when used correctly.

“Usually if I demonstrate it, we’ve usually disturbed something and brought out a bit of plaque or made the gum bleed or something. So, they can see the benefits that they would have from carrying that out at home.” (CTMi-03)

When to demonstrate and when to just give oral advice also depended on the advice being given and the equipment being used. Oral descriptions of how to use familiar equipment such as toothbrushes was sometimes enough to convey the message, but demonstration was needed with new or less familiar equipment such as interproximal brushes.

“I think most people can get a reasonable toothbrushing technique if they listen to what you say, but interproximal cleaning is a bit more fiddly. It’s sometimes helpful to demonstrate, either on the patient themselves during the check-up or with the model.” (CTMi-07)

Availability of demonstration equipment (sample brushes, disposable electric toothbrush heads, etc.) also impacted on how the participants provided advice. Some practices were well-equipped with samples to address most patients’ needs. Some were able to give patients samples to take away and try at home and others gave samples to guide patients when buying their own.

“We keep little boxes of a variety actually. Showing them which ones work. Just trying the odd couple and then just saying, ‘well I’ve used these on you. Take these away but you can buy them and try them’ and things like that.” (CTMi-03)

Other practices were stocked with equipment that reflected the principal dentists’ preferences. For example, one dental hygienist explained how the principal dentist was not

keen on the use of electric brushes and so they were only able to demonstrate their use on a model as there were no replacement heads stocked.

Another practical issue was room changes and having to share equipment across surgeries because of staffing patterns. Practices with part-time dental hygienists or dentists may not be working in the same room all week or there may be days when all surgeries are used, and resources are shared. In these instances, flexibility in approach and alternative methods are used to convey their messages.

"I'm not normally in here. But on a Friday when I'm up there they have got the flipcharts, the oral-B flipcharts, and if patients are not quite understanding we've got a model up there... on the side of the tooth. We have to share on a Thursday. So, if they don't understand when I'm explaining with that then I will use the flipcharts then."

(ABS1-04 DH)

4.2.2 Dietary advice

In line with the recommendations, all participants indicated that they discussed dietary risk factors in oral health with their patients. Participants mainly talked of how most patients were aware of the danger of sugar in their diet, for example they recounted how patients commented that they did not take sugar in their tea or tried to restrict their sweet or chocolate intake. For this reason, many explained how they focus their advice on the hidden sugars or at least try to limit the number of acid attacks on the teeth during the day (avoiding grazing or snacking). The amount and complexity of the advice was also discussed. A few told how they explained the mechanisms by which sugar can lead to decay, whereas another talked of keeping the advice down to a couple of main points.

How the advice was delivered varied. Some talked of asking questions about diet as a first move after the risk assessment with new patients, others raised the topic only if there is evidence of decay or disease, and others said they would raise it if they had time at the end of an appointment. Diet sheets were only used by a minority of participants, even then not with all patients. Other participants reported attempts at using diet sheets but stopped after a lack of response: *"I have tried to give out diet sheets, but they don't come back. So, I'll just advise and say what the causes are and try and keep to meals, blah, blah, blah."* (CTMi-08, DT)

While most patients might be aware of the negative effects of sugar on oral health, they may feel that this is offset by their oral hygiene efforts and so advice is needed to address this. One participant explained how they approached the topic and how patients were often *"grateful"* for *"a bit of a chat"* about hidden sugars and the impact on their oral health.

"Quite often to be honest most people like having a bit of a chat. I'm like, 'do you tend to have a lot of sugar? Do you have these kind of drinks?' and they're like, 'ah I do, I never thought about that' and I'm like, 'well there you go, now you do', and then they do come back and they say 'I've cut down on the amount of Coke. I've cut down on the water with slices of lemon in it that I used to have' and I'm like 'oh, there we go'." (Abi-02).

Because most people were thought to have some understanding about the dangers of sugar, some reported finding the subject easier to raise than other non-hygiene topics (e.g., smoking or alcohol consumption). A few found the subject more difficult to raise than oral hygiene discussions, with questions about diet potentially being perceived by patients as

intrusive or *“judging”*. One commented that simply asking about their eating habits may be *“more tricky”* and that the patient may be less likely to discuss their diet honestly. A participant explained how they used clinical indicators as an opening to discuss oral hygiene and anchored their advice to that to provide context for raising the topic. Keeping the questions around the implications of diet on their teeth avoided concerns that patients may *“feel[ing] that I’m judging them for other reasons.”* (Abi-05).

4.2.3 Smoking cessation advice

A selection of participants reported less confidence in delivering smoking cessation advice than in discussing other topics.

“Toothbrushing is fine, you know, in the sense of cleaning, but it’s the smoking cessation advice that I struggle with.” (CTMi-08, DT)

Some spoke of how training in smoking cessation interventions and participation in the national smoking cessation audit had helped them to develop their skills and encouraged them to discuss smoking cessation with patients. Participants told how the courses helped them gain confidence in the way that they approach patients about smoking cessation and how to convey messages in a non-judgemental way. Participation in the national smoking cessation audit also acted as a prompt for them to raise the subject and gain more experience of asking patients about their smoking habits.

Often, whether the patient smoked or not was picked up by the ACORN and this often determined whether the participants raised the topic during the appointment.

“It’s quite an easy one to broach because it’s on their medical form. ‘I see on your medical form you said that you’re a smoker’ and then you can go from there.” (ABi-02)

However, responses on the ACORN or practice medical form were sometimes not answered honestly. One participant explained how a new online version of the medical form introduced during the Covid-19 lockdown included more questions on social habits and that these were being completed more frankly than in the usual paper medical forms filled out in the practice.

Other times, the participants’ told how signs such as tooth staining could be caused by smoking, or tea or coffee drinking so they raised the topic even if patients had not noted it on their medical history form.

“It should be, if they’re telling the truth, on their medical history form. Sometimes it’s not up-to-date and sometimes it’s very obvious if they’re a smoker and sometimes if they’ve got a lot of staining, I ask, do you smoke? Sometimes they don’t. They’re just a heavy tea-drinker or a coffee drinker.” (ABi-02)

Patients’ potential reaction to being asked about their smoking habits was an issue of concern for participants. Participants expressed concern that patients sometimes become defensive and “close up” during the examination if asked about smoking.

“I do get nervous asking that question every time because the reaction is very unpredictable and it can make the appointment really awkward if they get a bit, ‘it’s none of your business. You know, mind your own business’, but if I say to them do you want to stop smoking and if they say no then I say ‘okay, if ever you want to, this is what I recommend’ but I don’t push it.” (ABi-01)

Patient resistance to attempts at smoking cessation advice were also said to arise when smoking was an important part of their lifestyle or identity. For some patients, smoking was said to be a source of pleasure in their life in the absence of other risk activities.

“A lot of them do say ‘oh it’s the only thing I do. I don’t drink. I don’t do drugs’. Then you’re thinking ‘oh well, okay’. It’s difficult to think of something to come back with, but then I just say, ‘well as long as you know your risks’.” (ABi-06)

Long-term smokers were also reported to be resistant to discuss making changes and were often unwilling to discuss cessation.

“oh I’ve been doing it for twenty years. No, just leave it. Just leave me as I am” (CTMs1-04).

Others used their long-term habit as a badge of honour which left little room for discussions on cessation.

“People sort of show off and tell you how many years they’ve been smoking for.” (ABs1-05)

Methods of handling the subject that were suggested included not pushing advice on the patient, but giving information of the risks associated with it and letting the patient know that they can discuss it again later if they wished.

Some acknowledged that smoking was something that had probably been discussed with other health professionals and so those that were interested in stopping smoking would have probably already sought or accepted help from another source such as their general medical practitioner or a community pharmacist. However, they acknowledged that it was still important that the dental team broach the subject with patients.

A number of the participants had experience of referring people on to smoking cessation services, with some positive results. Direct referrals were mainly done through the Help Me Quit/Stop Smoking Wales service as they were able to refer them using the computers in the surgery during the patients' appointment. *"The first person I referred I saw her a few months later and she'd quit. I think I was more-happy than she was."* (Abs1-05) Others passed on a referral to a local community pharmacy that was located near the dental practice. A minority of participants simply encouraged their patients to raise the subject with their General Medical Practitioner (GMP) if they were interested in stopping smoking. Participants also reported that some patients were interested in stopping smoking but did not feel ready yet. In these cases, the participants reassured the patients that they were there to help when they were ready to make the change.

Situations when they would not ask about smoking behaviour was if the patient was experiencing a lot of pain or if the appointment was very short on time. One participant noted even after a patient has successfully stopped smoking, they still check that they are still not smoking. Successful changes in this area may also have unintended consequences for another risk area. Ongoing discussions with patients were important to manage the changing advice needs for each patient.

"You might find out that having taken your advice and given up smoking they've adopted a Polo-mint habit instead and they hold it in their cheeks. So, I suppose because I see them quite regularly and I sort of know my patients I probably know in which area to direct the advice." (CTMi-03)

4.2.4 Alcohol consumption advice

Participants' reported advice on alcohol consumption consisted of providing guidance on the recommended units for men and women and explaining the risks of oral cancer. A minority indicated that they would refer the patients to another service: *"If they report alcohol dependency problems, I normally signpost them towards the GMP. Or Alcohol abuse, the website or a phone number. [...] Try and point them that way"* (ABs1-01). Advice was mainly given to those who reported drinking more than the recommended units per week. Participants from all professional groups explained how they rarely see anyone who reports drinking to a dangerous excess and that *"People who are drinking like that know it's not good for them"* (CTMi-01). In these cases, further advice is offered and if the patient is not interested in further help, then it was noted in their record and possibly raised again at a later appointment.

There was a group of participants who were happy to enquire about patients' alcohol consumption and to provide guidance. They explained how they ask all patients about their alcohol intake while doing the oral examination. Even if the appointment did not allow enough time for an in-depth discussion, they could remind them on the recommended unit limits.

"I'm perfectly happy to discuss that with people and like I say, I ask every patient during an exam what their alcohol intake is [...] and if they say 'I'm having sort of thirty units of alcohol a week' or something you can say 'okay that's really too much to be having' and things and 'have you considered sort of dropping back?' and things. I guess we don't really have time to do like the sort of in-depth talk about it, but you can bring it up and just mention it to people at least" (ABs1-03)

For another group of participants, alcohol consumption was the most difficult topic to discuss with patients and one that they felt least confident addressing. While some commented that they were not sure why they felt slightly uncomfortable with discussion alcohol, negative patient response was a concern for some participants, with some patients either not being interested in discussing it or seeing it as intrusive and outside the dental professional's role.

“Alcohol is a funny one though because people don't always appreciate the risk and it's just a normal part of lots of people's lives that they then are a bit more surprised when it's brought up.” (CTMi-07)

A number of participants had experiences of patients who had taken offense at their questions or had shown resistance to answering questions about their alcohol intake. While these experiences did not stop them from raising the topic with the patients in future appointments, it did lead them to take a different approach.

“One patient didn't mention that he was offended with me and went out to reception and said, you know, ‘Does she think I'm an alcoholic?’ I was a bit offended by that and thought ‘oh my gosh, I hope I'm not coming across badly’. But those are the things that I would always ask [...] It hasn't discouraged me though. I still ask everyone. The patients who were offended by them I've made a note to be a bit more sensitive with it.” (ABi-06)

Patient resistance to discuss their consumption level was also an issue when they knew that they were drinking over the recommended limit: *“I've had some people refusing to answer it because they know they're drinking too much and it's hard to, sort of, say why it is relevant”* (ABi-03). Other participants highlighted how the discussion was often hampered by patients

not understanding what constituted a unit of alcohol. One participant spoke of how raising the topic one-to-one during the appointment often resulted in more honest responses than they would give on the ACORN or medical form.

“Some of them are honest, but again it depends how you ask it when you’re running through the medical history. Like if I asked them myself, I think they tend to be a bit more honest. Whereas if they just do it on the pad out in reception then I don’t think they are so much, because sometimes you do get the ladies that say ‘yeah, I know I have too much. I have a bottle of wine a day’. I’m like, ‘oh really. You should be cutting that down a little bit’. (Abi-02)

As many participants were working in practices that were undertaking the contract reform pilot, they talked of the ACORN form and its influence on their discussion of alcohol consumption with patients: *“on the medical history they ask people what they drink. So, I would tend to ask if I thought that the amount written down was a lot higher”* (CTMi-05). But as some noted: *“I’d ask the question, but I don’t feel confident in giving advice”* (ABs1-01). Participants noted that they did not feel that they knew enough about the subject to provide advice or support beyond highlighting the recommended limits and the risks of oral cancers and excessive alcohol consumption. A lack of knowledge of available alcohol cessation resources or support systems affected their confidence in their ability to provide advice on the topic.

“Well, the recommended limit is fourteen units, but I don’t know much more about how to advise people. If people are drinking wine, if they offer me that information I know that there are units marked on the bottles. So, I tell them that, but yes, I wouldn’t really know how to...with the smoking there’s the Help Me Quit service and there’s

pharmacists and there's lots of people around. So, I can say, 'have you talked to your GMP about it? Have you been to the pharmacist? Have you tried nicotine patches?' or whatever. With alcohol there isn't so much stuff going on around it" (Abs1-02).

Some raised the subject in combination with other lifestyle risk behaviours on the medical form that the patient had indicated that they engaged in. Typically, alcohol was included in the discussion of oral cancer risk with patients who reported that they smoked.

"Usually I will, particularly the ones who are smoking and drinking high levels of alcohol, those are the ones that I really talk about both with. If they aren't smoking and they're just, kind of, medium risk on alcohol I'll mention it, but I don't really push too much. I just advise them to try and cut back. It's the double-headed that I really kind of go in on the alcohol and that's where you get some kind of funny responses of not really appreciating how risky that is." (CTMi-07)

Participants who used this approach explained how the risks of smoking are more well-known than those of alcohol. Tying questions and advice on alcohol with those of smoking allowed them space to discuss the risks of both with less concern about eliciting a negative response from patients.

As alcohol consumption is enmeshed within many social routines, advising behaviour changes to drinking practices were said to feel different, and to be more difficult to advise on than other risk behaviours. This was particularly difficult with some participant groups.

"A lot of the time older men and you think that's their social life. It's a hard one. I advise them to avoid the sugar in the alcohol and carbonated drinks. I find that one a bit of a funny one to advise on. I'm not overly confident in that" (ABs1-05 DT).

As it was something raised in the ACORN or medical form, some DTs talked of how it was therefore something the dentist would discuss with patients: *“that’s something that’s done on the ACORN as well. So, I feel that that’s more the dentist that would approach that with them”* (ABs1-04 DT). Some DTs reported only bringing up alcohol consumption regarding visible staining on the patients’ teeth and how to minimise it, or in conjunction with smoking as part of a discussion of oral cancer risks. Dental nurses’ advice on alcohol consumption mainly focussed on issues with antibiotics prescribed by the dentist.

4.3 Themes from the dental professional interviews

The findings have been broadly organised into six themes: the responsibility and capability of dental professionals for OHE; being a good clinician or being a profitable business; dynamic ways of offering OHE; perceptions of four patient ‘types’; the motivating factors for self-care and their influence on behaviour change; and acceptance of patient unpredictability as motivation for OHE provision. Table 4.2 outlines these themes and the associated subthemes.

4.3.1 OHE responsibility and capability

This section explores the participants’ reflections on their own role in OHE and which member of the dental team they view as the best placed to carry out OHE, their confidence in providing OHE.

Table 4.2 Overview of dental professional themes and subthemes

Theme	Subthemes
4.3.1 OHE responsibility and capability	4.3.1.1 Dentistry as encouraging patient responsibility for their oral health 4.3.1.2 The contribution of different dental professional roles to OHE 4.3.1.3 Confident in what they know
4.3.2 Being a good clinician or being a profitable business	
4.3.3 Dynamic ways of offering OHE	4.3.3.1 According to patient risk and perception of patient need 4.3.3.2 According to patient receptivity
4.3.4 Perceptions of four patient “types”	4.3.4.1.1 Problem-focussed irregular attenders 4.3.4.1.2 Regular attenders for monitoring and maintenance 4.3.4.1.3 Regular attenders with good intentions but competing circumstances or priorities 4.3.4.1.4 Patients with an interest in their general health
4.3.5 Motivating factors and their influence on behaviour change	4.3.5.1.1 Motivated by new information 4.3.5.1.2 Motivated to avoid further treatment 4.3.5.1.3 Aesthetics and motivation 4.3.5.1.4 Cultural attitudes and expectations of oral health 4.3.5.1.5 Relationship with the dental professional
4.3.6 Acceptance of patient unpredictability as motivation for OHE provision	4.3.6.1 Gaining pleasure from improvement 4.3.6.2 Frustration and disappointment from lack of behaviour change 4.3.6.3 Acceptance and shared responsibility 4.3.6.4 Unpredictable patient outcomes and getting it right at the right time

4.3.1.1 Dentistry as encouraging patient responsibility for their oral health

When talking about providing OHE, participants explained that they saw the aim of the task as providing information and tools that would enable patients to better care for their own oral health.

“Giving people the tools to be able to make good choices and look after their teeth, so hopefully they don’t get problems in the future” (Abi-03)

For some, this firstly involved changing patients’ perceptions of dental provision. This reorientation of dental care expectation was intended to shift patients’ perceptions away

from seeing the dental practice as a service there to 'fix problems' to encouraging patients to take more ownership and control over their own oral care. Participants noted that they only see the patient once or twice a year and noted the importance of getting the message across that what patients' do at home is key to maintaining their oral health and preventing the need for dental service intervention.

"I think you have to put some of the responsibility onto the patient and if we don't teach them properly then they will never understand that" (ABs1-04 DT)

Encouraging a sense of responsibility and control was explained to be important for patients to feel a sense of self-efficacy over their own oral health efforts. Participants contrasted between patients with self-efficacy about their oral health routine and those who adopted a "what will be will be" attitude. Patients with a fatalistic, external locus of control were said to be less likely to engage with advised oral health measures as they saw the outcomes as out of their hands. In contrast, those with greater self-efficacy were said to have a greater perceived sense of control and therefore more motivation to engage with oral care.

"It may come down to the way they view things. So, if they've got the same internal level of control, they control their own destiny. They'll be a bit more focussed on, 'Right, well if I can do this for myself, I'll do it.' Rather than 'Oh well, whatever I do it doesn't matter. What will be will be'. (ABi-05)

Patients taking control and responsibility for their own oral health also had implications for the practice. Prevention of poor oral health and its associated treatment demands was said to reduce the workload for dental teams. Some also talked of the difficulty of carrying out quite sophisticated treatments and restorations which fail because the patient failed to

sustain sufficient oral health care after the treatment. Encouraging patients' control and responsibility was also said to reduce feelings of blame towards the dental team if they were experiencing poor oral health.

"Patients should understand that if there is something going wrong in their oral health, it's not the dentist's fault" (CTMs1-04)

Participants involved in the contract pilot told of how an increased focus on prevention was becoming the norm in dental care and how they expected this to become more common in all Welsh dental practices in the future if the NHS contract changes.

"Things are changing and as this contract comes in they will change, and I think we need to start putting more of a focus onto the patients. That they're responsible for their oral health, as much as their medical health [...] I think it will be changing" (CTMi-02)

4.3.1.2 Contribution of different dental professional roles to OHE

All dental professional roles (i.e., dentists, DTs, DHs, DNs, and OHEs) indicated that OHE and prevention was an important part of their role and their clinical duty of care. However, there were differing opinions on which professional group was best suited to carry out OHE in the dental team.

A number of participants questioned whether dentists had the time in appointments to carry out effective OHE and suggested that DCPs would be better placed to do it. However, this was said to vary in practice with most DTs explaining how they sometimes felt that they did not have enough time to give *"proper, effective oral health information"* (CTMi-08, DT). Like the dentists' accounts, DTs talked of varying the time dedicated to OHE according to

patient need, what the appointment was for, and whether they were a regular patient of theirs.

“Some patients I just do fillings on, adults, and so I will just ensure twice a day, electric, flossing, but I won’t have the time to spend going through it all. So, it’s again a time element, but for perio patients or gum disease patients, absolutely reinforce, double checking, checking they do it the next time, things like that.” (Abs1-06, DT)

One DT commented that on the first appointment with a new patient they try to spend at least half of their twenty-minute slot on OHE, regardless of whether they were NHS or private patients. Others explained how they commented on oral hygiene during the clinical work and set aside five minutes at the end of the appointment solely to discuss OHE issues.

Separate clinics for the DCPs in their team (DNs, OHEds, DHs, or DTs), to engage in OHE with patients were posited as being the ideal approach that *should* be used to encourage the best outcome for patients. Dentists noted that having DCPs carrying out OHE was making the best use of the skill-mix within their team. Other participants also discussed how DCPs were sometimes better at providing OHE than dentists owing to the focus of their professional training. Only a minority of participants suggested that dentists may hand over responsibility to their DCPs as it is a task they dislike doing.

“When we’re seeing the patient, we maybe have less time to chat. Whereas part of the hygienist appointment time is dedicated to oral health education, not just the actual treatment. So, then they feel that they’ve maybe got more liberty to actually sit down and do the talking.” (CMTi-07)

The minority who did take the position that the dentist was the person best placed to engage in OHE suggested that the perceived higher status of dentists within the team meant that patients had more respect for their role and therefore took any messages delivered by them more seriously than from other dental team members. One DT participant noted that this was more evident with their private patients than with their NHS patients. Others explained how their DTs experienced higher levels of appointment cancellations than the dentist and how the patients often look to the dentist for confirmation when their DN is giving advice and instruction.

This contrasts with another stance within the participants' accounts - that patients relate better to DCPs than to dentists. The higher status and educational level of dentists were noted as barriers for some patients who may be overwhelmed. Their status and negative association of dentists with treatment was said to make some patients anxious during their appointment and therefore less likely to fully engage or attend to any OHE attempts. Their association with clinical treatment was also said to impede attempts to engage in OHE discussions.

“Having different members of the team able to give information we often find that we do get more compliance when a patient sees a hygienist because they’re thinking specifically cleaning. Whereas they might come and see us and then more about the teeth or about holes, etc.” (ABi-05)

In contrast, DCPs were thought to be seen by patients as more *“on their side”* and *“on their level”* and therefore it was easier for them to engage in conversations about their habits and

lifestyles. Participants explained that alongside their dental role, DCPs were more likely to be from the local area of the practice which eased rapport building with patients.

While DCPs were talked of as the ideal option for OHE, this did not mean absolving all responsibility from the dentist. Some acknowledged that even in practices with DHs or DTs, not all patients may have an appointment with them owing to their oral health needs and then dentists have a responsibility to provide information on oral hygiene. However, a team approach, reinforcing messages across different roles was discussed as the best option for influencing change in patients.

So, I see it more as a setting up a team to enable better care to be given, but I still carry it out myself. (ABS1-01)

Continuing the skill-mix conceptualisation of OHE, the different roles were said to each bring something different to the patients' care. Dentists conducting oral exams were talked of as the starting point for OHE, with initial queries about habits and hygiene routines and the provision of clinical information. For those needing more intervention, an appointment with the DCP would allow space for a more in-depth discussion with the patient capitalising on their perceived prevention-focussed expertise and longer appointment times. The higher status of dentists was said to be helpful in this teamwork both before the appointment and afterwards. DCPs explained how it would be useful if the dentist made it clear to patients the purpose of the hygiene appointment. This would help patients to understand the OHE-focus of the appointment. Clarifying the nature of the hygiene appointment was noted as beneficial in avoiding resistance from patients owing to a mismatch in expectations of the session, e.g., patients who are expecting more clinical treatment.

“I do think it’s really important that the dentists make it very clear that that is what we’re going to do. So, if they say, ‘I’ll book you a hygiene appointment’ they need to say where she will give you oral health education in the appointment’ so that the patients realise that it’s not just about us cleaning their teeth.” (ABi-01, DT)

After the appointment, dentists’ higher status was talked of being helpful to legitimise and reinforce the DCPS’ messages. Participants reflected that patients appreciated getting consistent messages from the whole dental team.

“They think, ‘oh everybody in the practice is saying the same thing. It must mean that it’s right’ and they’re quite happy then to carry on doing it. Rather than one person said one thing and somebody else said something else. (ABi-02)

Some dentists who worked alongside DTs, hygienists, or an OHEd explained how they did not provide detailed OHE themselves but gave brief information on any clinical issues and referred the patient on to the DT or hygienist to go into more detail and demonstrate techniques. DTs told how the dentists noted any specific advice that they wanted them to provide. This was talked of as a good use of teamwork and communication as it avoided unnecessary repetition within the practice and was of benefit to patients.

“Sometimes the appointments just aren’t long enough when you do a check-up, but if they specifically want something doing and they haven’t had time they would write it in the notes, and we’d make sure that you focus on that at that point as well. I suppose it is good communication between team members as well. You don’t want to be doing the same thing. Patients get a bit fed-up then” (ABs-05, DT)

This necessitated good team communication; one example was comments being made on patients' notes of OHE messages the dentist would like the DCP to cover and the DCP noting the messages given in the session.

4.3.1.3 Confident in what they know

Participants identified the sources of information that informed the content of the advice that dental professionals give and how they keep their knowledge up to date. Participants talked of sources of knowledge for both the clinical background of lifestyle risk factors and how to deliver OHE.

Most dentist participants reported doing "*quite a lot*" of training on OHE during their undergraduate or professional training. The DT participants indicated that alongside formal lectures, OHE was a key competency that had to be evidenced in practice in order to gain their dental qualification. The lectures covered aspects such as understanding behaviour change and motivational techniques. As registered professionals, all participants were members of professional organisations or registration bodies, e.g., the General Dental Council, British Society of Dental Hygienists and Therapists, and the British Dental Association. The organisations' newsletters or journals, such as the British Dental Journal, were all noted as sources of knowledge for changes in OHE advice.

A few participants commented that they also got information on oral hygiene equipment such as electric toothbrushes and toothpastes from company sales representatives or "*reps*". This was said to help them with information on which toothpaste to recommend, and most importantly what the scientific basis was for that recommendation.

“The rep that we have she’s very good, like she’ll give you, you know, ‘this is good because of this. I’m not just sitting and saying it’. She’ll give you the evidence for it”
(CTMi-08, DT)

A number of participants reported that they had attended CPD-accredited training sessions run by the large oral hygiene brands on prevention and OHE.

The *Delivering Better Oral Health* toolkit was a common source of information for nearly all participants and provided information on both the areas and topic of OHE and suggestions of how to raise them in practice.

“for us as practitioners I think they are quite...yeah, they’re very useful” (CTMi-04)

Other resources that were mentioned included the *British Periodontal Society* guidelines, the *NICE* guidelines, and *Scottish Dental Clinical Effectiveness*. The *Designed to Smile* scheme toolkits were also noted as useful for suggesting how to explain information to different age groups.

CPD courses are a requirement for ongoing professional registration and were also identified as a source of information on OHE: *“I’m constantly doing CPD”* (ABi-01, DT).

Prevention and OHE-specific activities included the Welsh smoking cessation audit and its required online smoking cessation course, a face-to-face version of the smoking cessation course, and *Making Every Contact Count*. Again, the *Designed to Smile* training also included a required CPD-accredited course. The *Making Prevention Work in Practice (MPWiP)* course run by the dental section of Health Education and Innovation Wales (HEIW) was mentioned

by some dentists. This training-the-trainer course provided advice on how to train dental nurses to deliver OHE and led the dentist to reflect on their current practice.

“I did the MPWiP Course to teach my dental nurses to apply fluoride. We were also taught how to teach them to do oral health education. So that kind of reminded me of the basis of how to give it, more so than just what I’ve been doing generally” (ABi-03)

Participants talked of getting information from courses that were not directly addressing OHE. For example, one participant detailed getting information on toothpaste from a periodontal course that they had attended. Another mentioned that OHE training typically provides the same basic advice and receiving information on how to deliver it as a professional and as a practice was more beneficial.

Participants in all dental roles suggested that discussion with other professionals was of value to their everyday practice. Participants indicated that they may not gain much new clinical knowledge from more formal learning activities and that without discussing their work with others there was a risk of getting stuck in a routine of providing OHE that did not necessarily use the most effective methods. Discussing experiences of OHE with colleagues provided insight and tips from other professionals on how to deliver advice and how to communicate effectively with patients. Examples described as helpful in the interviews included discussions in member-only dental groups on Facebook about experiences of working with anxious patients and with colleagues in other professional roles within their practice.

“I do benefit from chatting to some other people. So, there’s one hygienist who I work quite closely with and just having a chat about what they do, for example, is helpful just to kind of have a couple of new ideas” (CTMi-07)

Participants mostly reported being confident in their OHE knowledge and communication skills. Good communication skills were characterised as the ability to tailor messages to different people and were a valued aspect of OHE. Confidence for the dental professionals was linked with their level of comfort about their knowledge of OHE advice and the control over the appointment. For example, both more experienced and newer to OHE participants recognised that experience of communicating with patients was key to gaining confidence.

“The more you work, the more you learn.” (CTMs1-01, DN)

Some recounted how they were initially wary of engaging in OHE with patients. However, with experience of encountering different patients they gained *“an armoury of tools”* to use such as readily available, concise answers to typical patient questions. Participants’ talk reflected how confidence was associated with OHE becoming a tacit part of the appointment, developing a *“routine”* of what to say that came *“automatically”* or *“naturally”* to them as time went on. The dental nurse participants also expressed a desire to gain confidence through experience for their move to working independently of the dentist or DT in the proposed fluoride application and OHE appointments.

Some felt less confident about their abilities during time-pressured appointments where they spoke of concerns about accidentally omitting information that they would normally, or would have liked to, include. Others explained how they felt confident discussing topics

that they felt they had good knowledge about but were less confident about discussing non-clinical issues such as new products or more lifestyle issues (e.g., alcohol or substance abuse) where they preferred to refer the patients on to their GMP or another relevant service.

While most had confidence in their communication skills in OHE some acknowledged that this did not necessarily mean that their confidence extended to the likelihood of patients making changes as a result. Some explained that they often felt that the OHE interactions went well with good communication and patient interaction, but that this did not always translate into a positive patient outcome.

“So, I wouldn’t say it’s always successful. I feel confident in my ability to communicate, but I don’t always feel confident in the patient’s ability to do.” (CTMi-07)

Concern over the unpredictability of patients’ potential responses to different OHE topics were related by participants to their confidence in that topic. Similarly, experience of unpredictable patient outcomes also impacted their confidence in patient’s role in the OHE interaction.

4.3.2 Being a good clinician or being a profitable business

This section opens with the main practical contextual factors that dental professional participants identified as influencing the provision of OHE in NHS dental practices. Practical contextual factors such as the NHS funding system and the knock-on effect of time constraints within appointments are outlined.

Funding restrictions created a tension for participants between doing something that they saw as a vital part of their professional role ("*being a good clinician*") but losing money and time in already time-limited appointments if it was carried out.

"With the UDAs there's no financial benefit to giving it [OHE]. So, any time you do give you're doing it for being a good clinician and having to sacrifice doing other things"

(ABi-03)

"The motivation is there. We're engaged. We like to help people. We can't afford to do it." (ABs1-02)

Only one associate dentist participant spoke of having long appointment times, something that they had negotiated with the principal dentist, and that having the time to carry out OHE was not a problem. All other participants in all dental roles told of how they were under time pressures owing to the NHS financial remuneration system. To meet their UDA targets, a high number of patients had to be seen in practice per day. The number of patients seen during the day necessitated short appointments which then limited the amount of time they could spend discussing prevention and OHE. Despite acknowledging the importance of prevention, the low UDA banding of prevention work was said to be a direct barrier to how it is implemented in practice.

"Time, which is dictated by money obviously, and the UDA system is culpable for that because it delivers on activity, the things you do." (ABi-05)

Dentists talked of the different ways of incorporating OHE into their appointment times. The reported short appointment times led to different ways of fitting OHE in alongside their clinical and administrative work.

“Well basically I only get ten minutes for an examination [...] but in that ten minutes I’ve got to check their name, address, medical history. Do the check-up, do the examination and the BPs (bleeding points), and then talk to the patient. [...] So, there’s a lot of time constraints on it.” (CTMi-01)

One approach was to discuss it at the start of the appointment when checking medical history forms, however this was characterised as more of an *“awareness raising”* than OHE interaction. Other dentist participants talked of providing OHE throughout the appointment when doing the examination or the periodontal treatment (treatment below the gum line) or when the opportunity arose. This was sometimes followed up with a recap at the end of the appointment.

“I tend to try and throw it in as I’m doing the check-up. So, I’ll be charting and then I’m talking to the patient a bit here and there.” (CTMi-07)

Most participants reported that these time restrictions meant that they did not give as much OHE as they thought they should during the appointments.

Time spent discussing OHE causing the appointment to over-run into the next booked appointment slot had a knock-on effect for other patients and it was difficult to get the day back on schedule. Patients presenting with complex clinical needs were noted to have even less time for OHE owing to the extra work that needed to be completed within the appointment or a series of appointments. Conversely, patients with better oral health left more time in the appointment for OHE while they were not those that would benefit most.

“Unfortunately, it tends to be that the people who come in with loads of problems because they then need lots of things fixed and lots of discussion and lots of options and

all of that, you can end up actually putting aside some of the time you'd spend on prevention. Whereas actually they're the ones who need it most and the ones who come in and they've got no problems, you've then got a few minutes where you can talk about it, they can look after themselves a bit better or whatever. It's kind of, like, the dichotomy in that sense" (CTMi-07)

Working in a diverse skill-mix practice was noted as one way to help with these time pressures. Having a DT, HT, or OHEs so that they could delegate the demonstration work (e.g., toothbrushing techniques and the correct use of other cleaning implements) was said to ease their workload. Receiving additional funding to help pay for DCPs to help with provision was also desired. After attending *MPWiP* courses some participants recalled discussing the potential benefits of DNs using empty surgeries one afternoon a week to spend time with patients but noted that this would have to be funded by the practice and someone else would have to carry out the DNs' other roles.

"not many practices have the funding or the money to just have a free surgery and a nurse to be doing this" (ABs1-06, DT)

Empty surgeries were more likely to be staffed by an associate dentist who could complete more UDAs for the practice and therefore generate more income. However, as Associates are typically paid by the number of UDAs they complete, the UDA funding system provides no financial motivation for them to engage in low-banded work such as OHE and prevention.

Several participants commented that their practice had or were planning to train DNs in fluoride application and OHE. A selection of participants noted that some of their DNs were initially wary of taking on more responsibility. It was also acknowledged that if they are willing to gain extra qualifications and take on more responsibility then it was only reasonable for them to expect to be paid more. Again, this was an area not accommodated within the current contract.

“He’s got all these nurses that he’s trained up or paid to do fluoride varnish. They don’t do it and the girls complained because they’re not getting paid any extra for it when they do it”. (CTMi-08, DT)

Certain participants explained that their practice did adopt a preventive-focussed way of working which utilised the skill-mix of the practice team. They accepted that this resulted in some financial impact but felt it was worth it for better patient care.

“We felt it’s the type of practice we like to run, and it keeps our therapist and hygienist in work as well. So, we’ve never really thought about the business side of things. We’ve just probably tried to think about the need of the patient.” (CTMi-03)

The reduction in UDAs, longer appointment times, and the increased focus on prevention were noted to have made some improvements for those practices involved in the contract reform pilot. For others, the main difference commented on was the implementation of the ACORN and the traffic light system. While most explained that they already used a similar procedure, the ACORN was said to have formalised their history taking and risk assessments. Some noted how the ACORN part of the contract reform pilot opened-up

opportunities to ask more questions with patients. Some talked of how they were giving advice to all patients rather than when there were evident problems.

“We’re giving advice to everybody now. I think before that I mostly just gave advice when I found problems. If people didn’t have any issues, then I would have just flitted over it, but now I’m asking everybody every question”. (ABi-03)

Others noted an increase in teamwork within their practice with the employment of a DT and DHs. The training of DNs to carry out fluoride application and deliver OHE was also commented on as something that had come about because of their participation in the pilot scheme.

4.3.3 Dynamic ways of offering OHE

4.3.3.1 According to patient risk and perception of patient need

For participants, the first step to determining when and what OHE to provide was information gathering and an extensive risk assessment:

“You need to take the whole medical history, dental history and everything and then advise them accordingly.” (CTMs1-04)

While all talked of their practice having their own medical history form, participants engaged in the contract reform pilot highlighted that the ACORN form and history-taking was more in-depth and formalised.

“we have to rate patients on cancer risk and caries risk, high and low [...] their previous decay experience and their oral hygiene whether they’re high, medium or low caries risk. We’ve all got to put that in our history now.” (CTMi-01)

Participants used the information in the forms to do a risk assessment and form a plan for the patients' treatment and prevention needs. The process was also said to make prevention and OHE more explicit as an activity rather than an implicit part of their role.

"It's become more specific to patients. More measurable in terms of what we're recording in terms of what advice, help, and intervention we're giving them." (ABi-05)

Participants commented that the forms sometimes uncovered surprising risk information about patients. For example, patients with good oral health who then report that they take four sugars in their tea. Some also noted that the process creates a space for discussion with patients and gives the appointment *"more structure and it means it doesn't sort of come out of nowhere then when you start to tell patients."* (ABi-03)

While some patients may only need a quick summary as a reminder or to reinforce good oral hygiene measures, others may require more intervention and therefore longer discussion time. New patients may also need greater input.

"if we're starting from scratch, it might be going right back to basics. You know, the type of toothbrush they use. The correct way to hold it. Have they ever heard about interdental cleaning and how important it is that they do it every day? How long it takes for plaque to build up in the mouth and turn into calculus. So obviously it's going to be more comprehensive for new patients because we don't know what they've been exposed to in the past, and if it's just a regular patient it'll just be a brief summary."

(CTMi-03)

Participants indicated that there were very few situations when they would not try and offer OHE during an appointment. Situations such as medical emergencies, when a patient was in considerable pain were noted as situations where participants might not provide advice. Participants explained that they also gave some level of OHE to people ranked as low risk (green), well as those in the amber and red categories, even if this was reflecting on good brushing technique or reinforcing other key messages.

“I probably give it to everyone, even if they theoretically came in with no caries or no visible gum disease. Things like that I would still say, you know, just avoid certain things, blah, blah, blah. Keep brushing this and that. So, I would give it in every appointment.”

(CTMi-05)

Several participants initially started talking of such situations where they would not provide OHE, but during their accounts reflected on the different OHE opportunities that the situation might present. These reflections led them to change their position, asserting that there was not a situation where they would not provide OHE, even if it was just less advice.

4.3.3.2 According to patient receptivity

Patient receptivity relates to both patients’ willingness to listen to OHE, but also their capacity to attend to OHE messages during the dental appointment.

Patients who had shown long-term resistance to advice, defensive, or “*stroppy*” patients were also mentioned as appointments where they may not engage in prolonged OHE discussions but would still try and convey some reflections or advice.

“I had some patients who I had problems with them because they thought they knew everything, and they were not willing to listen to me. So obviously clearly as a

professional I knew that they were doing something wrong, but they kept saying that they were doing right and then in the end, you know, they were very upset with me because I kept going.” (CTMs1-05)

Participants explained how giving too much information at once may cause patients' to “switch off” as the scale of changes being asked becomes too much for them to consider trying. Providing too much information at one appointment was also avoided as a large amount of information is naturally difficult for people to process and recall.

“You’ve got their attention for a certain period of time, and they only remember a certain percentage of that.” (CTMi-08, DT)

One participant noted that if too much is covered in one appointment patients may focus only on one aspect of the advice. However, this was still positive if the patient made the one change as it created an opening for further escalation of advice.

“I think as well if I do give them too much information, they may just hang onto one part of it which again I’m happy with that. If they have taken one thing away. As long as they’ve made that change. The next time I go over the other things.” (ABi-06)

Advising smaller changes over a reasonable timeframe was said to keep the advice manageable for patients. In these cases, they initially advised on the changes that would make the most impact for the patient. In subsequent sessions, they either reiterated the importance for that behaviour change or gave positive feedback and built upon the advice given if the patient progressed. This incremental approach also provided more opportunities for the dental team to provide positive feedback to patients for any changes made,

reinforcing self-care behaviours. Advice may also be spread out across appointments if the patients are having a course of treatment.

“I maybe don’t cover everything at every appointment, but I find that if I can isolate a thing that they can do and they do that by the next time then I find you get a bit of a positive feedback then.” (CTMi-07)

Patient-centred care and shared decision making was said to be important in advising patients with long standing habits that might be more resistant to change. In these cases, negotiating the behaviour change with the patient may involve a compromise that opened space for further changes.

“I suppose it is people who have always done something. It is almost trying to revolutionise, and they might see that as a step too far. So, they could say, you know, ‘I am going to try and change to a sweetener in my tea, but I just can’t change my toothpaste at the moment’. You know, that kind of thing. You just take it on board and say, ‘Okay. Well, that’s brilliant. If you could try and change this bit, then hopefully we can go from there’.” (ABi-06)

These smaller changes were talked of as “drip feeding” advice as a way to “chip away” at poor oral health care behaviours. Some linked the approach to behaviour change approaches such as a ladder programme or nudge theory that they had learned on a smoking cessation course. Others explained how they had learned from experience that condensed, targeted messages based on the core issues worked better with patients than longer, more clinical explanations.

“I would spend ages on oral hygiene instruction, and I’d have a little flipchart out and I’d explain perio in great depth to people and explain stages of perio and everything they needed to do, and I would literally spend twenty minutes on oral hygiene instruction. Then over time I twigged that patients weren’t coming back. I was taking far too long, and the NHS just didn’t have twenty minutes to spend on oral hygiene instruction. Then I would get the same compliance of doing five minutes as I would do from twenty minutes, if not better, because people just glazed over. So, yes, far more succinct now and less clinical in the way I talk.” (ABi-02)

While the messages became more concise, targeted, and staggered, participants explained that with experience they have learned to spend more time on OHE and give better communicated advice. Some talked of spending more time demonstrating equipment or hygiene methods with patients during the appointment whereas previously they would have given brief oral advice. For some dentists and DTs this was linked with the participation in the contract reform pilot scheme.

4.3.4 Perceptions of four patient ‘types’

This section explores dental team members’ views of how *they* think patients understand the importance of oral health and prevention, the factors that influence those understandings, and their understanding of the role of dental practices. Based on the analysis, these accounts were used to generate four broad ‘patient types’ and their approaches to oral health.

Variation in approaches to interaction with patients and outcomes were discussed in terms of the patients' attitude to oral health and the role of dentistry. While some patients were acknowledged to be engaged with prevention, a lack of understanding of the importance of oral health was seen as underpinning some patients' approach to their own oral health care. Participants' talk described four broad categories of attendees, each varying in their understanding of their own oral health, their expectations of dental care, and their approaches to OHE.

4.3.4.1 Problem-focussed irregular attenders

The analysis highlighted accounts of patients who attended irregularly and only when they had a problem. Tooth or mouth pain was said to be a motivator for some for attending appointments and getting rid of pain or '*getting it sorted*' was the expected outcome of their appointment.

"You get lots of people who only attend because they've got problems, such as whether it's pain or cosmetic because they get issues they can see and by that point it's often too late." (ABi-03)

This was particularly true for infrequent attenders who often did not follow preventive advice and would only attend when a problem needed fixing.

"They just want to have their teeth sorted. They just want to have no pain. Perhaps they don't really care about improving their oral hygiene because they just come to have their teeth sorted and that's it." (CTMi-06)

Others explained how attending with pain can provide an opening to try and engage those who do not attend regularly or are new patients who may not attend a dental practice at all by explaining the risk factors and how they could prevent such future oral problems. New patients may present with pain but may become regular attenders if the team can successfully address the cause of pain and can gain their confidence that they can help prevent it re-occurring.

4.3.4.2 Regular attenders for monitoring and fixing

This type represented patients who were regular attenders but who placed the responsibility of their oral health with the dental team. Participants talked of patients who associate oral health with teeth, not realising the effect of oral health on general physical health. Poor oral health was assumed to be something that was easily fixed if it occurred rather than something to prevent.

“They don’t see the importance of a good healthy mouth. They just think, ‘oh well, if I get a hole, fill it. If I get plaque, you can clean it.’ I don’t think they realise the effects of having an unhealthy mouth has on their body.” (ABi-01, DT)

Participants reflected that the majority of patients still saw dentistry as a service to fix and maintain their oral health than a preventive partnership; attendees were interested in what the dental team could do to look after their oral health rather than looking into the causes of oral disease.

“I think they see us as a fixer of problems [...] I think they think if they go to a dentist lots then problems will happen less.” (ABs1-01)

Patients in this type were also said to underestimate the complexity of the work involved in treatment. They were said to assume that most problems could be fixed easily and quickly and were often said to be surprised and sometimes reluctant when treatment needed more than one appointment or took a long time.

Accounts described patients who were regular attenders and were sometimes happy to listen to advice but rarely showed more than a small improvement and were less concerned with the possibility of tooth loss. Oral health care was said to be seen as low priority.

“Lovely patients, and we’ll see them every few months and they’ll quite happily come in and they’re lovely, but they’re just not bothered at all and then every couple of years they lose a tooth, and the dentist has spoken to them as well. They say ‘okay’, but nothing changes. They’re just not interested.” (ABi-02)

Other participants also reported that these expectations for oral care meant that patients may perceive advice on cleaning during appointments as *“being told off”* and attempts were sometimes undervalued. Participants recounted common experiences of attempting OHE only to see the patients’ faces *“glaze over”*. During these instances’ participants explained how they realised that they were losing the patients’ attention and so kept the information brief or light-heartedly reminded patients that it was part of their job to inform them of all the risks.

Function was little talked of as a concern for patients (e.g., unable to chew steak with dentures). Some patients were said to use what they could feel and observe as barometers of their current and ideal oral health. Aesthetic factors such as having straight white teeth and avoiding bad breath were talked of as issues that a subsection of these patients tended

to raise during appointments. Bad breath was said to be raised as a concern by patients either as a potential indicator of something wrong with their teeth, or as a concern about others' negative perceptions of them.

The view that dentistry was there to "fix" their problems was said to be part of wider view that many patients had towards healthcare and the NHS in general.

"In an ideal world, patients would be aware of oral hygiene advice is far more important than a scale and if they had the oral hygiene advice then maybe they could prevent themselves from having caries, but that is just not how the British public have been raised. This is not how you see healthcare in general unfortunately. There needs to be, personally I feel there needs to be far more emphasis on prevention, rather than cure, and not just in dentistry." (ABi-02)

4.3.4.3 Regular attenders with good intentions but competing circumstances or priorities Patients for whom oral health care was not a high priority owing to other issues in their life were also discussed. These patients were regular attenders who were motivated but were impeded by their current situation. The issues were said to range from time and economic factors, long-standing patients who may be going through a temporary change of circumstance, to those who may be experiencing mental health problems or addiction which all lower the priority of oral health care. These circumstances were said to sometimes impact on the patients' general care as well as their oral health care.

Links between interest in general self-care and with oral health care were made. Issues in the patients' lives such as ill health, addiction, or mood disorders were all noted to impact

on how people take care of their general health or well-being and their oral health was part of that general neglect.

“You get some people who don’t even look like they wash their clothes and they come in and they’re not particularly clean. So, you think are their teeth going to be a high priority?” (ABi-03)

Lifestyle factors such as being a single mother of a large family or a large change in lifestyle or routine that might negatively impact on how oral health is prioritised. For some patients, these were temporary situations and when the patients’ situation changed, they were again motivated to look after their oral health. Changes in routine from religious observations such as Ramadan fasting were noted to temporarily impact on patients’ oral health routines. Lack of time, or perceived lack of time was mentioned by several participants as a reported explanation for oral health neglect. Physical dexterity issues limited some patients’ attempts to carry out hygiene routines as recommended by practitioners. In these cases, participants explained how they would work with the patient to find the best methods for them. Links with socio-economic deprivation were made by several participants who highlighted the cost of equipment as a potential barrier. For those on low incomes, hygiene equipment may be out of their budget or may not be perceived as a worthwhile use of essential funds. Similarly, the purchasing of healthy foods may be seen as outside their budget.

“Financial constraints, if they find the electric toothbrushes and those interdental brushes are quite expensive. [...] So, you might find that [...] you’ve given them samples and they’ve made them last for three months, but it’s only been a handful. So, you know they’re not working very well anymore.” (CTMi-03)

In some cases, the professional provided additional information on where patients could purchase the equipment at its lowest price for patients who they knew that were on low income.

The importance of working with patients and adopting a holistic view in expectations of patient behaviour change and the potential reasons behind the outcomes was discussed.

“Obviously if they’ve got issues going on in their own lives as well. You’ve only got up to half an hour and then sometimes you don’t get the full picture. I think some people just don’t want to because they think it’s too hard. Some people can’t and some people just forget. There’s a lot of issues and sometimes you don’t get the full picture when you’re with them.” (ABs1-05, DT)

4.3.4.4 Patients with an interest in their general health

Some patients were said to be motivated to look after their general health and having a healthy mouth was part of that. This was said to be possibly influenced by the way they were raised. Participants indicated that these patients rarely required external reward or reinforcement from them after making changes, for patients in this category, improved health was rewarding in and of itself and acted as encouragement to make further changes. It was highlighted that those patients who were engaged with prevention were those who needed the least treatment or OHE intervention. However, while all participants indicated that they would provide OHE to all patients, regardless of oral health or apparent motivation they reported that they enjoyed the opportunity to go into details with patients who were interested.

“If someone is really motivated and really interested, then that’s quite nice and I’m happy to keep on explaining and giving advice until they look bored.” (ABs1-01)

Such patients were said to be mostly already well informed on ways to maintain their own health. In these cases, the patients were seen to be seeking reassurance that their oral health was good and for the dental team member to *“keep an eye on their teeth for them.”* (CTMi-06).

“The people who are health conscious come to you for prevention because they never need treatment anyway. The reason they regularly attend is they like the reassurance of being told they’re healthy and they also like being told how they can stay healthy, and I think you could apply that to loads of different areas of healthcare. I mean, I think if you asked the physio or if you asked the GMP they’d have the same type of thing with their patient population.” (CTMi-07)

4.3.5 Motivating factors and their influence on behaviour change

As well as identifying factors that influenced patients’ expectations and interactions with the general dental team and their OHE attempts, participants also talked of factors that influenced patients’ attempts to follow advised lifestyle or behaviour changes across all patient types.

Participants’ accounts of OHE and patients’ behaviour change acknowledged that making lifestyle changes was not a straightforward process and may be difficult. Reflecting on their experience of working with patients and their own experiences of attempts to lose weight or stop smoking they appreciated that some lifestyle changes were not easy, even with the

best intentions. Various factors were raised that influence patients' motivation and ability to make changes to their oral health care.

"I think it's much bigger than it's made to seem in the education, because I think my education at least was, kind of, focussed on what information you give to the patient. How you're communicating it and then suddenly it's all going to work, and if you can say it just the right way or if you give them just enough evidence then they're going to do it, but that just doesn't happen. [...] I think I've been unrealistic before about how easy it would be for some people to change little things about the way that they do oral health and found that actually no it's more deep-seated than I expected." (CTMi-07)

Greatest time was spent talking about the different motivations or barriers for patients to improving oral health routines and how they related to the different patient "types".

4.3.5.1 Motivated by new information

The acquisition of new information or a new awareness that their current oral health routine was not the best option for their needs was said to motivate some people into making changes. For some who were already motivated to look after their own oral health this new information allowed them to improve existing habits or routines. In others, communicating information in a way that "clicked" with them so that they could newly understand the application to their own life or that tapped into something that motivated them (such as more pleasant feeling or better-looking teeth) was also said to inspire change in previously less motivated patients.

While new information was motivating to some patients, others were noted to be resistant to changes or held firmly fixed beliefs about their current routines. A number of participants were said to believe that their current attempts at oral health care were correct or at least sufficient for their oral health. Although reflecting a minority of all patients, those exhibiting this resistance were said to not predominate in any one age or socio-economic groups. Examples given ranged from a few older patients who were resistant to trying new equipment, to patients who believed that the routine that they had learned from their parents, another dentist, or the media, was the correct way to do things.

“I had some patients who I had problems with them because they thought they knew everything, and they were not willing to listen to me. So obviously clearly as a professional I knew that they were doing something wrong, but they kept saying that they were doing right and then in the end, you know, they were very upset with me because I kept going because I thought that it was the best for them. So, I think nowadays if I feel that they’re a bit, [or] you can feel when they are not comfortable listening to you and then I will stop.” (CTMs1-05)

4.3.5.2 Motivated to avoid further treatment

Several participants indicated that patients sometimes followed advice following an experience of oral disease. For some patients, the experience of problems may have been a shock to them after not experiencing many problems before and the changes are made to avoid it happening again. For others, fear of losing teeth or needing intensive treatment in the future also motivated them to amend their oral health care routines. These motivations reflected an underlying or new appreciation for the importance of maintaining their oral health.

“So, they don’t want to lose any more teeth and just explain to them that they’ve already lost four teeth. If you look after yourself, you won’t lose anymore and that’s quite often motivation for them to continue.” (ABi-02)

Other participants reported patients made changes to avoid experiencing a recurrence of an unpleasant oral health condition or having to undergo uncomfortable treatment after a previous experience. As well as the pain and discomfort of some oral disease, some of the treatments such as periodontal therapy or restorations were noted to be uncomfortable for patients. For this group of patients, change was said to be motivated by attempts to avoid the discomfort of disease or treatment.

“The best advice I can give you is if you don’t like having something done stop the thing that’s causing the treatment.” (CTMi-05)

4.3.5.3 Aesthetics and motivation

The prospect of a declining cosmetic appearance was said to motivate some patients to make changes. Concerns about receding or swollen gums, about bad breath, or tooth loss were said to be facilitators in encouraging patients to improve their self-care habits. Small changes made in practice such as an improved appearance after a scale and polish was said to enhance patients’ confidence and their motivation to keep their teeth looking and feeling good.

“You try and explain the health benefits and some of them do get it, but I think for most of them quite often it’s cosmetic really. So that it looks nicer, and it feels better.” (ABi-02)

Accounts of a minority of patients only brushing the front teeth as they are *“the only ones you need”* to maintain appearances were recounted by some participants as an extreme example of this valuing of cosmetic appearance over oral health. Others described patients who became frustrated when oral hygiene efforts did not lead to whiter teeth.

“The front ones will be clean. ‘I brush them, why are they still yellow?’ I think that the only reason they understand the importance of teeth is cosmetic. They don’t understand any other function of the teeth.” (CTMs1-04)

Patients valuing cosmetic appearance were said to be willing to pay for whitening procedures even when they are experiencing poor oral health and are not carrying out appropriate oral hygiene routines. This was attributed to a lack of understanding and cultural influences in areas of deprivation.

“I think there’s a lot of education, deprived area, and things like whitening is more important to them than brushing their teeth. They lack that understanding of why something as simple as toothbrushing, you know, you need the teeth to whiten them, and they don’t get that.” (CTMi-06)

A desire for instant effects were said to lead patients to the use of non-fluoride charcoal toothpaste, veneers, braces, and whitening kits that they have purchased from social media or have had carried out in beauty salons rather than addressing their underlying oral health.

“They go the beauticians to have the whitening done but they don’t come to the dentist. [...] It’s just about that instant sort of smile, isn’t it, and that instant look about things and they don’t really care what’s going on into these sometimes.” (ABs1-04, DT)

4.3.5.4 Cultural attitudes and expectations of oral health

Participants commented on the cultural expectations of oral health in the deprived Valleys areas to explain a lack of interest in maintaining oral health. Some patients from these communities were said to exhibit a fatalistic approach to their oral health and tooth loss was seen as normal or an expected part of the aging process. This was not a generalised stereotype applying to all people from a certain community, or necessarily a result of being a more deprived area, but it was proffered as a possible reason given to explain patterns in experiences of the professionals interviewed.

This fatalistic approach to oral health was said to arise from patients' experiences of having watched older members of their family experiencing poor oral health or losing teeth. This was said to lead to an external locus of control where bad teeth were something that ran in their family and not something that they could do anything about. Practices passed down by parents such as a lack of a routine of brushing were said to lead to a cycle of lack of motivation that the participants had to overcome.

“When people have babies up in the Valleys it’s all what your mother did. It’s all passed down the generations and what Gran did and things. So that’s what’s so difficult in getting oral health and diet advice more than anything across.” (ABs1-04, DT)

Extractions of primary (baby) teeth in children were a common experience and older patients were also said to be of the mind that tooth loss is a common part of aging. Changing expectations of tooth loss as the result of lack of care rather than as something that happens was another set of cultural attitudes that impeded patient's motivation.

“Lots of patients come in. I mean, I’ve had kids having their teeth taken out and the parents are excited. ‘Oh, your first tooth out’ and you’re like ‘this isn’t a good thing.’ It’s the culture side of that.” (ABi-03)

Poor oral health to the extent of tooth loss requiring dentures was said to be accepted in some of the more deprived communities served. Wearing dentures was seen as a positive move by some as it meant that they would not have to deal with future toothache or other problems that might arise. When faced with oral health problems, extraction was sometimes preferred over involved treatment options or significant lifestyle changes without considering the long-term effects.

“We’ve got quite a wide demographic base. Posh people from [Town] and then the Valleys people. They have much lower expectations and are much happier to be without teeth and have gaps in their mouth which I wouldn’t be happy with, but they are. [...] Whip it out, put a denture in. Not much motivation to try and keep teeth.” (ABs1-01)

4.3.5.5 Relationship with the dental professional

Patients’ emotional affective response to the appointment and to their oral health in general were noted as influencing factors in implementing advice received during the appointment. Having a good relationship with their dentist/DCP was noted as a facilitator in encouraging patients to make positive lifestyle changes. Participants observed how a positive rapport with their patients encouraged trust which in turn made suggesting changes easier. Showing the patient that they cared about their patients’ oral health was claimed to contribute to this relationship. Those patients who were able to make improvements were said to anticipate that the dental team would be pleased with their

changes. Again, this indicated the importance of a positive patient-clinician partnership in encouraging self-care rather than a perception of being lectured or “told off” for poor oral health.

“Some want to please me. Some say, ‘you’re going to be really pleased. You know, I didn’t want to let you down’. So, some patients actually care that I care.” (ABi-01, DT)

That some patients do not like dentists or attending the dental practice was also said to be a barrier. Being nervous or uncomfortable during the appointment was acknowledged to potentially impede patients’ attention and therefore retention of advice and information following the appointment.

“Some patients probably don’t like me or like the dentist in general. It’s part of the day job to be told ‘I don’t like you’ or ‘I don’t like the dentist’. So, they’re not going to take your advice very well. There’s not a lot you can do about that. Some of that is down to anxiety. Some of that’s just down to not wanting to be there.” (CTMi-07)

Patients who were very insecure or ashamed of their poor oral health and the appearance of their teeth were suggested to sometimes find making changes to tackle the problem difficult. Some patients were said to avoid tackling their oral health concerns as they cannot face addressing their problems or see it as too much of a task to even attempt.

4.3.6 Patient unpredictability and acceptance of outcomes as motivation for OHE provision

Participants discussed their emotional reaction to the outcomes of OHE attempts in practice, both positive and negative, how they impact on how they view their own efforts, and how they manage these reactions to maintain their efforts.

4.3.6.1 Gaining pleasure from improvement

Some talked of gaining great pleasure when patients follow advice and as a result improved their oral health. Examples were given of patients who had stopped smoking, and those who had improved oral hygiene. These improvements were said to be most pleasing when they happen with patients who they did not think would follow their advice.

“I thought nothing is going to happen and he came back a few weeks later and it was like he’d had nothing wrong with them at all. It was like it was a different person [...] the difference was actually superb. One of the most pleasing results I’ve seen”. (CTMi-01)

It was also acknowledged that such “successes” may not be a common occurrence in practice and so they are particularly pleasing when they happen.

“It’s always nice when you do have that one person that does improve for the ten that didn’t.” (CTMi-02)

4.3.6.2 Frustration and disappointment from lack of behaviour change

Lack of adoption of recommendations were said to sometimes lead to disappointment and frustration for some participants. The attributed reasons for these reactions were a feeling that they were wasting their time with OHE efforts and that patients were needlessly stuck in poor oral health. A description used by several participants was that felt that they were “talking to a brick wall” in their OHE efforts. Repeated efforts at OHE were said to lead to

them feeling like they were giving the same information at every appointment with little to no impact on the patient. This led to them sometimes feeling “*fatigued*”, “*disheartened*”, or “*dispirited*”.

“It just feels a bit that you’re just carrying on saying the same stuff to people and they’re still saying, ‘yes, yes’ and not doing anything about it.” (ABs1-02)

Participants also explained how frustrating and sad it sometimes made them when they saw patients attending with poor oral health that could be prevented or managed. Failure to make relatively small, basic changes such as brushing their teeth regularly, patients who wanted to receive care from the hygienist that they should be doing themselves, or patients who were not progressing with their treatment because of lack of self-care were noted as sources of frustration and disappointment.

“You’re trying to help people and you know they’re not listening, and you have their best intention at heart. Sometimes they come in and you see them, and it can just break your heart.” (CTMi-01)

However, only one participant reported that these feelings impacted on the amount of time spent on OHE, and then only temporarily.

4.3.6.3 Acceptance and shared responsibility

Participants reflected that with experience they had grown to accept that not all attempts at behaviour change will be successful. When they were newly qualified some saw lack of adherence or behaviour change as a reflection of their own efforts or skills at OHE. They explained that with experience, they came to accept that not all patients may be motivated or interested in making changes to improve their oral health.

“I’d just think - typical. (laughs) [...] but now I’m tough and I think well, there’s going to be people that are going to listen and people that just don’t and it’s very difficult to change those. [...] and then if they do, fantastic; give positive praise and all of that and if they don’t, I think okay, well...” (ABs1-06, DT)

Another way was to separate themselves from the outcome by making the point that they had done their job to the best of their ability and could not control the patient once they leave their surgery.

“It’s their mouth at the end of the day. So, you can’t really feel anything towards it. You just try and help them as much as you can.” (ABs1-05, DT)

The knowledge that they had *“done their bit”* by giving information and reinforcing the message helped them to accept that all efforts may not be successful. This appraisal of the interaction emphasized the shared responsibility of patients in looking after their own oral health.

4.3.6.4 Unpredictable patient outcomes and getting it right at the right time

Despite the varying frequency of positive outcome from OHE efforts participants kept up OHE efforts with all patients as the reasons for non-adherence vary for patients.

Maintaining attempts at OHE with patients was said to occur because not all patients learn or retain information in the same way and repeated attempts allowed them to try to find another way to communicate the message more effectively with the patient. Participants also explained that some patients may have tried to make changes but failed to achieve or maintain them for some reason. In this situation, participants talked of working with the patient to find out why it failed and finding another approach. Also, some patients may not

be ready to make changes owing to other factors in their life, but then other things may change in their life that make them amenable to making oral health improvements. With these patients, it was said to be a case of keeping on reinforcing the message until the time was right.

"I think the only thing you can do is just sort of keep saying the same message; reinforcing it and obviously fix any problems that they have and things and then hopefully, over time you'll develop a change in things." (ABs1-03)

Opinions varied about whether they were able to predict when patients were going to make advised changes. Some reflected that they could usually tell which patients would make changes based on their level of interest and engagement in the discussion or with patients they had previously covered the same information with.

"You get quite a good instinctive feeling, I think. You do because sometimes the nurse and I will look at each other and think, 'oh well that fell on deaf ears.'" (CTMi-03)

Others explained how they had had positive discussions with patients who later show no improvement. In contrast there were those who reported pleasant surprises when patients who had looked bored or shown little interest later made changes.

"I don't think you can really tell a lot of the time. I think you've just got to speak to each patient as an individual and then you don't really know what they'll do or what they won't do." (ABs1-03)

Again, participants emphasized how important it was that they keep trying with all patients.

4.4 Summary

The dental professional interview analysis showed good levels of self-reported confidence in OHE knowledge and skills. However, this varied by topic and questions regarding patient perceptions and reactions increased in the lifestyle risk topics beyond oral hygiene (diet, smoking cessation, and alcohol). Which dental team member was the best placed to offer OHE was contested, with issues around time, ability, and status being raised as factors. Opinions were more cohesive on the importance of a team approach that benefits both patients and the running of the dental practices. Time limits arising from the NHS remuneration system were highlighted as a key barrier. These time limits led to adaptations in the content of the OHE message and the method of delivery used with each patient.

Narratives of patients' approach to their own oral health and their engagement with the dental team were organised into four broad patient 'types': those who included oral health as part of their interest in their own general health, regular attenders who were motivated but were impeded by their current situation, regular attenders who placed the responsibility of their oral health with the dental team, and those who attended irregularly and only when they had a problem. Several factors were suggested to facilitate behaviour change such as aesthetic concerns, instances of poor oral health, and a desire to avoid future treatment.

Participants reported great pleasure from seeing patients make positive changes.

Experiences of lack of adherence to oral health advice were initially disappointing and frustrating but adoption of a sense of shared responsibility aided future OHE attempts.

Participants noted that they were "*doing their job*" by giving advice and would keep up attempts with the hope that they could either find the 'correct' way to convey the message

to that particular patient or that the patient's circumstances would change, and they would eventually be receptive to advice.

5 Findings from interviews with patient/public

In order to provide some context for the later data analysis, this chapter opens with a description of the demographics of participants who took part in telephone interviews in both the two case studies and in the HWW-recruited interviews. A summary of the themes generated from the patient interview data is then provided.

5.1 Summary of participant characteristics

5.1.1 All participants

In total, 87 patient/public interviews were conducted and analysed. A total of 23.49 hours of interview data was gathered, with an average interview length of 16.25 minutes (minimum: 5, maximum: 42 minutes). The average age of the participants was 61 years with a mode age range of 65-74 years (n=39). There were no participants in the 18-24 age range across any of the participant groups. A total of 34 males and 53 females were interviewed. See Table 5.1 for a summary of the age and gender ranges for each participant recruitment group.

Most participants attended their practice regularly for appointments at either every six or 21 months. A minority attended their dentist every three months for treatment of gum disease. One in the case studies was on their first appointment for many years. Most of the HWW interviews had not seen a dentist for some time owing to Covid-19 although a minority had had appointments for emergencies or had paid privately for an appointment.

Table 5.1: Participant ages and genders

Age range	AB1	CTM1	HWW	Total
25-34	0	3	2	5
35-44	0	2	3	5
45-54	2	2	8	12
55-64	2	1	14	17
65-74	3	2	34	39
75 and over	3	0	4	7
Missing data	-	-	2	-
Male	3	5	26	34
Female	7	5	41	53
Total	10	10	65	85

Thirty-nine participants had seen a dental hygienist or a dental therapist. Twelve of those reported seeing one “regularly”; eight saw them every three months, one every four months, two every six months and one noted that it was when they also saw their dentist. Some had previously seen a dental hygienist or dental therapist at their current practice, but the person had left the practice and they had decided not to, or had not been able to, visit an alternative. Some reported seeing one at a previous practice but not since they moved to their current practice. One had only seen them once for cosmetic reasons (a scale and polish before an important event). For a detailed summary of each participant see Appendix 14.

5.2 Themes from the patient interviews

This section explores themes common across the patient participants’ accounts. The section opens with a summary of participants’ recollections of OHE that they have received and their views on the appropriateness of discussing topics such as oral hygiene, diet, smoking and alcohol during their dental appointments. The theme of trust in the expertise and status of dental team members, and how this varies by dental role, is then explored. This is

followed by an explanation of participants' views on their responsibility for looking after their own oral health and how this links in with the dental team. The importance of the dental team members' communication skills in building rapport are followed by a summary of participants' insights into how being a private or NHS dental practice influences or constrains the care provided. The chapter closes with patients' reflections on changing dental care experiences and oral health influences across their lifetime. Table 5.2 outlines the patient participants' themes and subthemes.

5.2.1 Recollections of OHE

A minority of all participants could not recall being given any oral health education (OHE) or general advice on looking after their teeth or mouth. This lack of feedback led them to believe that their current behaviours were adequate and could not be improved upon.

"I think I'm doing the right thing because you know I don't really get any advice very often, really". (AB1-16)

Some reported receiving reassurance that their current oral hygiene efforts were sufficient and to just maintain their routine.

"My view very much has been, so carry on doing what you're already doing. You're doing okay." (ABp-01)

Others commented how the advice is rarely new information for them but recognised that it was reinforcing the information.

"Well, it's basically just what I know already, but okay I suppose it was a reminder for me." (ABp-02)

Table 5.2: Overview of patient themes and subthemes

Theme	Subtheme(s) 1	Subtheme(s) 2
5.2.1 Recollections of OHE	5.2.1.1 Oral hygiene 5.2.1.2 Diet 5.2.1.3 Alcohol and smoking 5.2.1.4 Other topics	
5.2.2 Trust in dental “experts”	5.2.2.1 Seek information from other sources but check it with the dentist 5.2.2.2 Preference for OHE from dentists or DCPs - different expertise by role	
5.2.3 OHE as compliance or shared responsibility		
5.2.4 Psycho-social influences on oral health behaviour	5.2.4.1 Personal motivations	5.2.4.1.1 Linking oral health with general health 5.2.4.1.2 Desire to keep their teeth 5.2.4.1.3 Appearance 5.2.4.1.4 Making the effort versus laziness
	5.2.4.2 Message-related factor - the “fit” of the advice	
	5.2.4.3 Oral health-related factors	5.2.4.3.1 Avoid more treatment 5.2.4.3.2 Pain and comfort
	5.2.4.4 Dental team and attendance factors	5.2.4.4.1 Respect advice 5.2.4.4.2 Dental appointment-related efforts 5.2.4.4.3 Socio-economic factors 5.2.4.4.4 Covid-19
5.2.5 Communication, rapport, and being treated as an individual		
5.2.6 NHS versus private dental care		
5.2.7 Life course reflections on dentistry/dental care needs	5.2.7.1 Generational and experienced changes in provision 5.2.7.2 Intergenerational transmission of oral health care 5.2.7.3 Timing of advice	

5.2.1.1 Oral hygiene

Oral hygiene was the most frequently recalled topic of OHE. Participants talked of being guided on which equipment to use (toothbrush firmness, electric toothbrushes, appropriate toothpaste, the correct size of interdental brushes, and floss) and how to correctly use them. The use of these was sometimes demonstrated by the dental team member but sometimes explained verbally.

“the last time I went they gave me a lot of tips how to look after your teeth and stuff like that. I’m thirty years of age and that’s probably the first dentist that’s told me how to floss. How you’re supposed to brush your teeth and your gums properly. That’s the first time I’ve been told properly by a dentist how you go about brushing your teeth, brushing your gums, etc.” (CTM1-12)

However, some participants recalled just being reminded to brush their teeth which some put down to the dental team member assuming that they knew the correct methods and not wanting to alienate the patient.

“I think obviously when you get to my age you really ought to know, but maybe they would think it was a bit patronising but I’m sure if I wasn’t sure, or if she didn’t think I knew, she would elaborate.” (CTM1-02)

5.2.1.2 Diet

Around one third of participants reported not receiving diet advice or being asked any questions on the topic during their appointments. Some thought avoiding sweets and fizzy drinks was just common sense and so did not need to be addressed, while some participants talked of not having sugar in their tea or drinking fizzy drinks as they were careful with their diet and so it was not necessary for them. However, most participants said that they would

be happy to discuss it if the dental team member thought it would benefit them or if they saw a need to make changes in their oral health.

“If my teeth reflected the need for sugar control or dietary control then, yes sure. I wouldn’t mind that at all. I view health experts, dentists, doctors, nurses, whatever the case, they’re there to give advice. I wouldn’t be at all upset if someone said, well perhaps you should cut down on sugar or whatever.” (CTMp-15)

Those who could recall being given dietary advice talked of guidance on avoiding sugary foods, avoiding eating sweets between meals, and cutting down on fizzy drinks and fruit juices. This was said to go hand in hand with advice on oral hygiene.

“Well, they ask every time, ‘how often do you brush? Do you brush for two minutes?’ They ask you that every time and you say the same things; that you brush regularly. ‘Do you eat a lot of sweet stuff’, and I’d say no because I don’t and things like that. They’re generally concerned about diet and oral hygiene.” (CTMp-22)

5.2.1.3 Alcohol and smoking

The topics of alcohol and smoking were often raised together and discussed as one topic.

Most participants reported not drinking much and the majority did not smoke. Participants commented that questions about both alcohol and smoking were asked on the pre-appointment medical form. While they reported that dental professionals asked about them again in the appointment the subject was not usually discussed in depth unless their responses required it. Participants also noted that medications are similarly covered.

The majority of participants were accepting of dental team members asking about smoking and alcohol. Only one participant thought that alcohol was more of a “*doctor thing*” and one was not sure how it related to oral health. Smokers accepted that discussing smoking

cessation was an appropriate topic to raise during their dental appointment. One smoker had previously attempted to stop smoking and acknowledged that the time was not right for them to try again but was happy for the dental team to raise the topic with them as they saw smoking-related issues as draining on the NHS.

“Every time I have a check-up, she nags me to stop smoking (laughs)” (CTM1-02)

5.2.1.4 Other topics

A small number of participants talked of being offered private tooth whitening procedures by both NHS and private dental team members but were not interested. A few others raised the topic themselves of whitening or implants to improve the aesthetic appearance of their teeth but were informed that their oral health was not good enough. Other participants noted that they had recently started receiving examinations of their mouth and neck to check for oral cancer and that this was something that had not been raised with them before.

5.2.2 Trust in dental “experts”

Underpinning participants’ accounts was a belief that dental team members are highly trained, knowledgeable, and experts in oral health. Participants based this trust on dental professionals’ lengthy education which was said to indicate an expertise in the subject. Part of this expertise was to monitor their patients’ oral health and repair instances of oral disease. Alongside this, participants talked of dental team members having a responsibility to tell their patients the correct way to look after their oral health.

“They’ve got their own education haven’t they, which we haven’t.” (AB1-08)

They highlighted how they may not have had any guidance on how to care for their oral health by anyone, but the dental team. Previously they may be doing things with the best intentions to try to protect their oral health that were not optimal or may be damaging.

“It’s just making sure they are giving you the correct advice and guidance and just offering that care to you, and then maybe giving more support if needed. If you’re not really understanding what you should and shouldn’t be doing.” (CTMp-30)

5.2.2.1 Check information from other sources with the dentist

Trust in the expertise of the dental team was also evident when participants talked of checking information from other sources with their dentist before acting on it. The first source of information on oral health for many was the dental team, with interviewees reporting feeling able to telephone the practice if they had any queries. Many said that they had not actively looked for information but may have seen information in newspapers, on television, or on a poster in the dental practice. A number mentioned raising the issue of dental implants with their dentist after having seen it online and in the media. A minority had changed habits: changing toothpaste brand or stopping rinsing after brushing after seeing material in the media. If participants were experiencing issues with their oral health, they indicated they would check online first to see if it was something they could manage themselves before contacting their dentist for advice. In these cases, information was sought from the NHS website, BBC health websites, or other trusted sources. Some had been to a pharmacy to enquire about pain relief over a weekend but only as a stop gap until they could see their dentist.

“Well, there are cases on the TV, adverts and sometimes if you really want to find out about something you could look on the Internet, can’t you, and see what they advise.”

That's where we get most information now but whether it's right or wrong that's the question, isn't it, because you don't always know.” (CTMp-22)

Some had family friends who had worked in a dental team and so trusted their advice. Others mentioned that their oral health was not something that they tended to regularly discuss with family or friends and so the dental team were the main source of advice on such matters.

“It's not a topic you talk with friends and acquaintances. If you're drinking coffee somewhere and you'd say 'well, what do you think I should do about my teeth?' I don't think it comes up that topic.” (AB1-02)

5.2.2.2 Preference for OHE from dentists or DCPs - different expertise by role

Many participants who had attended appointments with both dentists and DCPs reported no preference over which role would be best suited to provide OHE. Participants highlighted how all members of the dental team were qualified health professionals and had the expertise to provide accurate advice. In these accounts, having the communication skills to convey advice in a clear and friendly manner were more important than their professional status.

“Anybody that's qualified basically. Whether it be the hygienist or the dentist. As long as they have the knowledge then I'm willing to listen to their advice.” (CTMp-15)

Others were happy to receive advice from any member of the dental team but talked of different roles different expertise in certain topics. For example, while some were happy to get advice from the dental nurse, dental hygienist (DH), or dental therapist (DT) about aspects of oral hygiene (e.g., flossing, plaque removal) they explained how clinical issues relating their teeth were more of *“a dentist-y type thing”* (CTMp-17).

“Well, they both do a different job. I think the hygienist is concerned with getting the plaque or making sure that my teeth aren’t attacked by anything, and the dentist is there to make sure that my teeth kept in good condition. So, they both work as a team.”

(ABp-20)

The extended training of dentists compared to DCPs led a selection of participants to perceive the dentist as the most appropriate person to give OHE advice. While acknowledging that they would not necessarily discount any advice given by a DCP, they expressed a preference for dentists as they were seen as being the most educated.

“To be honest I would have to say the dentist, only because I know the oral hygienists go through qualifications and everything else, but the person who’s got the degree is the dentist. So, if I was going to get advice and stuff, I’d go to get advice from somebody who’s got the better qualification.” (CTMp-27)

Other participants noted that as well as having a longer training, they were the team member that they were most familiar with as they saw them more than the DH or DT. Participants were of the view that dentists had better knowledge of their personal oral health history and a personal relationship whereas they may have only seen the DH or DT once or twice and so did not have the same relationship.

“I just think that because I see the dentist more regularly, I’ve probably got this preconceived mind-set that the dentist might be better qualified, but again I could be entirely wrong. [...] You’ve got that familiarity and there’s just that greater trust element, I think. That’s probably what would lean me towards the dentist more than the hygienist.” (ABp-26)

DCPs' perceived specialism in oral hygiene was given as a reason for them being the preferred professional to provide OHE by some participants. Again, "soft" skills and appointment issues also fed into participants accounts. Participants spoke of DCPs having more time for discussion in their appointments and also being more approachable than the dentist. While appointments with the dentist involve examinations or treatment, DCPs were said to focus on oral hygiene and so presented opportunities to "chat" while they worked.

"The hygienist seems less busy. The dentist I'm just in and out in five minutes. They just seem too busy really. So, the hygienist seems to be the one with the time to talk." (ABp-08)

Participants noted how the different specialties and skills within the dental team and the differing amounts of time available to each role highlighted how OHE should be a team effort.

"I think it's just a whole team thing. [...] That's why you've got different people doing different things within the practice, isn't it?" (CTMp-09)

5.2.3 OHE compliance or shared responsibility

When asked what people should be doing to look after their oral health, oral hygiene measures were most frequently reported (regular brushing, flossing/interdental cleaning, using mouthwash), followed by avoiding sugary food or drinks.

"Well obviously, cleaning your teeth regularly. Flossing and then avoiding having sugary food or fruit juices, etc. in between meals when you're not going to clean your teeth for a little while. That's about it really, I think." (CTMp-31)

A few participants also mentioned cutting down on alcohol or smoking.

Certain participants also went on to explain how looking after their own oral and general health was their own responsibility. The dental teams' role was said to be to educate people about how to maintain their own oral health and supporting them to make positive changes, but it was still up to the individual to take responsibility.

"When you go to the dentist you don't see the dentist. You go and see somebody that's telling you how to prevent you going to see the dentist." (ABp-10)

Others noted that attending the dentist provided reassurance about their oral health and as a back-up if things still went wrong. Their own oral health care attempts were talked of as an insurance to demonstrate that problems had still occurred despite their efforts.

"I go there just as almost a mental check. 'Yeah, they're okay. Carry on'. But I am very much of the mind-set that you have to take responsibility for your own health. You can't just go to the dentist and say, 'well look, I've got a filling there'. 'Well, you've been eating sweets for three years' or whatever. (ABp-01)

Self-care was described as way of demonstrating that they were working in a team with the dental team: *"working together, not against each other"*. (ABp-20) In these accounts, self-care was a way both of showing that they cared about their own oral health and a demonstration of respect for the efforts of the dental team.

"I think just following their advice really and having that respect and just making sure you're...not making it easier for them, but just looking after your teeth so when you do go, you know, you've got a responsibility as well and just that you've cared." (CTMp-30)

Participants showed an active interest in the appointment by asking questions to check whether there was anything that they could improve that had not been discussed, or to clarify any advice that was given.

"I've been given general advice about diet, about how it influences your dental care and your dental health. Partly, initiated by myself as well. Just out of interest really." (CTMp-32)

Other accounts framed their responsibility for self-care by talking of listening to the dental team and doing what they say. Where the previously described accounts spoke of working as a team with the dental team, participants in this group were depicted as led by the dental team; dental professionals were seen as responsible for leading the relationship and giving advice and the patients' responsibility as doing what they were told. Failure to follow advice was said to reflect laziness or a lack of interest in looking after their oral health. While it was still a shared responsibility, the two sides were operating separately with patients somewhat passively adhering to the dental professionals' direction rather than working together as a team like in the other accounts.

"I think as long as the dentist tells you how to correctly brush your teeth and let you know whether you need a filling or whatever, it's down to the person then whether they decide to take that on board and look after their teeth or obviously just ignore what the dentist is saying basically. I think as long as the dentist covers what is supposed to be done to brush your teeth, I think they're doing their job." (CTM1-12)

"Well, I think all they can do ... I mean they've learned; they've studied, they just give you the advice that they know, and you take that on-board ... unless you just don't care about your teeth, then you'll ignore it." (AB1-17)

5.2.4 Psycho-social influences on oral health behaviour

Changes to oral hygiene efforts were the most frequently reported changes that patients made after receiving advice. A selection of participants explained how they are paying more attention to their oral health routines now whereas previously it was “*a little bit slap-dash*” (ABp-29). Taking more care when brushing, adapting their brushing technique, not brushing immediately following a meal, using an electric toothbrush, or using floss or interdental brushes were some behaviours that participants identified.

“I always floss and now use the interdental brushes as well which was recommended by the dentist to try and keep the problems at bay. I still get a little bit of problem but, you know, pay more attention to certain areas with the interdental brushes has helped.”

(ABp-04)

Not rinsing their mouth out after brushing was also frequently noted as something that they had changed about their routine following advice from the dental team.

“As an example, I would always brush my teeth and then rinse it out with water because I thought, obviously, that’s what you’re supposed to do. But they told me that obviously you brush your teeth, and you don’t rinse it out with water. That’s one example they gave me, and no other dentist had ever told me about that.” (CTM1-12)

A few participants also reported making small changes to their diet such as cutting down on sugary snacks, cutting down on acidic food or drinks, or switching from cider to beer. A smaller minority also talked of giving up or cutting down their smoking.

Most participants stated that they had not been given any advice that they had not been able to follow. Many also could not think of anything that would prevent them for making

any changes based on their dental teams' advice. Some commented that the advice was *"just common sense"*.

"No, it all seemed rather practical and achievable really." (AB1-05)

However, barriers that could hinder their own likelihood of following the dental teams' advice were suggested and others reflected on reasons that they thought might impact on other people's adherence.

5.2.4.1 Personal motivations

5.2.4.1.1 *Linking oral health with general health*

Several participants recognised that oral health was important to their general health and reported an interest in maintaining both.

"It is part of my general health, and I don't like the idea of being ill at all." (ABp-01)

Another way oral health improvement was linked with general health was through the self-management of other health issues, e.g., diabetes self-management, or losing weight.

"I think it's a type of self-care, isn't it? It's making sure you're doing the best for your teeth and keeping from not having any problems really." (CTMp-33)

5.2.4.1.2 *Desire to keep their teeth*

A number of participants talked of wanting to keep their teeth. This had slightly different meanings for different participants. Some participants explained how they had good teeth and wanted to maintain their current state. Others had already lost some teeth owing to poor oral health and did not want to lose more and wear additional dentures. Some older participants' talk associated ageing with tooth loss, and they told of older relatives with false teeth and a desire to avoid the same fate as they neared a similar age.

“Because I want to keep my teeth. I’m getting to the age now where I think it might be false teeth soon. So, I want to keep my teeth as long as I can.” (ABp-30)

5.2.4.1.3 Appearance

Various participants did comment that healthy teeth were more important than cosmetic factors. However, for some, improving their oral health was linked to “vanity” and wanting their teeth to look nice as part of a care in their general appearance.

“I’d rather take pride in my appearance and have a smile full of teeth than a smile full of gums, you know.” (CTM1-29)

Others noted how oral health and the appearance of their teeth was a part of how other people view and judge each other and they wanted to avoid the negative judgements associated with poor oral health.

“It’s what’s presented to the world every day in terms of your teeth, your smile, and your face.” (ABp-01)

5.2.4.1.4 Making the effort versus laziness

Motivations for making recommended changes were sometimes discussed in terms of individual attributes, i.e., making the effort to find time for new behaviours or laziness.

Participants acknowledged that sometimes people can be very busy, and it required great effort to carry out the full range of oral hygiene routines when tired. Others attributed lack of adherence to laziness, some when accounting for their own behaviour and some as explaining others’ actions.

“I suppose laziness really. You know, sometimes I’ll do it for a little while and then it kind of lapse back, like even now when I guess I’ve got access to a dentist if I really needed it

because they're open. Then I'm not as frequent with the flossing now as I was two months ago." (ABp-31)

5.2.4.2 Message-related factor - The "fit" of the advice

Gaining a better understanding of what they should be doing, and why, was also highlighted by some as a motivation for following advice. However, some participants spoke of how their own evaluation of the information and the potential impact of the changes would influence their willingness to make changes. While mostly recognising the importance of following advice, participants also reflected on what might influence their decision.

"The only thing that would prevent me doing something was if I didn't want to do it; you know"? (laughs) (AB1-13)

If the advice necessitated a major change in their lifestyle, then some said they would consider the costs versus the benefits of making the change. This was talked of in terms of both the size of the required lifestyle change and the impact that the change would have on their lifestyle and relationships.

"No, I got the teeth out instead. I do like a bit of cake." (CTM1-16)

Participants explained that the message had to be communicated in a way that convinced them that the changes would be beneficial to them.

"Well, if I had it explained to me what they want me to do. You know, if they can sell it to me, I'll do it, but if I can't see any benefit to it, I wouldn't." (ABp-31)

If the advice did not make sense to them, they were not sure why it was being advised, or were not convinced that it would benefit them then they were also less likely to try it.

“It wouldn’t preclude my considering whatever it was, but sometimes you do get advice that is wrong. For years and years, I’ve always had eggs for breakfast, and they weren’t so great when the whole country were all against eating eggs and saying, how they were bad for you, and now it’s swung and they say eggs are very good for you, and you can’t have too many. So that’s just an example of how things are not always right”.

(ABp-07)

With regards to the content of the advice, participants indicated that they would be less likely to make changes if the advice contradicted something that had previously been working well for them. Similarly, conflicting advice from different dental team members was discussed by some as something that influenced participants’ adherence. Differing recommendations for treatment, and for cleaning equipment or techniques were said to lead to participants falling back on personal preferences.

If participants perceived that the dental team were recommending using something just to sell equipment in the practice, then participants were also less likely to attempt changes.

5.2.4.3 Oral health-related factors

5.2.4.3.1 Avoid more treatment

A few participants explained how they had previously experienced problems with poor oral health and wanted to avoid more treatment. Some recalled experiences of long courses of treatment in secondary care (dental hospital), undergoing uncomfortable treatments (fillings), or the trauma of losing teeth at a young age which all spurred them on to make

changes to their oral health care. Participants recognised that they had needed less treatment the more they took care of their oral health.

“My teeth aren’t awful but they’re not what they could be, and I just regret that massively. If there’s one thing in life I could, if I won the Lottery, would be to have my teeth done lovely and have them beautiful. If I could ever win the Lottery that’s what I would have done. My teeth. Not a car. Not a house. My teeth.” (ABp-11)

5.2.4.3.2 Pain and comfort

An increased level of comfort or absence of pain arising from self-care were talked of as reinforcing oral hygiene efforts for some participants. For example, their teeth felt more comfortable without a build-up of plaque, so they were keen to maintain that feeling.

Conversely, people were less likely to follow advice if it was going to cause them discomfort or pain. For example, one participant noted wearing a mouth guard to prevent tooth grinding at night and how they were happy to use it if they were able to drop off to sleep quickly but took the guard out if they could not sleep. Actions that made their gums bleed were said to be off putting for some.

“Like I was talking about when the blood came. Then you stop immediately because you’re inclined to stop, rather than continue. Do you know what I mean? It’s a human nature thing. (ABp-10)

5.2.4.4 Dental team and attendance factors

5.2.4.4.1 Respect advice

Appreciation that the dental team members were trying to help improve their oral health was also given by some as a reason for following advice. Participants acknowledged that any advice was only given for their (patients’) benefit.

“If they’re going to have the decency to tell me something, then obviously I’ll take that on board.” (CTMp-12)

Making recommended changes were said to be done out of respect to the dental team that had offered the advice that would benefit them and that it was pointless going to see them if you were not going to listen to what they said.

“I tend to...if somebody tells me something that it’s for my benefit then I try to listen and try to do what they say. It’s going to save me in the long run.” (CTMp-14)

5.2.4.4.2 Dental appointment-related efforts

Efforts were said to increase immediately prior to, and just after a dental appointment. A minority of participants reflected on attempts to make changes for a short period after the appointment but not maintaining the behaviour long term, despite their best intentions. Participants then adopted the recommended behaviour for a period before their next dental appointment to demonstrate good oral hygiene efforts for their check-up. That the dental team positively commented on their oral hygiene, or at least did not negatively comment, was seen as an indication that this routine was sufficient.

“Yes. I soon fall out of good practice, but then the next time I go I start again. I start off good and then I’m good the week before I go to see her.” (CTMp-02)

5.2.4.4.3 Socio-economic factors

The cost of dental care and the tools required for oral hygiene (specialised toothbrushes or toothpaste, floss, TePes, mouthwash) were suggested as potential barriers for those who did not have the income to support such measures. Participants recognised that treatment is free for those on benefits but reflected that an inability to access an NHS practice in some

areas was mentioned as a barrier for some. Low-income people who do not qualify for free treatment but have little or no surplus income were noted to “*fall through the gap*” in provision.

“There’s always those people that fall through the gap, where they get paid too much to be offered NHS, but they haven’t got a spare thirteen quid either.” (CTMp-27)

A small number of participants questioned why there are costs to see a dentist on the NHS when there are no equivalent fees to see a doctor.

“I know personally I feel the dentist should be exactly the same as a doctor. You should have a dentist. You shouldn’t be paying anything for the dentist, whether you’ve got money to pay or not and it should be part of, full part of the NHS.” (CTMp-27)

Dental teams were said to need to take these differences in socio-economic circumstances into account when giving advice to patients.

“Like they call it the postcode Lottery. It is that and we live in an area where our basic health is going downhill in [UHB] and yet in The Vale it may be very different. The socio-economic factors are going to be different in each area. So, I don’t think one-fit approach will work and I think you have to look at it regionally maybe or by area.”
(CTMp-08)

5.2.4.4.4 Covid-19

Some of the later interview participants (October-November 2020) talked of concern over the uncertainty of when they would next have a dental check-up. They also stated that because of the cessation of regular check-ups and restricted access to appointments that came into effect in March 2020, they were taking extra care of their teeth because their oral health was going unchecked. Others indicated a desire for more information online from

their practice with tips on maintaining their oral health during the suspension of normal operations as well as practical information about the practice. A small number of participants were struggling with an oral health concern but had not been able to secure an appointment; some had telephoned their practice for advice on dealing with an oral health concern.

5.2.5 Communication, rapport, and being treated as an individual

Being treated as an individual rather than just one in a long list of patients was said to be important and aided rapport. Participants valued open communication with an approachable dental team member who took their feelings into account and did not make them feel judged for their oral health issues.

Participants told of how the most important characteristic of the dental professional was being friendly, approachable, and understanding of the patients' circumstances and oral health status. Feeling able to chat with the dental team member in a relaxed appointment rather than made to feel rushed was valued. Some talked of the dentist having cared for several generations of their family and having built a good relationship and rapport as a result. Seeing different dentists at each appointment or only attending once a year were seen by some as slightly hindering relationship development. Having the dental team member take the time to explain everything was valued. Similarly, feeling comfortable to ask questions if they arise, and getting understandable answers made participants feel that they were taken seriously.

“Yes. I have a quite relaxed relationship with my dentist. [...] You trust her. There’s a trust there, especially when you’re lying back in a chair when she’s got some things in her hand. You want to trust your dentist, don’t you?” (CTMp-07)

Expanding on the need to be seen as an individual, participants talked of the need for provision of personalised advice to patients. The dental team were said to need to take the individuals’ current knowledge and lifestyle into account when providing advice.

Additionally, the dental team should adapt their methods of communication to convey the message most effectively to each individual as what works with one person might not work with another.

“It’s not just about...it’s more than their teeth, isn’t it? It’s about the person themselves. So, they have to tackle it in a way that that person is going to take it on board and some people are not very good at doing that. So how they deliver the message sometimes is just as important as what they’re saying. Everybody’s knowledge base is different. So, what you say to one person isn’t going to be the same, and I think sometimes the standard approach doesn’t always fit all.” (CTMp-08)

Previous traumatic experiences or a fear of attending the dentist was also said to impact the appointment. Participants told of putting off attending appointments out of fear but having a dental team member who recognised their nervousness and made the effort to put them at ease was greatly valued. Again, showing compassion and recognising the effort that the patient was making to attend was appreciated.

“So, there’s quite a trust relationship and they know that I hate the dentist. They know that I get really worked up about it and I sit there cringing and they do everything they

can to try and make it as positive as possible, but I think they appreciate the fact that I'm prepared to put myself through it anyway.” (CTMp-21)

Fear of being judged or blamed for poor oral health was an issue for some participants. Participants expressed how being chastised or feeling ‘*told off*’ about their oral health during OHE discussions was off-putting. Such interactions were said to affect their relationship with the dental team member and make them feel ashamed of their oral health when they thought they were doing their best. One participant recalled a negative experience where a dentist spoke to her like she “*was a child*” about toothbrushing. Being told off, or a fear of being told off would make people nervous and less willing to go to attend appointments in the future. Kindness and encouragement were said to be better ways to communicate information and motivate people, rather than criticism.

“When they started to say that my oral hygiene wasn’t very good, I felt quite, well embarrassed really and ashamed. You know, I thought ‘I brush my teeth; I brush my teeth in the morning, I brush my teeth before I go to bed. Why is my oral hygiene not good?’ [...] I thought ‘God they must think I’m really dirty and not a nice person’, kind of thing. That’s how it made me feel, but when somebody actually takes the time to explain the reasons around the oral hygiene and what you can do and why it prevents then it started to make sense, and I thought, ‘well actually this isn’t my fault. It’s because I’ve never known’. I didn’t know.” (ABp-11)

Being given the same information at every time was said to be sometimes annoying but participants acknowledged that there was probably a reason for it. Repetition of advice, if

communicated well, was also spoken of positively as a reminder to keep up oral hygiene efforts.

“Well, I suppose because you’re considered to be a more mature person sometimes you feel like maybe a naughty school kid because you haven’t been cleaning properly, but I just think, well at the end of the day they can see my mouth better than I can. I mean, obviously if they’re telling me that I’ve missed something.” (ABp-29)

Despite noting that the dental team had good technical skills, some participants changed practices because of a lack of rapport with the dentist or other communication issues. Not seeing the same dentist each time was given as a reason for one participant. Others talked of being given vague, impersonal, or confusing advice which led to concerns that they were putting their oral health at risk by not being able to follow the advice.

“It was sort of confusing. I didn’t quite understand the advice given. The relevance of it mainly. I just think he was reading from a script almost.” (CTMp-10)

Dental team members who did not acknowledge or address concerns that the participant was reporting during the appointment (e.g., gums bleeding) were also given as a reason for changing their practice. In these cases, participants moved to other practices (some private practices, and some NHS) where they felt relieved to have their concerns listened to and were made to feel supported.

5.2.6 NHS versus private dental care

Despite most participants being happy with their current care, some NHS and private participants in the HWW-recruited group reflected on the extent to which being NHS

patients influenced the level of preventive advice and general care that they received. Such participants pondered whether the dental team would be more forthcoming with advice or if they would be referred to a DH if they were paying for their treatment rather than being NHS. Participants discussing this difference in provision attributed it to practices being constrained by financial concerns arising from working to an NHS contract. The need to achieve, or remain within, NHS 'quotas' were discussed, alongside a view that NHS dental teams were paid for treatments rather than OHE activities. These issues were said to impede both the opportunity and willingness to do more than essential care e.g., not doing many expensive treatments.

"It's like, 'you're an NHS client. Get on the chair, six months. Yeah, it's all fine. See you in another six months'. 'Do I get a clean and polish this time?' 'Oh no you don't need it'."

(ABp-01)

High appointment turnover during the day was discussed and the feeling of being on a "conveyor belt" of patients with little time for OHE discussion was sometimes given as the reason for leaving a previous dental practice. Others explained how the dental team were willing to engage in discussion with them at the end of the appointment, but participants were aware that there was a waiting room full of patients and did not want to "waste their time" by causing the appointment to overrun.

Short, time pressured appointments were also said to be caused by being an NHS practice. Practices were seen to be having to work hard to try and make money (particularly small practices) and the negative public perception of NHS dentists as oversubscribed and overworked was highlighted by some participants. Similar time pressures were commented on for other NHS services such as General Practice.

“The people there are lovely. They’re really nice, but it’s like fifteen-minute appointments, so you’re in. They do. Then out. I mean, at the end of the day the dentists are...it’s the same with the doctors mind. The doctors are fifteen minutes appointments. They are being dictated to by the money aspect.” (CTMp-27)

Participants perceived private practices as being more profitable. This led some participants to posit that private practices were perhaps giving extra preventive care to justify the extra costs to patients: *“you have what you pay for, don’t you?” (ABp-02).*

Some NHS patients indicated that they were happy to pay for their treatment but were attending an NHS practice as they needed a local practice owing to mobility issues or were on limited incomes. Of those participants who had, or were currently attending a private practice, some reported more referrals to hygienists and more time spent discussing oral health issues. Conversely, others had previously attended a private practice and had seen the DH regularly but did not feel that they benefitted any more than with their NHS dentist. One participant reflected that they may be missing out on some of the NHS health promotion drives as they were seeing a private dentist.

“Again, I suppose if I’m seeing her privately, it hadn’t occurred to me until this moment, because if I’m seeing her privately perhaps the NHS contract doesn’t actually apply to her, in the sense that our relationship is a private one, and therefore even if there are some fantastic health promotion advice in the dental contract in Wales because I’m seeing her privately, it doesn’t apply.” (CTMp-17)

5.2.7 Life course reflections on dentistry/dental care needs

A number of participants' talk reflected their experiences of oral health care across their lifetime and their anticipated future needs. These reflections included comparisons of previous oral health care which they contrasted with more recent experiences. Others discussed historic influences on their oral health behaviour and the timing of advice that was given.

5.2.7.1 Generational and experienced changes in provision

Participants reflected on the oral health care that they had experienced when they were younger. Older participants recalled experiences across the 1950s to the 1970s explaining how they had received little preventive care or OHE and gave accounts of *'old school drill and fill'* dentistry. In these accounts participants spoke of dentists as being *"a bit of a butcher"* (CTMp-16) and dental practices as cold and intimidating places. The equipment used was said to be antiquated and talked of as only being seen in museums now.

Participants recounted how they were not encouraged to look after their teeth, only seeing the dentist when they needed treatment. A number of participants only saw the school dentist that operated out of mobile dental clinic vans. These participants recalled instances of school dentists taking out teeth when they were a child. Participants explained how they did not receive any education on cleaning their teeth and contrasted experiences with modern programmes such as *Designed to Smile* and other activities that include children now.

"I'm seventy-seven and when I first started remembering the dentist it was back in the 50s where you didn't have any preventative dental treatment. If you had a problem your

tooth was taken out and it was gas masks and laughing gas and that kind of thing.”

(ABp-20)

Participants explained that this attitude towards oral health care was reflective of their wider culture as there was little peer pressure or expectation for looking after your teeth then either. Toothbrushing was generally encouraged but there was little understanding of the effects of diet on their teeth or the long-term effects of poor oral health. As a result, there was also little expectation of keeping their teeth.

“I can give you a story, [...] people at twenty-one of my generation - their 21st birthday present was a set of false-teeth.” (CTMp-26)

Other participants highlighted differences in oral health care in more recent years with practices’ ethos shifting towards a more preventive focus during the time they had been a patient there or between different practices that they had attended.

5.2.7.2 Intergenerational transmission of oral health care

Some participants talked of parental influence, usually their mother’s, on their oral hygiene habits and utilisation of dentistry services in their early life. These influences and their outcomes were said to have intergenerational effects for the participants and their families. For some, parental influences encouraged positive oral health behaviours which they carried on into adulthood and later encouraged in their own children. The parental influence was said to be affected by participants’ parents’ own experiences of poor oral health and the level of OHE that they had received.

“my mother [...], because she lost all her teeth at a young age, she was fanatic about our teeth, and it was really, you know, from my mother. She made you clean your teeth, whether you just wanted to skip it or not. [...] I was the same with my daughter, and I’m

glad to say her teeth are beautiful [...] and her young daughter has always been brought up the same.” (CTMp-16)

For others, lack of importance placed on oral health care at an early age was attributed to their parents' lack of knowledge about the importance of oral health. This then led to negative oral health implications for the participant which in turn made them determined to avoid such outcomes for their own children.

5.2.7.3 Timing of advice

Participants talked of either not knowing about how to best look after their oral health when they were younger or did not understand the importance of it. For example, some did not understand the long-term effects of poor oral health and saw restorations as fixing the problem. Participants talked of “*looking back*” and wishing that they had been taught how to best look after their teeth when they were younger and have avoided oral health issues. As such, OHE was said to be something that should be taught early in the lifespan, to young children. Suggestions included having lessons in school to demonstrate good brushing techniques and the importance of good oral health and supplementing this with information on television and in the media.

Participants also reflected on their future oral health needs, noting how advice on self-care and prevention was particularly important now as they are getting older. For these participants, getting older was associated with experiencing more or new oral health problems. Participants anticipated oral health decline as they aged and were keen to receive advice to adjust their current routine to help minimise the impact.

“I think it’s more of a lifestyle and lifetime event advice. ‘So [name], you’re in your 50s now. We notice X, Y and Z tends to happen’.” (ABp-01)

Examples of such issues given were concern about amalgam fillings and the changing needs of cleaning in between teeth and around restorations.

5.3 Summary

The analysis showed that that trust in the expertise and status of dental team members was an important factor determining how the OHE was received and acted upon. This expertise led to patients viewing OHE and sharing their knowledge as a key responsibility of dental professionals. Participants were generally happy to discuss the different topics of OHE but saw some topics as more suitable to certain dental professional roles than others, or even as more appropriate for other health professionals. The importance of the dental team members’ communication skills in building rapport were also vital in their perception of the dental professional and their likelihood of following advice. Being an NHS dental practice was said to constrain OHE opportunities owing to financial, and contract demands. The participants’ own role in OHE was split between viewing it as a shared responsibility and working with the dental team and viewing it as the dental team in control and their role as following advice given. Factors influencing attempts to make changes following advice related to personal motivations, attitudes and the importance placed on their own oral health; the content, potential lifestyle impact and perceived benefits of the OHE; issues around the dental team; and Covid-19. Participants also reflected on the socioeconomic factors that might influence others’ ability to adhere to the advice. The changing importance of their own oral health and their experiences of dental care over their lifespan was also

reflected upon by some. These influences and experiences were said to have a bi-directional generational influence.

6 Application of the theoretical frameworks

This section will present the dental professionals and patients' analysis in light of the COM-B (Michie et al. 2011; Michie et al. 2014) and TDF (Cane et al. 2012; Cane et al. 2015) theoretical frameworks. Tables 6.3-6.5 provide an overview of the dental professional and patient data for the three COM-B domains.

OHE Capability factors including participants knowledge, skills, memory, and decision making and behavioural regulation are summarised in Table 6.3. The influence of Opportunity is outlined in Table 6.4. This includes both environmental and resources domains, alongside the social and interactional opportunity factors. The third table explores the domain of Motivation in OHE provision and behaviour change (Table 6.5).

6.1 Capability factors

Capability factors (Table 6.1) contained two sub-domains in the COM-B (Michie et al. 2011) (psychological and physical) and five TDF (Cane et al. 2012) domains mapped on to these: knowledge, skills, and memory, attention and decision processes mapped onto psychological capability within psychological capability and behavioural regulation and skills within physical capability.

There was more on psychological capability than physical capability discussed by both participant groups. With regards to *Knowledge* and capability, dental professionals reported good knowledge from their training, from CPD, and from discussing the 'softer' OHE communication skills with peers. They recognised that patients may not have had formal

education on their oral health, and this was reflected in patients' accounts of learning their oral health behaviours from their parents first, and only later from the dental team. and New knowledge on looking after their oral health was said to be a motivation for behaviour change by both participant groups.

Within the *Skills* capability, both participant groups agreed on the importance of the dental professional possessing good communication skills. Patients valued advice being conveyed in a clear, friendly, and non-judgemental way. Additional skills evident in the dental professionals' accounts were the ability to manage the interaction, adapting their approach to different patients interactions and to their clinical needs, and maintaining enthusiasm with previously non-adherent patients. *Memory, Attention and Decision Processes* Dental professionals were aware of the attention and memory capacity for successfully retaining information and reported adjusting OHE messages accordingly. In contrast, patients' attributed an inability to maintain oral health efforts to laziness.

Within the Physical Capability domain, *Behavioural regulation* changes to practice included the routine use of the ACORN form when risk assessing patients, in line with the contract reform pilot requirements. Patients were able to identify small changes that they had made to their oral health routines or lifestyles following advice such as adapting their brushing techniques or dietary changes. Physical skills were discussed in terms of dental team members' capability for demonstrating oral hygiene techniques and for patients it was the ability to master new techniques or adapt to new tools (electric toothbrushes).

Table 6.1: Capability (COM-B) factors identified within the results

COM-B Domain	Dental professional	Patient
Capability	<p><i>Knowledge</i> Undergraduate training, post-grad, CPD, company reps, personal experience, and from discussion with peers.</p> <p>Recognition that patients may have had little education on oral health and so need to understand why it is important and how it can be maintained. Patients may be motivated by new knowledge.</p>	<p><i>Knowledge</i> Initially learned from parents, then later from dental team. Learning passed on to own children. Wished they had been told earlier. Perceived learning needs arising for anticipated poor health associated with ageing. New knowledge or greater understanding was motivating for some.</p>
	<p><i>Skills</i> Risk assessment of patients' needs and deciding which needs should be addressed first. Managing the interaction with resistant patients by acknowledging their feelings and creating distance ("<i>just doing my job</i>") to maintain the relationship. Maintain OHE efforts in case they find the appropriate way to motivate non-adherent patients.</p>	<p><i>Skills</i> Dental professionals' communication skills: experiences of lack of advice or poorly communicated advice by dental professionals, which they could not follow. Communication that suggests blame or creates shame for their oral health impeded the relationship and their learning. Friendly, understanding, and personalised communication was valued.</p>
	<p><i>Memory, Attention and Decision Processes</i> Acknowledging limits to patient attention and capacity for recall of information. Providing smaller amounts of information over a series of appointments. Starting with small achievable changes in the area of most need.</p>	<p><i>Memory, Attention and Decision Processes</i> Some noted capability but failure to maintain full-time – attributed to laziness.</p>
	<p><i>Behavioural regulation</i> Using ACORN when performing risk assessments (contract reform pilot).</p>	<p><i>Behavioural regulation</i> Small changes made to oral health routine or lifestyles e.g., brushing technique, sugar consumption.</p>
	<p><i>Skills</i> Capability in explaining and demonstrating hygiene techniques.</p>	<p><i>Skills</i> Learning new oral hygiene techniques e.g., brushing methods, not rinsing after brushing.</p>
	<p><i>Physical</i></p>	

6.2 Opportunity factors

The consensus on the Opportunity factors (Table 6.2) meant that that the domain was much smaller than the other two but represented some of the main influencing factors that underpinned dental professionals' accounts of providing OHE and patients' historical engagement with OHE and dentistry in general.

For dental professionals, *Physical Environmental context and resources* opportunities within NHS dentistry limited their opportunity to provide OHE. Participants talked of how dentistry was shifting to a preventive-focus but how the financial structure of general dental care does sufficiently support this change. The financial constraints influenced staffing decisions and made it difficult to profitably employ dental team members who could share the OHE role (e.g., DCPs). The financial structure necessitated high patient turnover and short appointments limiting opportunity for OHE. The *Social influence* opportunity barrier for dental professionals their view of patients as not interested, reporting resistance to efforts and a cultural lack of interest in maintaining their oral health. A minority of dental professional participants also recognised that financial and social circumstances may also act as a *Environmental context and resources/Physical* barrier.

For patients, the *Social influence* of their learned understanding of the importance of oral health influenced their previous engagement with dentistry. For example, a selection of patients explained how their parents or their school had not placed much emphasis on the need to look after their oral health. This shaped their opportunity to receive OHE as it required a change of perception about the value of maintaining their oral health. There were also talk of *Environmental context and resources* when talking of the NHS dental care as

'struggling' and a questioning whether this limited the dental teams' opportunity to provide OHE, compared with private practices which had to offer more to justify costs. A selection of participants also noted that the financial cost of oral health care and hygiene routines may be a barrier for some.

6.3 Motivation factors

In the analysis of the data in this study the complexity and variation in accounts regarding their own personal behaviours in either providing or acting on OHE advice meant that *Motivation* (Table 6.3) was the largest category of the three. Additionally, both dental professionals' views on their own OHE behaviour and their perceptions of patients' opinions and motivations were coded together which also increased the number of factors within these domains.

The framework again separates *Motivation* into two forms, *Reflective* and *Automatic*. The *Social/Professional role and identity* maps to both domains. Within the *Reflective* domain, dental professionals' saw OHE as a key part of the dental professional role but also perceived status differences across the different roles within the dental team. Some participants questioned whether patients' saw lifestyle questions and advice as an intrusion or as outside their role. Patients reported a view of dental professionals as 'experts' on all matters of oral health. However, they also reported variations in the perceived specialities of different dental roles. Within the *Automatic* domain, dental professionals discussed a desire to make greater use of teamwork to share the load and wanted to optimise the training and skills of different

Table 6.2: Opportunity (COM-B) factors identified within the results

COM-B Domain	Dental professional	Patient
Opportunity	<p><i>Social influence</i> OHE activity greatly influenced by patient response. Activity is adapted according to patient response, e.g., resistance or lack of interest. Use of medical forms/ACORN to raise the topic.</p>	<p><i>Social influence</i> Little importance placed on oral health in the past and expectations of oral health declining with ageing. Social pressure to have good looking teeth.</p>
	<p>Recognition of patients' cultural attitudes towards oral health: some see tooth loss as acceptable and inevitable; not understanding the importance of oral health for wellbeing, only as functional or cosmetic.</p>	
	<p><i>Environmental context and resources</i> Macro: Shift to a preventive-focus in dentistry which is not supported by NHS funding. Meso: high patient throughput and short appointment times. Impacts on staffing decisions e.g., DT/DHs and upskilling DNs. Micro: differing ways of fitting OHE in around the appointment time and influencing the content and delivery of the OHE messages. Adoption of a team working model with OHE delegated to DT/DHs instead of the dentist. Availability of demonstration equipment.</p>	<p><i>Environmental context and resources</i> Perception of NHS dental care: struggling to meet quotas and the influence this has on care provision compared to private. Conveyor belt of patients and clinicians prioritising intervention over prevention for financial reasons. Financial outlay for check-ups and equipment may be too much for people on limited budgets. Concern whether lack of examinations during Covid-19 restrictions were impacting on their oral health.</p>
	<p>Acknowledged that some patients' personal and socio-economic factors inhibit opportunity for oral health self-care. Maintenance of OHE efforts in case the patients' circumstances change.</p>	

roles within the dental team. Patients reported two different expectations of care from their dental team. Some wanted to be given advice that they could follow whereas others were motivated to work with the team to improve their oral health.

In the domain, *Beliefs about capability*, Dental professionals reflected that they had good confidence in their OHE skills but were sometimes less confident about discussing lifestyle risks such as alcohol and smoking. Patients viewed the advice that they had previously received was mostly realistic and achievable. *Optimism* and *Belief about consequences* seemed to follow a similar path in the analysis. Within both domains the dental professionals' findings explained how they had confidence in their own skills but were not always confident that patients' would make the recommended changes. They also noted that some patients had previously surprised them with unexpected positive outcomes and this unpredictability of patient adherence motivated them to provide it to all. Patients' accounts did differ across the two domains. Within *Optimism* the data indicated that they were motivated to make changes as they believed advice from a dental professional would benefit their oral health. In *Beliefs about consequences*, however, the accounts suggested that they appraised the information and the potential benefits compared with the potential costs before making any changes.

Intentions and *Goals* were another two *Motivations* that contained similarly coded information. Dental professionals' talk of the different expectation patients had about their care when attending the dental practice was coded under *Intentions*. Whereas their own understanding of what they wanted to achieve with OHE was coded within *Goals*. Laziness,

Table 6.3: Motivation (COM-B) factors identified within the results

COM-B Domain		Dental professional	Patient
Motivation	<i>Reflective</i>	<p><i>Social/Professional role and Identity</i> Recognition the OHE is a key part of their professional role. The perceived status of different members of the dental team was thought to influence patients’ reception of OHE. Concern about patient perception of them overstepping their role and being intrusive.</p>	<p><i>Social role and Identity</i> Great trust in dental “experts”. Check advice from other sources with the dental team. Variation in perceptions of the status and specialities of different dental roles.</p>
		<p><i>Beliefs about capability</i> Good knowledge and good confidence in their communication skills but the levels varied by topic e.g., less confident about alcohol and smoking than oral hygiene and diet. Confidence based on training and experience.</p>	<p><i>Beliefs about capability</i> Most patients saw the advice that they had received as “achievable” and “common sense”.</p>
		<p><i>Optimism</i> Belief that dentistry is changing towards prevention. Unpredictability of patient adherence. Confident in their own skills but less confident in the patients’ ability or willingness to change.</p>	<p><i>Optimism</i> Mostly believed following professional advice would help maintain/improve their oral health.</p>
		<p><i>Beliefs about consequences</i> Unpredictability of patient adherence. All noted that some patients had surprised them. Accepted not all patients would make changes but saw unpredictability as a reason to keep providing OHE to all.</p>	<p><i>Beliefs about consequences</i> Examples of the advice being appraised by the patient and being followed, or not, depending on whether they felt that it would benefit them, whether it contradicted or confirmed previous advice, or level of certainty about whether the benefits would outweigh the scale of changes needed.</p>
		<p><i>Intentions</i> Patients attend the practice with different expectations of care: those who view it as a shared responsibility with the dental team; those who attend for the dental team to look</p>	<p><i>Intentions</i> Some indicated laziness, their own and others, as a reason for not making or maintaining changes.</p>

after their oral health; those who only attend with a problem; and those with good intentions but low capacity for self-care.

Goals

Saw the aim of OHE as to change patient expectations of dental care away from treatment-based, to encourage a shared responsibility for oral health.

Patients: some motivated to change to avoid further instances of oral disease or treatment.

Social/Professional role and Identity

Teamwork used to share the workload and reinforce OHE messages. Optimising the training and skills of different roles.

Reinforcement

Lack of financial incentive from remuneration. Pleasure from patient improvement. Comment on oral hygiene efforts to reinforce messages.

Automatic

Emotion

Pleasure gained from improved patient oral health. Disappointment and frustration from lack of change following OHE efforts. Acceptance of variation in outcomes, based on adoption of a shared responsibility with patients.

The cosmetic impact of poor oral health motivates some patients to make changes. But some so ashamed or anxious about their oral health that they cannot face addressing the issue. The relationship with the dental professional seen as influencing adherence, e.g., wanting to please them with improvements, or feeling “*told off*” during the discussion.

Goals

A desire to keep their teeth; either in their current good state, or to avoid losing more teeth. To avoid needing further uncomfortable treatment. Motivated to maintain their oral health as part of looking after their general health

Social/ role and Identity

Saw the dental professionals’ role as either someone to instruct them and for them to follow their advice (or not), or as someone that they were working with to improve their oral health.

Reinforcement

Perceived that lack of comments or advice on oral hygiene meant that they were correctly maintaining it. Improved comfort levels or easing of pain after better cleaning acted as a motivator.

Emotion

Negative early experiences of dentistry put some people off attending until later in life. Some were nervous of attending, or of uncomfortable cleaning methods. Some took pride in their appearance and the appearance of their teeth.

either when talking about themselves or their perception of others' motivations was coded as their *Intentions*. *Goals* were coded as more active motivations, such as a desire to keep their teeth, to avoid needing further treatment and to maintain their oral health as part of their interest in their general health.

Items coded within *Automatic Motivation*, alongside Social/Professional role identity which is described above, included *Reinforcement* and *Emotion*. Positive *Reinforcement Motivation* for dental professionals included pleasure from positive patient outcomes while a negative influence was the lack of financial reimbursement for engaging in OHE. Dental professionals also noted that they reinforce OHE messages by commenting on patients' good oral hygiene. Patients accounts follow on from this as they reported taking a lack of feedback as indicative that they were doing things correctly. Lessened pain or discomfort also acted as reinforcement for patients' oral hygiene efforts.

Emotion Motivation for dental professionals was boosted by pleasure gained from improved patient oral health but negatively impacted by a lack of change following OHE. Viewing oral health maintenance as a shared relationship with patients and an acceptance that not everyone will or can make changes eased the negative emotional impact. When reflecting on patients' emotions, dental professionals highlighted that patients' feelings about their oral health and the appearance of their teeth can be a motivator for some, but may impede motivations if they are ashamed or overwhelmed. The quality of their relationship with patients' was also said to act as either a motivator or a barrier. Patients spoke of negative memories of early experiences of dentistry, others were nervous of dental appointments,

and others found certain cleaning methods uncomfortable. Pride in their appearance extended to pride in the appearance of their teeth for some patients.

7 Discussion

This study began by exploring the increasing focus on OHE as part of a preventive approach to oral health care and the issues that influence and constrain its delivery. The literature highlighted a lack of understanding regarding dental professionals' and patients' experiences and understanding of OHE in general dental practices. This study aimed to explore how both patients and dental professionals view the provision of OHE in general dental practices. This study adopted a qualitative approach, using case study interview methods and semi-structured interviews (both face-to-face and telephone) to gather participants' experiences and views on oral health education. The interviews investigated what influenced dental professionals' OHE messages and how they delivered them, and how dental professionals' and patients viewed the patients' roles and responsibilities for following advice and looking after their own oral health. Data were analysed using thematic analysis at a narrative level to generate themes which conceptualised commonalities and complexity within participants' accounts and these narratives were then analysed against the TDF domains. In this chapter the frameworks are used to address how the data answer each of the five research questions of this study. The patient and dental professionals' analysis are discussed together to highlight areas of similarity and divergence between the two groups' accounts and how the results fit within the literature. This is followed by a discussion of the methodological implications of the study. The chapter closes with conclusions, recommendations, and areas of future research.

7.1 Answering the research questions using the theoretical frameworks

This section provides a summary of how the results discussed in the previous sections address the study's original research questions. Each question is addressed in turn, with the results outlined and mapped to the frameworks.

7.1.1 How do dental professionals working in general dental practices view their role in the provision of oral health education (OHE)?

All dental professionals spoke of viewing OHE as a key part of their professional role (*Motivation - Social/Professional role and Identity*). The aim of OHE was understood to help change patient expectations of dental care away from a treatment-based view of dentistry, and to encourage patients to accept a shared responsibility for oral health (*Motivation – Goals*). Participants perceived that dentistry was moving more towards a preventive focus (*Motivation – Optimism*). However, they also acknowledged that this preventive focus was not supported by remuneration (*Motivation – Reinforcement*).

Reflecting on a good knowledge of the risk factors addressed in OHE and having confidence in their communication skills, they acknowledged that their confidence varied by topic e.g., less confident about alcohol and smoking than oral hygiene and diet – topics in which they had received less training and experience (*Motivation - Beliefs about capability*). Questions were also raised regarding how patients understood their role in OHE, particularly with lifestyle advice, and voiced concerns about being perceived as intrusive or overstepping their role (*Motivation - Social/Professional role and Identity*).

While gaining pleasure from improvement in patients' oral health following OHE, some reported disappointment and frustration from a lack of change after OHE attempts.

Acceptance of variation in patient outcomes, based on adoption of a position of shared responsibility with patients helped motivate participants to maintain OHE efforts with previously non-adherent patients (*Motivation – Emotion*). This was aided by the unpredictability of patient adherence, all noted that some patients had surprised them, leading to sustained efforts until they communicated the messages in a way that would 'click' with the patient or until the patient was in a position to act on the messages (*Motivation - Beliefs about consequences*).

7.1.2 How do patients view the dental professional and patient relationship in oral health education?

Negative early experiences of dentistry were recalled by some older patients, while a number recounted experiences of poor dental professional communication. These experiences put some people off attending until later in life or until their oral health became a problem. Some patients were generally nervous of attending dental practices, or of undergoing uncomfortable cleaning methods (*Motivation – Emotion*). These emotional responses influenced their perception of dentistry and could be managed and overcome through positive relationships with dental professionals.

Participants reported having great trust in dental experts. Many indicated that because of their expert status they checked advice from other sources with the dental team before making changes (*Motivation - Social role and Identity*). They respected advice that was given

and perceived that lack of comments or advice on oral hygiene meant that they were doing it correctly, sometimes in error (*Motivation – Reinforcement*). Perceptions of the different team members' status and specialities differed, and their own relationship with the dental team (*Motivation - Social role and Identity*). Dentists were seen as the highest status members of the dental team, followed by DHs and DTs. As such, OHE was seen as more appropriate to the role of DHs and DTs by some as dentists were viewed as more suited to clinical work than prevention. In contrast, others respected dentists' higher status and knowledge when providing advice. Role and identity were also evident in participants' accounts of their responsibilities for following OHE advice and looking after their own oral health. While all recognised that it was their responsibility to look after their own oral health, accounts portrayed the dental professional's role as either someone to instruct them and for them to follow their advice (compliance), or as someone that they were actively working with as a team to improve their oral health (shared responsibility).

Dental professionals' approach to patients was a key factor in the patient – professional relationship. Dental professionals who were empathetic, avoided lecturing or apportioning blame, and who treated the patient as an individual were noted to aid the professional relationship (*Capability – Skills*). Patient perceptions of NHS dentistry influenced perceptions of the dental team for some: the perception of dental teams struggling to meet NHS quotas, prioritising treatment over OHE for financial reasons, and of being one of many on a “conveyor belt of patients” (*Opportunity - Environmental context and resources*).

7.1.3 What influences dental professionals' delivery of OHE to individual patients?

The dental professionals' knowledge of the risk factors addressed in OHE influenced their provision. Participants' OHE knowledge was based on their undergraduate and post-graduate training, CPD (both on OHE topics and messages gained from other topics), company reps, personal experience, and from discussion with peers. They noted that patients may not have had much education about oral health before and so needed to understand why it is important and how it can be maintained (*Capability – Knowledge*).

The results of this study underscore how OHE is a highly dynamic interaction, adapting to the influence of context, and the communication between the dental professional and the patient. *Opportunity - Environmental context and resources* operating at different levels featured heavily in participants' accounts of OHE delivery. For example, at the macro level, both participant groups perceived a shift towards a preventive focus in dentistry that are not supported by NHS funding. At the meso level this necessitated a high patient throughput and short appointment times, and also impacted on staffing decisions. A team approach utilising skill-mix was said to optimise the training and skills of different roles (*Opportunity - Social/Professional role and Identity*) and lessen dentists' workloads. Micro level *Opportunity - Environmental context and resources* factors involved differing ways of fitting OHE in around the appointment time and influencing the content and delivery of the OHE messages.

A high level of work is involved in short appointments to assess risk and determine which area of OHE is needed (e.g., cleaning, diet, etc.), how to convey the message during the time available. Dental professionals acknowledged patient attention and capacity for effective recall of information. This led them to provide smaller amounts of information over a series of appointments, starting with small achievable changes in the area of most need to avoid overwhelming patients with too much information or unachievable goals (*Capability - Memory, Attention and Decision Processes*). Alongside these clinical judgements, the dental professional is also judging and adapting the best way to communicate with the patients by 'reading' patients interaction (e.g., resistance or lack of interest) during the appointment (*Opportunity - Social influence*) to avoid disrupting rapport (*Capability – Skills*). The content and delivery of OHE messages were sometimes influenced by a concern about patient perception of them overstepping their role and being intrusive (*Motivation - Social/Professional role and Identity*). In the absence of any need for advice then participants reported still commenting on the patients' oral hygiene efforts to reinforce the message and the importance of maintaining efforts (*Opportunity – Reinforcement*).

7.1.4 How do dental professionals view the patient's responsibility for maintaining their own oral health care and what limits patients from following recommended advice?

As noted in section '7.5.3 *What influences dental professionals' delivery of OHE to individual patients?*', dental professionals acknowledged that patients may not have had much personalised instruction on looking after their oral health before. They also indicated that new knowledge on how to look after their teeth and mouth might motivate some people to

make changes but also noted that this was not the case for all patients (*Capability - Knowledge*).

Patient Intentions (*Motivation*) when engaging with the dental team were also outlined as influencing the way that patients receive and act on OHE messages. Patients attend the practice with different expectations of dental care: the four patient types reflected different motivations for attending dental appointments (*Motivation – Intentions*).

Some patients were motivated to change their behaviours to avoid further instances of oral disease or to avoid the need for further treatment, either out of concern about oral health or because of comfort or pain (*Motivation – Goals*). Emotional factors were also raised as motivators. For example, the cosmetic impact of poor oral health motivated some patients to make changes, while others are so ashamed or anxious about their oral health that they cannot face addressing the issue. The patients' relationship with the dental professional influenced adherence, for example, wanting to please them with improvements, or how feeling "told off" during the discussion can affect the messages taken away from the appointment (*Motivation – Emotion*). Opportunity factors explained how patients' cultural attitudes towards oral health influenced their motivation and how they received messages. Some patients were said to view tooth loss as acceptable and inevitable. Some were said to not view oral health as important for wellbeing (*Opportunity - Social influence*). Patients' personal and socio-economic context factors were acknowledged to inhibit opportunity for oral health self-care, even in otherwise motivated patients (*Opportunity - Environmental context and resources*).

7.1.5 What are patients' reasons for not following recommended advice?

Participants' accounts provided more information on why they do follow advice than why they would not. Motivations such as a desire to keep their teeth in their current good state, or to avoid losing more teeth, and a desire to avoid undergoing more uncomfortable treatment after a period of poor oral health were noted. The interviews included accounts of participants motivated to look after their oral health as part of their attempts to maintain their general health (*Motivation – Goals*). Participants who took pride in their appearance made the point that it included maintaining the appearance of their teeth (*Motivation – Emotion*). Others reported that there had been little importance placed on oral health in the past and therefore had experienced poor oral health and wanted to avoid further decline. An anticipated decline in their oral health as a result of ageing and a desire to tackle it before it happened motivated patient participants (*Opportunity - Social influence*). Following trusted, “expert” dental professionals' (*Motivation - Social role and Identity*) advice was accepted as a way to achieve these goals (*Motivation – Optimism*). Conversely, the fact that their oral health was going unchecked for a period during Covid-19 restrictions led others to make more efforts with their oral health (*Opportunity - Environmental context and resources*).

The learning of new information (*Capability – Knowledge*) and hygiene techniques (*Capability – Skills*) led to patients making small changes to their routine or lifestyle (*Capability - Behavioural regulation*). Lack of comments from the dental team during appointments were taken as an indication that their oral health care efforts were already sufficient (*Motivation – Reinforcement*). Most patients viewed the advice they had been

given during appointments as “*achievable*” and “*common sense*” (*Motivation - Beliefs about capability*). Some appraised the advice regarding whether they felt that it would benefit them, if it contradicted previous advice, or if they were unsure whether the benefits would outweigh the scale of changes needed (*Motivation - Beliefs about consequences*).

A minority of patients indicated that they had improved knowledge and the ability to put some changes into practice but had not maintained them over time – something that they attributed to their own “*laziness*” (*Capability - Memory, Attention and Decision Processes*). “*Laziness*” was also given as a reason for not making changes, either from their own experience or as their perception of others’ lack of change (*Motivation – Intentions*).

However, a minority of both groups of participants reflected that the financial outlay for equipment may be too much for people on limited budgets to maintain (*Opportunity - Environmental context and resources*).

Alongside the content of the OHE messages’ influence on behaviour change, the patients’ perception of the dental professional providing the OHE was also posited as an influence. These included interpersonal factors such as the dental professionals’ communication skills (*Capability – Skills*). Patients recounted experiences of poorly communicated advice by dental professionals, which they could not follow. As reported earlier, communication that suggested blame or created shame for their oral health impeded the patient’s relationship with the dental professional and their learning. Instead, friendly, understanding, and personalised communication was valued. A minority of patients explained how fear or anxiety regarding the dental appointment impeded their learning (*Motivation – Emotion*).

7.2 Views on the provision of OHE in general dental practices

Both dental professionals and patients saw OHE as key to the dental role. Dental professional participants saw OHE as encouraging patient self-care as part of their clinical duty of care. Patient participants also saw advice as a responsibility of the dental professional owing to their expert status acquired through their training. Patients noted that while they were carrying out actions with the best intentions for improving their oral health, they did not always know if they were following the courses of action correctly if no one had discussed it with them. Lahti et al. (1995) suggest that patient concern about whether they were performing self-care currently could be overlooked by those dental professionals who take for granted patient knowledge, and therefore do not raise the topic.

Dental professionals highlighted that they saw their role in OHE as helping patients to understand that the focus of oral health maintenance lay with the patients and not with the dental team. Alongside the provision of self-care advice, OHE activities aimed to change patient attitudes to encourage a sense of shared responsibility and self-efficacy in patients to help them to look after their own oral health. This was reflected in talk of encouraging patients to accept that they were responsible for their own oral health in their everyday practices and not the dental professionals who only saw them briefly. Accounts mirrored Wilson and Mills (2020) view of the dental team as *“occasional visitors in patients’ lives to support and encourage them to practise effective, daily oral health maintenance”* (p.20).

The OHE advice was also intended to encourage a sense of self-efficacy and to dispel fatalistic approaches towards having a sense of no control over their oral health.

Encouraging self-efficacy is in line with the drives towards preventive dentistry and Prudent Healthcare (e.g., General Dental Council 2015; Welsh Government 2018a). However, Garthwaite and Bambra (2017) caution that what some professionals “*see as fatalism or a low locus of control are revealed as realistic assessments of the limited opportunities people have to control their lives*”. Dental professionals in this study were found to vary their approach to patients and recognised the competing priorities that some of their patients lived with.

Analysis of dental professionals’ accounts generated four ‘types’ of patients and their differing approach to dental care and prevention. These included patients who viewed maintaining their own oral health as part of their interest in their general health (*‘Patients with an interest in their general health’*), patients who attended their appointments for the dental team to monitor their oral health and intervene when needed (*‘Regular attenders for monitoring and maintenance’*), patients who attended appointments regularly but who were currently limited in their capacity to look after their oral health (*‘Regular attenders with good intentions but competing circumstances or priorities’*), and patients whose main contact with the team was for treatment of oral problems (*‘Problem-focussed irregular attenders’*).

Although dental professionals talked of patients’ different expectations of care and attendance patterns, patients’ accounts confirmed that it was their responsibility to maintain their own health. A large-scale national survey of patients’ views on the NHS indicated that 65% of participants saw maintaining their health as their own responsibility

rather than the responsibility of the NHS (7%) (Wellings 2017). This was a survey on views on the NHS in general, rather than dentistry specifically and obscures some complexity of opinion regarding the different healthcare services. In this study, patients' different approaches to their own responsibility hinged on how they viewed their relationship with the dental team in working together to maintain their own oral health. All patient participants acknowledged that looking after their own oral health was their responsibility, but participants saw their role as being active in working with the dental team (shared responsibility), as their responsibility to follow the advice given by the dental professional leading their care dental professional's advice (adherence) or saw it as their responsibility to listen to advice and follow it if it was acceptable or if circumstances allowed (periodic adherence).

Table 7.1 outlines the dental professionals and patients' views of patient approaches to dental and self-care.

Similar difference in dental professionals' patient types were evidenced in the literature. Finch et al. (1988) described participants' different expectations of dental attendance and Riley et al. (2006) described four attitudes towards dental care (see Chapter 2.3 for a full description). The "*active*" patient group found by Finch et al. (1988) and the "*favourable attitudes about dental care*" (Riley et al. 2006) broadly map onto the dental professionals' accounts of "*patients with an interest in their general health*" group in this study as they all were all said to show positive attitudes towards preventive dental care.

Table 7.1: Summary of views of patient ‘types’ and personal responsibilities

Dental professional	Patient
<p>Patient “types”:</p> <ul style="list-style-type: none"> • <i>Problem-focussed irregular attenders</i> <ul style="list-style-type: none"> • those who only attend when experiencing pain or other oral health problems • <i>Regular attenders for monitoring and fixing</i> <ul style="list-style-type: none"> • those who attend regularly but place more emphasis on the dental teams’ efforts to maintain their oral health rather than their own • <i>Regular attenders with good intentions but competing circumstances or priorities</i> <ul style="list-style-type: none"> • those who were or who had previously shown an interest in maintaining their oral health but who had psychological or lifestyle issues that currently impeded efforts • <i>Patients with an interest in their general health</i> <ul style="list-style-type: none"> • those who include good oral health care as part of their general interest in health and well-being 	<p>Patient approaches to personal responsibility:</p> <ul style="list-style-type: none"> • Taking care of their own oral health working in active partnership with the dental team (<i>Shared responsibility</i>) • Listen to and follow the advice of the dental expert (<i>Adherence</i>) • Listening to and following the advice of the dental expert when it suits or when circumstances allow (<i>Periodic adherence</i>)

Patients who view attendance as an “*insurance policy*” and those who mainly attend out of habit (Finch et al. 1988) show some similarities with the dental professionals’ “*regular attenders for monitoring and maintenance*” as they reflect positive views of dental care but a more passive personal approach by relying on the dental team to lead and direct their self-care. “*Frustrated believers in dental care*” (Riley et al. 2006) were also said to only attend when experiencing poor oral health and had lower preventive interests which matches the dental professionals’ “*problem-focussed irregular attenders*” patients.

Participants, who were “*pessimistic about personal and professional oral care*” (Riley et al. 2006) were not evident in either the dental professionals or patients’ accounts in this study. This may reflect study inclusion criteria, as study participants were either patients attending

a dental practice and so may have felt an obligation to provide a positive account of their care and their own behaviours or were participants who had volunteered to discuss OHE. Equally, the “*negative attitudes and cost concerns*” type did not map well onto a type in this study. The closest match was “*Regular attenders with good intentions but competing circumstances or priorities*” but this type reflected broader psychosocial and environmental inhibitors rather than the solely financial inhibitors outlined by Riley et al. (2006).

7.3 The dental team and responsibility for OHE

The role in OHE of the different members of the dental team was also discussed. Opinions differed within both analyses regarding which professional group was best suited to carry out OHE in the dental team. Both analyses highlighted the complexity of professional statuses within the dental team and its impact on OHE. Different potential uses of status were suggested, including message communication, appropriateness of topic, and as a legitimiser of messages in a team approach. For example, some patients discussed how certain oral health topics were more appropriate for dentists than DCPs and vice versa, e.g., oral hygiene was seen as more appropriate for DCPs while clinical topics were more appropriate for dentists.

The perceived appropriateness of OHE for different roles reported by participants may either reflect the different perceived specialties of the dentist and DCP roles (Dyer and Robinson 2006), or it may reflect prioritising the status of clinical knowledge over OHE messages. Freeman (1999a) explains that while extensive training equips dental professionals with knowledge and expert status, it also increases perceived inequality in the

dental professional-patient relationship. Thus, not only are DCPs seen as having better OHE skills (Watt et al. 2004; Dyer and Robinson 2006; Jensen et al. 2014), but their greater rapport with patients may also be associated with the perception that the status difference is less marked than that between patients and dentists.

However, it emerged during data gathering that patients were sometimes unsure whether they had seen a dental therapist or the dentist. Particularly in AB1, patients were often told which room to go to or the name of the person they were seeing rather than their professional role. Similar findings regarding lack of knowledge of dental professional roles but also viewing the dentist as the head of the dental team has been noted in other research (Dyer et al. 2013). Dyer et al. (2013) found that patients assumed DCPs were trainee dentists or if they did not know their role, they still entrusted their care to them because they had trust in the dentist overseeing the practice. This raises questions regarding how status is judged during appointments when they are not always aware of the dental professionals' role, and whether this information would influence how they interpret the interaction and messages.

A team approach to OHE was noted to benefit patients and ease time pressures on the dentists. Patients were said by the dental professional to respond well to a coherent team message, something that was supported in the patient interviews. Having clear practice policy around team provision of OHE with transparency on the distribution of key responsibilities and messages was said to aid effective OHE (Watt and Fuller 1999).

7.4 Influences on the dental professionals' OHE messages

Dental professional participants reported engaging in OHE in some form with all participants. Several factors cut across accounts of what influenced the messages conveyed. Participants talked of tailoring the advice based on the patients' clinical needs, practical factors, and the patients' responses during the session. The content of the messages conveyed varied by the scale of the required changes to oral self-care, and the dental professional participants' relationship with the patient. Practical issues such as appointment patterns also influenced the content of advice delivered during time-limited appointments. While this research question was directed to the dental professional participants, unprompted patient participants' accounts provide further insight into the reported influences and actions.

7.4.1 OHE as an undervalued activity

One of the key factors influencing delivery of OHE was how the dental professional was operating in the middle of a perceived bi-directional undervaluing of prevention at both the macro and meso/micro levels. "*Upstream*", the practitioner was said to work within a macro structural system of inadequate remuneration and time pressured appointments owing to the dental contract. This finding is well reflected in the literature (Watt et al. 2004; Dyer and Robinson 2006; Sbaraini et al. 2013; Yusuf et al. 2015). Dental teams are said to liken working under current contract conditions to being on a "*treadmill*" to see a sufficient number of patients to meet their NHS contract (Department of Health 2005; Leggett et al. 2021).

7.4.1.1 Macro-level valuing of OHE

Dental professional participants talked of a changing culture of dentistry from a treatment-focussed service towards a preventive approach, but that implementation was not being supported by the NHS contract. Alongside providing oral health care, general dental practices also operate as a business. To function well for staff and patients, there needs to be a business model that supports the work carried out in practice (McCann et al. 2000; Watt et al. 2004; Dyer and Robinson 2006; Tomlinson and Treasure 2006; Sbaraini et al. 2013). All staff members must be paid and under the current system such a preventive approach was reported as impossible without some financial sacrifice. Like the provision of OHE and prevention, the funding mechanism is considered insufficient to support and encourage teamworking (Gallagher and Wilson 2009). Additionally, staff members who take on more responsibility, such as DNs who undergo OHE certification, would expect to receive a greater salary than other DNs in the practice who had not extended their role. Such additional payment would increase the cost of running the practice.

Mixed results from capitation model studies highlight how financial factors interact with personal and practice influences on clinical activities (Brocklehurst et al. 2020). These findings indicate that removing financial barriers is not enough to solve the negative impact of funding on its own, but without such reform a tension arises between intended and achievable work.

The impact of the practices' contexts as either NHS or private was raised by a section of patient participants. Patients from both NHS and private practices spoke of NHS practices

being under pressure to perform a 'quota' of certain activities to keep up with NHS contracts, prioritising treatment over OHE. The British Social Attitudes survey of patient views on the NHS reported that while 61% were satisfied with NHS dental services (Roberston 2017), 93% of respondents believed that the NHS was facing a funding problem, with 32% seeing the problem as 'severe' (Appleby et al. 2018). The effect of short appointment times, influenced by the funding in place, cut across participants' accounts of OHE in this study and in the literature (McCann et al. 2000; Watt et al. 2004; Dyer and Robinson 2006; Tomlinson and Treasure 2006; Sbaraini et al. 2013; Yusuf et al. 2015). Awareness of the time pressured appointments led patients to want to avoid wasting the dental professionals' time with discussion. Similar findings have been shown in studies of medical lifestyle change discussions (Ashley et al. 2020). The patient interviews supported the avoiding being treated as just one of many on a '*conveyor belt*' of patients, mirroring the view of dental teams as working on a '*treadmill*' (Department of Health 2005; Leggett et al. 2021), or as a "*money making machine*" (Leggett et al. 2021). For some patients in this study, such experiences of hurried, time-pressured care had been off-putting enough to make them change dental practices.

A different take on the impact of finance on dentists' performance was reported by Finch et al. (1988) whose participants perceived dentists as highly paid and therefore attributed high numbers of appointments in tight time schedules as an attempt to earn more money for personal financial gain. This perception of dentists as '*money-grabbing*' was still evident in a recent mixed-methods study with dental professionals and patients (Cowpe et al. 2020). Participants in Cowpe et al.'s (2020) study contrasted patient views on doctors with dentists

where the latter were seen as focussed on profit. As they pay for their care, or contribute to the cost of care, dental patients may see themselves as consumers as well as patients.

Furthermore, the necessity of treatment may be unseen and a relative mystery. Experiences of receiving differing opinions between dentists about treatment was also seen as evidence of attempts to prioritise financial gain over oral health care (Cowpe et al. 2020).

A selection of patient participants in this study questioned whether OHE was offered more frequently and in greater depth in private practices as a way of justifying the extra financial outlay from patients. Again, if patients are also consumers (Cowpe et al. 2020), paying more money for a service may create a tacit expectation of receiving extra care, in this case OHE. An assumption potentially supported by findings of differences in engagement with smoking cessation between predominantly-private and predominantly-NHS dental practices (Csikar et al. 2009) and of longer appointment times for privately-funded dental care compared with NHS-funded appointments (Lynch and Calnan 2003).

7.4.1.2 Meso, and Micro-level valuing of OHE

“Downstream”, at the micro level were the different expectations and value patients who were receiving the OHE and the placed on both their oral health and the oral health care provided in the dental practice. At the micro level, dental professionals also perceived OHE and prevention attempts to be undervalued by the patients. The dental professional participants explained how the key role for the dentist was to teach patients to expect and accept OHE as part of their appointment, whether delivered by the dentists or the DCPs. Dental professional participants desired greater emphasis on prevention from other health

care sectors, reinforced through the media and social media to support patient acceptance of prevention. This contrasts with patient participant reported expectations of the provision of OHE during their appointments. This may reflect the different demographics of the HWW-recruited participants who tended to be older and from more professional occupations but similar findings were reported by a recent study by Leggett et al. (2021). Leggett et al. (2021) reported patient valuing of prevention and a desire for more information and advice on caring for their own oral health from all six European countries involved in the study. In this study, patients viewed the dental professionals as not being interested in providing prevention and OHE.

7.4.2 Managing the OHE interaction

The literature and results highlighted the interactive nature of OHE, involving judgements and adjustments by both dental professionals and patients' during the discussion. In dental professional accounts, participants highlighted how the OHE interaction is more than a sharing of knowledge and motivating patients to make changes. Dental professionals spoke of the work involved in being actively engaged in managing interactions with patients. Examples of this work included introducing OHE into the appointment in an 'appropriate' way, to reading patient responses during the session and adapting the advice given, to modifying their communication to maintain a good rapport with patients. The patient interviews also emphasised the importance of good communication and being treated as an individual. The provision of person-centred care (Asimakopoulou and Daly 2009; Waylen 2017; Nowak et al. 2018) that takes both clinical need and the patients' lifestyle factors into account and adapting methods of communication to the individual patient were all highly

valued and thought to aid rapport with the dental professional. The importance of good communication skills for patients has been widely noted in the literature (Newsome and Wright 1999; Fox 2010b; Stenman et al. 2010; Newton 2015; Waylen et al. 2015) and the provision of personalised advice fits with the movement towards the person-centred care model of dentistry encouraged in Prudent Healthcare (Allen 2014; Dineen 2014; NHS Wales/Wales Government 2014).

Concern over patient response to questions or advice, coupled with a perception that patients may see the interaction as “*being told off*” impacted the dental professionals’ confidence in their OHE skills. For some professionals, the medical questionnaire helped provide an opening for discussion of lifestyle factors that allowed them to anchor questions to an oral health relevance and provided a legitimacy for their discussion. For them, this aided the interaction as it reduced the additional load of having to find an appropriate moment to raise the topic within the appointment that did not catch the patient off-guard. This concern was borne out in the patient interviews where participants recounted negative experiences of feeling blamed or judged. Participants’ concerns about negative communication led some to change dental practice because of the poor communication skills of their previous dentist. The literature showed that patients value dentists who make them feel that their concerns are listened to, that they are reassured, and not felt to be blamed for their oral health status (Sbaraini et al. 2012). The importance of this was recognised by the dentist participants in Leggett et al. (2021).

Patients also spoke of adjusting their interaction based on the dental professional's communication style and their own affective response, which may include shame from a sense of being blamed or anxiety about the appointment (Brennan and Spencer 2006; Sbaraini 2012; Sbaraini et al. 2012; Fico and Lagoe 2018). Shame has been noted to be a particularly social emotion as it involves self-monitoring, concern with how we appear to others, and how others judge us on that appearance (Scheff 2000). Social judgements are made about a person based on the condition of their teeth and mouth, such as their health, wellness, and financial success (Alkhatib et al. 2005; Gregory et al. 2005; Exley 2009; Jamieson 2016) as well as personal attributes such as laziness, intelligence, and education (Moore and Keat 2020).

Owing to the routine professional scrutiny and maintenance that is typical of oral health care (Rousseau et al. 2014), Nettleton (1991) asserts that there are moral associations to the mouth that are not found with other body parts. However, feelings of shame and embarrassment have also been reported in lifestyle interventions with GMPs (Guassora et al. 2014) such as weight management (Malterud and Ulriksen 2010; Malterud and Ulriksen 2011). The processes of shame and blame have been claimed to be tacit in self-management as managing a lifestyle is related to a persons' management of their sense of self (Foucault 1988). A health consultation is a social encounter involving "*negotiations of identity, authority, and knowledge*" (Guassora et al. 2014). When lifestyle issues that are viewed as socially unacceptable (e.g., smoking) are raised or when patients perceive that they are being blamed or judged by dental professionals, shame and embarrassment can arise from this challenge to their desire to create a positive impression (Guassora et al. 2014).

The emphasis on self-management of preventable conditions associated with lifestyle can lead to a moralisation of 'failure' when this is not achieved. The increasing emphasis on shared responsibility has been noted to reflect a neoliberal model of action to 'roll back the state' (Penn et al. 2015). Reflecting market-based values, neoliberal views of healthcare centre around individual choice and the commodification of health care provision (Viens 2019). The shift recentres choice and responsibility onto the individual through policies encouraging 'self-care' (Kay and Williams 2009), but 'under guidance of distant expert' (McNay 2009, p.56). Such moves are often proposed as a way to manage increasing healthcare spending.

This changing view creates the concept of a 'remoralised' citizen who is expected to be autonomous, proactive, and responsible for their own health and choices, and to engage with healthcare when appropriate to avoid costly future problems (e.g., attending dental check-ups) (Ellis et al. 2017). As a result, people feel a moral responsibility to manage their own health conditions to avoid being a burden on the health services (Kendall et al. 2011; Ellis et al. 2017), particularly in an NHS which patients viewed as "*pressured*". This sense of moral responsibility can lead to sensitivity to shame or implied blame during the dental appointment. Rather than motivating people to make changes, feelings of shame or stigma may have the opposite effect (Franklin et al. 2021). Negative feelings may become internalised and gradually weaken the individuals' sense of agency over their condition and what they perceive it is possible for them to achieve in the future (Warin et al. 2015; Manderson and Warren 2016; Hamler et al. 2018; Franklin et al. 2019a; Franklin et al. 2021).

Dental professionals in this study were aware of such patients' concerns and their accounts reflected a desire to avoid alienating patients through poor communication. The interactive nature of OHE went beyond providing appropriately personalised, well communicated advice and spoke of "*reading and understanding*" patients and adapting according to their responses during the appointment. During the discussions, dental professionals reflected that they had observed patients' eyes "*glazing over*" and other signs of resistance or disinterest in OHE. In some cases, this involved focussing on the most important clinical message for that patient and providing this information in the most concise way.

Another method was to adopt a technique of linguistically stepping back from the role and positioning themselves as just "*doing my job*". By taking themselves out of their professional role and, often light-heartedly, noting that it was part of their responsibility to go through this information it allowed them to acknowledge the patient's reluctance but keep going in a way that avoided the interaction feeling like a "telling off". Similar approaches were reported by Lavery and Harris (2020) who found that using terms such as '*I need to*' or '*I have to*' when discussing treatment risk emphasized the obligation of delivering the information rather than framing it as something that they '*wanted*' to discuss (Horlick-Jones 2005). This allowed them to carry out due diligence while distancing themselves from negative feedback from patients that might damage rapport (Bright et al. 2017; Lavery and Harris 2020).

The contradiction of building rapport but maintaining professional distance influenced other aspects of the OHE interaction. The importance of a good relationship with patients was

said to make the OHE discussion easier, in line with the literature (e.g., Stenman et al. 2010; Sbaraini 2012; Sbaraini et al. 2012). However, dental professionals also noted that they had positive interactions with patients who later showed no evidence of making changes based on their advice. Frustration and disappointment were said to sometimes arise from preventable continued poor oral health as wanting to help improve patient's oral health was a key aspect of their role and training.

Watt et al. (2004) and Andersson et al. (2012) both reported on dental professionals' frustration and negative feelings resulting from patients' lack of behaviour changes. These responses may negatively influence dental professionals' enjoyment and belief in the efficacy of OHE, impeding future OHE efforts (Kay et al. 2016). Chambers (2001) reviewed dentists' and dental students' personality and values and concluded that lack of behaviour change leads to dissatisfaction as it threatens dentists' need for control. The review also concluded that dentists preferred situations in which they had an element of power, and for helping others but avoiding mutual dependency. This contrasts with the dental professionals' views expressed in this study. Leggett et al. (2021) found that lack of patient change was demotivating for their dentist participants, but they felt a professional responsibility to repeat OHE messages, while emphasising the patients' need for more responsibility.

In this study, seeing the relationship as a shared responsibility and accepting that patients' oral health outside the practice was out of their control were also adopted as ways of building a rapport with patients but keeping a distance from the outcomes. Instead,

participants retained control over their OHE provision and ensuring that they had “*done their job*” by providing the patient with the appropriate advice to help them manage their own oral health.

7.5 OHE and behaviour changes

Dental professionals’ opinions on whether they could predict which patients would follow advice varied but all noted that they had been surprised by some patients. Kelly and Barker (2016) point out that without knowing the individuals’ relationships and social influences it is very difficult to predict how to anyone will behave. Dental professionals’ explanations for continuing OHE attempts with previously non-compliant patients reflected two approaches. Some participants explained how they kept up attempts to communicate advice to patients in the hope that at some point they may communicate it in such a way that it would resonate with the patient. With this explanation the dental professionals put the emphasis on their delivery of the message and finding a better way to communicate it to the patient. While there is evidence that the way that OHE messages are conveyed have an influence on effectiveness (Kay et al. 2016), focussing on the importance of finding a way to communicate the message ‘*correctly*’ reflects an information deficit approach to behaviour change, privileging the influence of the ‘*expert*’ conveying knowledge which will spur change (Kelly and Barker 2016).

Other explanations focused on the patient readiness to receive the information, either psychologically or because of lifestyle factors. This approach acknowledged the patient’s readiness for change and its effect on their reception of OHE messages (Prochaska et al.

2008) and also takes into account the relationship of social factors and mechanisms impacting on the individual (Kelly and Barker 2016; Bedos et al. 2018). Patients who have expressed a desire to stop smoking and have higher motivation levels are usually more successful than those who attempt after an intervention by a healthcare professional (Borland et al. 2012; Kotz et al. 2013). Therefore keeping up smoking cessation discussions with the patient is important to improve the chances of engage them when they are at their most motivated (Wiltshire et al. 2003).

According to the COM-B model (discussed further in *section 3.1.1.2*), increased knowledge and skills (Capability) and changes in the individual's life that enable them to make changes (Opportunity) have been said to increase Motivation to make a change (Michie et al. 2011). Similarly, patients who were said to be motivated to change after an experience of oral disease or to avoid further treatment may be explained by the transtheoretical model of readiness to change (Prochaska et al. 2008). These patients' may have moved from a pre-contemplative stage to one of active readiness (Prochaska et al. 2008) because of an increased awareness of the importance of their oral health and the negative implications of poor oral health. Freeman (1999a) recommended an appreciation of the patients' stage of readiness to encourage patient behaviour change in a way that enables patients to have an equal say in their decisions.

Explanations that include both psychological and social influences were also given, such as the social implications of the aesthetic appearance of their teeth and cultural attitudes and expectations of oral health were discussed by both male and female participants. As noted

above, interactional factors such as the relationship with the dental professional were seen as influential. Lifestyle and socio-economic factors such as mental health, life stressors, and financial stress were acknowledged to impede motivation for maintaining their oral health (Patrick et al. 2006; Fisher-Owens et al. 2007; Watt and Sheiham 2012; Alkan et al. 2015; Peres et al. 2019).

Patient participants' reported reasons for following advice, or not, showed a good overall match with dental professionals' explanations of their behaviour. For example, wanting to keep their teeth, wanting to maintain their appearance, wanting to avoid more treatment, and out of respect for the dental professional were raised by both groups. Table 7.2 provides a summary of the different barriers and enablers to patient behaviour change.

As in the literature, factors may operate as both barriers and facilitators depending on other individual or context factors (Templeton et al. 2016). For example, the message content was influential for some patient participants. New or improved knowledge was said to be motivating for those already interested in maintaining their oral health. A selection of participants appraised the new information, weighing up the advice against previous knowledge, against contradictory previous advice, and the implications that changing would have for their lifestyle versus the perceived benefits. Contradictory messages from dental professionals or between dental professionals and wider health promotion or advertising campaigns have been noted by patients in UK and Germany (Leggett et al. 2021). Gregory et al. (2012) reported that their older participants were uncritical of health professionals' advice.

Table 7.2: Summary of barriers and enablers for following advice

Dental professionals: Motivating factors and their influence on behaviour change	Patients: Psycho-social influences on oral health behaviour
<ul style="list-style-type: none"> • Aesthetics and motivation (F) • Cultural attitudes and expectations of oral health 	Personal motivations: <ul style="list-style-type: none"> • Linking oral health with general health (F) • Desire to keep their teeth (F) • Appearance (B/F) • Making the effort versus laziness (B/F)
<ul style="list-style-type: none"> • Motivated by new information (F) 	Message-related factors: <ul style="list-style-type: none"> • The “fit” of the advice (B/F)
<ul style="list-style-type: none"> • Motivated to avoid further treatment (F) 	Oral health-related factors: <ul style="list-style-type: none"> • Avoid more treatment (F) • Pain and comfort (B/F)
<ul style="list-style-type: none"> • Relationship with the dental professional (B/F) • Lifestyle and socio-economic factors (B/F) 	Dental team and attendance factors: <ul style="list-style-type: none"> • Respect advice (F) • Dental appointment-related efforts (F) • Socio-economic factors (B/F) • Covid-19 (B)

B – Barrier, F – Facilitator, B/F – both barrier and facilitator.

Patient demands have been observed to have changed over time and the rise of the ‘articulate’ consumer (Harris et al. 2011) in dentistry may mean that patients are now more critical of advice as a result of greater access to knowledge. Appraisal of health information has also been linked to the concept of the ‘active’ patient who makes ‘appropriate’ decisions to improve their social wellbeing (Ellis et al. 2017). However, Cottingham and Toy (2009) reflected that a “postmodern disillusionment” with authority and claims of expertise might lead to experts’ views being questioned and examined for possible attempts at oppression. These accounts of appraisal of information and decision-making by patients are a reminder that individuals bring experience and their own understanding to the OHE interaction. As Dyer et al (2016) noted, acceptability is influenced by previous encounters of

similar care (*'experiential acceptability'*) and its match with patients social principles, values, rules, and regulations (*'social acceptability'*).

As well as offering socio-ecological influences on their views and behaviour, participants also described temporal influences. Patients in this study offered a range of life course-based reflections on their oral health behaviour and the factors that influenced it. Borreani et al. (2010) found similar life-course reflections in their study of older people's oral health understanding. Attending a dental appointment can bring to mind emotions and experiences of previous oral health care (McKenzie-Green et al. 2009; Borreani et al. 2010). For example, negative childhood experiences of dentists have been found to leave long-lasting impressions on the older participants (Finch et al. 1988). This was evident in the 75–84 year old participants for Borreani et al. (2010), in Gregory et al. (2012), and in the older participants in this study. Participants talked of parental influence, usually their mother's, on their oral hygiene habits and utilisation of dentistry services in their early life. The importance of parental influence was also echoed in the dental professional accounts. Outcomes of lack of personal and professional oral health care were said to have intergenerational effects for the participants and their families. Parental and early years influence on oral health behaviours have been noted in the literature (McKenzie-Green et al. 2009; Gregory et al. 2012; Issrani et al. 2012; Vogl 2013; Hernández-Santos and Díaz-García 2021; Leggett et al. 2021).

Family attitudes and observed behaviour and are noted to be the primary influence on an individual's health knowledge (Baric 1977; Freeman 1999b). This reflects the socio-

ecological influence of factors that are closest to us, in this case the meso community of the family. Later, the individuals' scope of influence widens to friends, peers, and schoolteachers during the school years (secondary socialisation), and with wider groups in adulthood through social norms (tertiary socialisation) (Baric 1977; Freeman 1999b).

Tertiary socialisation was also reported to shape dental professionals' knowledge and approach towards OHE. Alongside their professional training, a few dental professionals in this study indicated ongoing learning from colleagues' personal experiences of working with different patients but this was not as widespread as suggested in the literature.

Changing social norms around oral health across the life course were also identified in this study and echoed in the literature. For example, the previous acceptance of dentures at a young age was raised by some participants. Ageing and anticipated oral health needs were also a motivator for some to gain more information and improve their oral health care routines. The socially constructed stereotype of older age's association with loss and deterioration (Hernández-Santos and Díaz-García 2021) have been noted in other studies. Gregory et al. (2012) posited that efforts at maintaining remaining dentition in older age were seen to be pointless owing to the perceived inevitability of their loss with time. This is in contrast with the findings of this study as patients spoke of the need to take extra care owing to an anticipated age-related decline in oral health.

7.6 Methodological reflections

This study adopted a constructivist qualitative approach, using semi-structured interviews (both face-to-face and telephone) to gather participants' experiences and views on oral health education. The constructionist approach emphasizes subjectivity, the importance of social context, and of the social influence on dental professional and patient experiences and behaviours. Several methodological issues were encountered while conducting the study. These will now be reflected on and their potential implications for the study discussed.

7.6.1 Conceptual framework

A socio-economic framework proposes that health and disease are influenced by a dynamic and complex process of environmental and behavioural influences which are themselves moulded by wider socioeconomic conditions (Petersen 2005; Patrick et al. 2006). This conceptualisation was helpful when trying to understand and organise the complexity within participants' accounts. Being able to visualise the micro, meso, and macro circles of influence enabled the researcher to understand the layering of influence generated in the thematic analysis. While the influences identified in the literature review were plotted in a conceptual diagram earlier in the study process (Barnes et al. 2021), attempts to try and amend it in light of the later study findings proved more difficult as the interconnected nature of the influences became harder to separate out visually. Instead, rich description was the only way to express the relationships.

The researcher had slightly similar feelings towards the COM-B and TDF frameworks adopted. In her critique of behavioural change taxonomies, Ogden (2016) cites the danger described by Kuhn (1962) of analysis becoming a 'puzzle-solving' exercise when applying a theory rather than being a 'problem-solving' task. At times, coding the findings using the TDF domains did feel like 'puzzle-solving'. While the COM-B domains were broad enough to make most of the coding relatively straightforward, the TDF analysis involved repeated reading of the domain summary table (Appendix 3) trying to match it to the most appropriate domain to code the section of data when there were sometimes more than one possibility. In the researchers' view coding using the framework without previously conducting a thematic analysis may not have fostered as much insight as arose from the reflexive engagement with the data required in thematic analysis.

A potential lack of clear delineation between the TDF domains has been noted by other authors (Francis et al. 2012). Some aspects of the findings were difficult to fit within the domains. For example, the interaction between dental professionals and patients was coded within the Social influence domain in the TDF within Opportunity in the COM-B. While the findings 'fit' within these domains, the categorisation does not fully account for interaction that involves subtle perceptions and negotiations between the two parties. As noted previously, COM-B and TDF, like other behaviour change taxonomies, are descriptive frameworks and do not descriptive or predict the mechanisms operating between domains (Francis et al. 2009) and psychological constructs may not be coded consistently across studies (Buchanan et al. 2021). Ogden (2016) points out that the 'gaps' in the relationships

between the domains are patient variability and flexibility which can impact the outcome of any healthcare interaction.

The research questions and data gathering methods coupled with the nature of the frameworks meant that a large proportion of the data represented micro/intra-personal factors and as a result, the Motivational domain appears to be the dominant influence. This was followed by mainly meso or social/community factors throughout the domains. In contrast, the macro Opportunity factors represented a small proportion of the coding but underpins many of the other factors for dental professionals.

Studies adopting the COM-B and TDF have mainly used it to explore the behaviours underpinning clinical practice and the adoption of dental guidelines with less focus on individual oral health behaviours (Buchanan et al. 2021). This reflects the researcher's observations that it was easier to code the dental professionals' accounts of their OHE behaviour and the influences behind it, than it was to code the patients' accounts. This might also be because the study was not actually about patient behaviour change, just their reflections on it and therefore it did not capture such information to code.

While the application of the COM-B and TDF frameworks does break the results down into easy-to-understand barriers and enablers, it risks oversimplifying the interrelationships of the three factors and loses the complexity and importance of context. While useful, the domain tables are best used to complement the full thematic descriptions.

7.6.2 Recruitment issues

Early difficulties arose from the recruitment of dental practices for the case studies. A significant hurdle was accessing the practices to seek permission for their participation. Initially, the researcher attended a number of practices to hand deliver a personalised letter for the principal dentist(s). In most cases, the researcher was unable to speak to anyone at the practice other than the receptionist and in some instances the practice managers. In only one practice was the researcher able to speak with the principal dentist, one of the case study practices. As a result, sending a larger number of letters out to practices and following them up was attempted. This resulted in the recruitment of the second case study practice. A change of approach adopted in early 2019 saw the researcher attend training sessions for dental professionals delivered by Health Education and Improvement Wales (HEIW) to briefly speak about the study, answer questions, and gather contact information from interested parties. This approach appeared to be more successful as several practices had indicated interest in participating and the researcher was following-up when the Covid-19 restrictions were put into place in March 2020.

As it was not possible to discuss the study with the principal dentists, then we can only speculate about their reasons for declining to participate. The initial recruitment by letter relied on the principal dentist taking time to read the letter, assuming it had not already been filtered out by the receptionists or practice manager as unimportant. In many health care services, receptionists or practice managers act as 'gatekeepers' negotiating between the demands of the clinical teams and patients and prioritising actions based on importance (Hammond et al. 2013) so research requests may be handled similarly. The later telephone

interviews occurred at a time when workload in practice was lower and so receptionists may have been more willing to allow access to any of the dentists, often Associates, there at the time of the call.

At follow-up calls the researcher was informed of the principals' decisions whether to participate or not and it is therefore unclear whether all letters had been read and in what detail. Personal contact with potential participants at the training sessions may have secured more attention than a letter received at the practice which may be easily discarded. An obvious, and understandable, reason could also be that the practices did not want to have a researcher in the practice who might potentially disrupt their workload. As previously noted, general dental practices have high appointment turnovers and principals may be unwilling to do anything that could potentially disrupt appointment flow. Being unable to speak with the principals personally, the involvement required of participating may have seemed like a much bigger investment than was in reality the case. Another potential reason for declining to take part may have been because they did not want to feel that they were going to be 'checked-up' regarding OHE provision in their practice. The explanation provided and the opportunity for potential participants to ask questions at the training sessions may have more accurately clarified the study's intentions and alleviated some of the concerns regarding the nature and requirements of the study beyond that which was communicated within the letter and information sheets.

It is also a possibility that low participation reflected a lack of interest in the topic or that they did not see the topic as worthy of their time. The perceived importance of OHE and

prevention has been raised several times throughout this study and it is possible that the two practices that participated as case studies were those who viewed the subject as particularly important. That both case studies reported adopting a prevention-focussed practice adds some weight to this possibility. Engaging with two preventive-focussed practices provided insight into how it can work within a general dental practice and the perceptions of the staff working within such a context. However, it also means that we did not have access to the views of staff and patients from practices who are not as preventive-focussed and how they are managing the demands of current drives and movements. The later telephone interviews did however give insight into a broader range of practice contexts.

7.6.3 Sample implications

The changes to the planned protocol mean that a slightly different patient participant sample were recruited. Although a range of data was gathered from the HWW-recruited participants, their accounts represent a specific group of people. As previously noted, the HWW participants were slightly older, volunteered to take part in the study, and voluntarily identified themselves as being from professional careers (a minority from health-related careers). While demographic data was not gathered from the case study patient participants apart from age range, a number were receiving free treatment and therefore we may cautiously infer that this was because they were not in full-time employment or were in receipt of some form of benefits. However, owing to potential variation within each participant group we cannot classify any as representing a particular demographic group and as such it is not appropriate to draw conclusions. If the analysis was looking to draw

generalisable conclusions based on consensus, then there was a potential that the data may be skewed by the slightly shorter, case study interviews and the larger sample of more in-depth HWW participant interviews but the analysis in this study was open to complexity and different positions on the research questions.

Lack of generalisability of qualitative research to other participant groups or contexts is a common criticism. This study aimed to explore individual understanding and practices' and so the generalisability of the findings to all patients and dental professionals was not the intended outcome. Verification methods to add a sense of validity such as triangulation and member checking assume that there is an underlying reality captured within the data gathered which can be correctly accessed by readers (Angen 2000). Such aims are not compatible with the inherent aims of qualitative research. However, this does not mean that messages that will not resonate or be of practical interest even if they cannot be directly applied to the wider population (Bryman 1989; Padgett 2014).

7.6.4 Data gathering method implications

The adoption of a qualitative approach also had implications for the interview data. This research aimed to explore both views on OHE and people's behaviours (provision of OHE and changes made to behaviour after OHE). The research questions adopted in this study explored subjective views and experiences and was not a process evaluation of OHE effectiveness. The findings provide insight into the acceptability and subjective experiences of OHE and adherence, regardless of participants' actual behaviours and outcomes. As such, it must be accepted that the behaviours reported by participants are accounts rather than

objective reporting of activity. Interviews provide participant accounts of the topic, i.e. what people say about a topic rather than necessarily objective reports about behaviour (Green and Thorogood 2018). Therefore, in this study, we again acknowledge that we cannot be sure that behaviours and actions that were reported are an accurate reflection of the participants' oral health care or their clinical provision. However, this study aimed to explore subjective understandings and experiences of OHE and perceived roles and responsibilities rather than an objective study of its delivery and effectiveness. As Braun and Clarke (2013) note, "*qualitative research does not treat subjectivity as a bias to be eliminated from research*" (p21). With these aims in mind, semi-structured interviews were an appropriate method to explore subjective perspectives and experiences (Pope and Mays 1995; Stephens 2007; Gill et al. 2008).

Several method-related factors may have influenced the interview process for participants. Practical issues about the face-to-face interviews with dental professionals, included context issues of being interviewed in their place of work. This may have influenced their accounts and inhibited any negative responses about their dental practice and how it operated. This may particularly have been an issue for the three dental professionals who were interviewed together during the case study where a foundation dentist and an associate were interviewed alongside their principal. This did not appear to be an issue in these interviews as the challenges of working were discussed alongside what worked well, and many participants also worked in other practices and offered comparisons of the ways of working unprompted, but we cannot rule it out completely.

Interviewing dental professionals in the practice also necessitated fitting in the discussions around their clinical duties. Most interviews were carried out during lunchtimes, on breaks, or if a patient had not attended for an appointment. As a result, interviews were often time-pressured with an awareness from both the interviewer and participant of how long it was taking and the emergence of competing interests such as the practice re-opening after lunch break, or notifications that their next patient was in the waiting room. This was a distraction for both parties and may have potentially impeded their immersion in the discussion.

Holding interviews outside working hours may be one way to avoid this distraction but this raises additional practical hurdles of securing times and locations with a similar number of participants.

In the later telephone interviews with dental professionals, dentists, dental hygienists, and the dental therapists were all able to engage in the discussions without the worry of delaying patient appointments. At the time of data gathering, a very small number of patients were physically attending the practice for appointments, so dentists were able to talk without concern about patient numbers building up in the waiting room. The DHs and DTs were not able to work at that time and so were able to take their telephone calls at a convenient time from their home. This led to other potential issues such as disruption from children, partners, deliveries, and so on. While these interruptions happened occasionally, they were not a problem in the interviews and did not seem to disrupt the flow of the conversation. Some participants went as far as to comment that they valued the chance to escape from family life for a while and discuss their work, something that they were missing during the practice restrictions. It is possible that the dentists also welcomed an opportunity

to discuss and reflect on their 'regular' practice during such an unprecedented time. That the telephone interviews with dental professionals both at work and at home were typically of a longer length than those conducted face-to-face in their practice suggests that the conditions were more favourable for in-depth discussion.

Dental professionals being interviewed in a group was also a departure from the planned data gathering protocol. As outlined in the method, the group context can influence the content of data gathered during focus groups and so the group interviews may have gathered slightly different data compared to if they had been conducted one-to-one (Kidd and Parshall 2000; Hollander 2004; Lehoux et al. 2006). Interviewing pre-existing groups has been said to be a benefit in focus groups as participants have shared experiences and an already established rapport and familiarity which facilitates openness in discussion (Gill et al. 2008). That there was some mild disagreement between the dental professionals indicated that there was some ease in talking of such matters within the work team.

However, the issue of hierarchy within the professional roles may have impeded discussion. In both dentist and dental nurse interviews, there were participants who were recently qualified or who were still in training being interviewed alongside more senior members of the team. Interviewing dentists and dental nurses as two separate groups may have minimised some of the hierarchy concerns than if the two groups had been mixed. The role discrepancy may potentially have been more of an issue for the dentist who had only recently graduated and was interviewed with their practice lead. The researcher noted that during the discussions the two other participants asked them whether they had experienced

something they were discussing, and this may reflect an extension of their mentor relationship with the participant. Although the recently graduated dentist appeared to have a good rapport with the other team members the researcher cannot be sure that they did feel completely comfortable in disagreeing with them.

Molzahn et al. (2005) asserts that while interviews are best suited to discussing personal experiences, focus groups are better suited to exploring understandings and opinions about a topic. If that is the case, then the hierarchy of experience may have helped some participants to contribute to the focus groups. Both group interviews reflected a group with very different amounts of experience and hearing from others with more experience may have allowed them to participate in the discussion by commenting on the issue raised by the more experienced team members. Whereas in contrast, they may not have been able to answer such questions in an individual interview if they had not had much personal experience of the situation or phenomenon.

Telephone interviews with patients recruited face-to-face in the case study practices were overall slightly shorter than the interviews with the patients/public who were recruited via HealthWise Wales, and all patient interviews were shorter than the dental professional interviews. In some patient interviews, the responses were offered as short, one sentence answers which the researcher then had to try to prompt more detailed answers out of the participant with follow up questions. On a small number of occasions this only prompted more one sentence answers.

In-depth qualitative interviews are said to typically last from thirty minutes to several hours in length (DiCicco-Bloom and Crabtree 2006). While the dental professional interviews broadly fell within this limit (with some exceptions), the short length of the patient interviews (the shortest was six minutes) meant that some more closely resembled a structured interview or telephone survey than an in-depth interview. Structured interviews limit the range of discussion to the predetermined direction of the interviewers' questions and are more aligned with positivist approaches than constructivist or interpretivist approaches adopted in qualitative research (Askey and Knight 1999). While structured interviews gather information on the required topic of exploration, they do not provide enough discussion for an in-depth investigation of people's subjective views on a topic (Gill et al. 2008). Most participant interviews, while still shorter than the minimum recommended length, did explore topics raised by the participant and not the researcher and so were semi-structured and produced information unanticipated by the researcher. However, they were still far from the in-depth interviews planned in the protocol.

Case study participants were recruited while attending their dental appointment and their being asked to participate in an interview was an unexpected activity. In these instances, while some of those approached declined to participate, consenting to participate may have been done to be helpful to the researcher. Additionally, the HWW interviews were more formally planned with the participants expecting a telephone call at a mutually negotiated time. While the case study participants also identified a time and day to call but it was a much broader timeframe. In some cases, the interviews were carried out with little advance warning with participants who had forgotten they had agreed to be interviewed. It should

be noted that in such instances, the researcher again checked whether they were willing to be interviewed and offered to arrange another time if it was inconvenient, but the majority wanted to do the interview at the time of the call. Recruiting in the dental practice may also have led to participants being reluctant to portray the practice in a poor light, which may explain why many responses were short and affirming their happiness with the care provided. The HWW participants were recruited from a cohort of people who had already indicated an interest in participating in health care research by registering with HWW and were actively looking out for research studies in which they could participate and have their views heard yet some of their interviews were still short. One conclusion could be that participants just did not have much to say about their oral health and their relationship with the dental team.

The influence of the researcher must also be taken into account for the conduct of any data gathering. The researcher has reflected whether greater familiarity with the topic and confidence in conducting the interviews may have lead to variation in the timings. This may of course play a part, an interview is an unnatural situation for both participant and researcher and during early discussions the researcher was also 'finding her feet' with a new study. However, the pattern in timings does not fit with such an assumption. It is also possible that her familiarity with interviewing dental professionals aided her comfort and rapport with the dental professional participants. However, the researcher also has considerable experience interviewing patients from a variety of healthcare settings and felt that she achieved good rapport with many of the patient participants by sharing information about herself (for example, discussing where she was from, what she was studying,

discussing the Covid-19 lockdown, etc.), the presence of humour within the chat, and a 'relaxed' feel to the conversations.

The data that was gathered from the shorter patient interviews still provided an insight into participants' views on OHE but sometimes lacked depth which would allow analysis to fully 'unpick' their accounts beyond a surface analysis. This also limited the researchers' ability to compare similarities and differences in accounts across the different interview contexts, for example between the two case studies or between the case studies and the HWW participants. When analysing the findings the researcher did not find any patterns of differences between any of the patient participant groups or by gender - even after going back to check for variation between groups when all the themes had been finalised and the narrative had been written up.

The overall amount of patient interviews (n=87, 20 hr 20 mins in total) and breadth of accounts provided a great amount of data and allowed insight into a range of viewpoints and understandings. Malterud et al. (2015) introduced the concept of '*information power*' in qualitative research samples where the depth of relevant information is inverse to the number of participants needed. So while the interviews were shorter than anticipated in this study, the large sample still allowed for an amount of relevant knowledge that allowed analysis. Therefore these findings still offer great insight into patients' experiences and opinions on OHE, but some deeper insights may have potentially been lost.

As discussed in the methodology chapter (*Chapter 3.1*), telephone interviews are a method of data gathering that allows participants to discuss potentially sensitive topics with the additional perceived anonymity and comfort arising from the remote nature (Chapple 1999; Carr and Worth 2001; Sturges and Hanrahan 2004; Opdenakker 2006; Vogl 2013). It is also a convenient method for both the participant and researcher allowing increased flexibility in location and scheduling (Chapple 1999; Musselwhite et al. 2007).

However, their remote nature has caused some concerns over its value as a method, for example, issues such as its impact on establishing rapport and the loss of visual communication. In the case studies, initial patient contact and consent requests were made face-to-face, rather than over the telephone. These initial encounters allowed space for some of the rapport-building interactions noted above. However, the researcher still experienced a number of unanswered telephone calls when trying to contact participants and the shorter interview lengths discussed above.

The later professional and patient interviews were recruited and carried out remotely. In the case of the professional interviews, rapport appeared easily achieved through the initial discussion of the study, the informal chat while the researcher set up the recording equipment, and the general 'chatty' nature of telephone conversations. That the interviews took place during and after a period of increased patient telephone consultations owing to Covid-19 may have meant that dentists were used to communicating via telephone through their recent experience of engaging with patients remotely. The familiarity of the telephone

conversation compared with the artificial situation of a formal face-to-face interview may have helped the participants to relax and aided rapport.

In the telephone interviews, the lack of non-verbal cues did not lead the researcher to feel that they were 'missing' out on any information from the conversation. Other cues such as laughter, and tone of voice gave an insight into the meaning of participants' accounts. When a participant paused to think about a question, they often made a noise to indicate that they were pausing for thought ("*ooh*", "*umm*", or audibly exhaling). Different tones of these expressions could give insight into whether they found the question difficult, were being used as a 'place holder' response while composing their answer, or whether it was a topic that they had not thought about before.

In the case studies, the initial face-to-face meeting minimised some of the issues around building rapport. Lack of non-verbal communication during the interview itself required the use of alternative methods to indicate attention and understanding to the participant. While a number of issues have been raised about the use of telephone interviews, telephone and face-to-face interviews have also been found to provide similar quantity and depth of responses from participants (Sturges and Hanrahan 2004; Vogl 2013). Therefore, the adopted qualitative interview methods remain an appropriate and pragmatic method for gathering accounts of individual understanding and normative expectations of professional role and/or personal responsibility for oral health care.

7.7 Contributions and conclusions

This study offers conceptual, empirical, methodological and policy contributions to scholarship in the fields of public management, services marketing, and health services research. The nature of each contribution is outlined below.

7.7.1 Conceptual contributions

While previous research has suggested that patients have a preference for certain dental professional communication styles (e.g., Fico and Lagoe 2018), the results of this study illustrate how OHE should be understood as a highly dynamic interaction for both dental professionals and patients and how this influences the OHE provided to individual patients – both the content and the communication style. This study shows that dental professionals' OHE provision adapts during the appointment according to the influence of the appointment context, and the communication between the dental professional and the patient.

The findings of this study highlight that a large amount of complex work is involved in short, time-constrained appointments to assess risk and determine which area of OHE is needed, how they can fit the information into the appointment time, and how and when to raise the topic with the patient. Alongside these judgements, the dental professional is also 'reading' patients' interaction and perceived interest during the appointment, and adapting their communication of the OHE messages as a result. Participants in this study reported developing a repertoire of stock advice to provide which reduces some of the cognitive load of the task but may be at the expense of provision of personalised advice. On the other side

of the interaction, patients are also responding to the dental professionals' communication style, particularly if it is perceived as lecturing, or suggesting shame or blame. The interaction is open to miscommunication and misunderstanding from both sides, and such instances were noted in the findings of this study.

This study shows how OHE interactions are not something that are easy to slot into patient appointments without adding a sizeable amount of extra work for the dental professionals. Recognition of the range of skills and labour that goes into the OHE interaction would help raise its profile as an activity in dental education and support the call for remuneration that reflects the effort involved.

Although these findings were derived from an exploration of dental contexts, they may share similarities with the provision of self-management interventions in other primary healthcare settings. Education on ways to communicate information to patients and how to use different techniques to motivate change in patients may help clinicians feel confident in their ability to do provide behaviour change advice but it forms only part of the required skills. Many other healthcare professions may not have appointment slots devoted to self-management discussions and so may also have to communicate the messages within a short timeframe while completing other clinical or administrative tasks. The findings of this study suggest that the increasing emphasis on increasing patient self-management interventions within primary care should not underestimate the additional mental and interpersonal 'work' involved for clinicians.

7.7.2 Empirical contribution

When exploring how dental professionals view their role in OHE, the results of this study paint a more positive picture of dental professionals' views than found in the literature (e.g., Leggett et al. 2021), potentially influenced by the fact that many were engaged in the contract reform pilot. This study shows that OHE was indicated to be a key part of the dental professional role and most participants felt confident in their ability to communicate it to patients.

The study also contributed knowledge on how both dental professionals' and patients' conceptualised their own responsibilities within OHE. Both the dental professional and patient participant groups' views on patients' responsibility for maintaining their own oral health broadly matched in that they both acknowledged that responsibility lay with the patient and not the dental professional. Patients' accounts of the dental professional-patient relationship in OHE generally valued a preventive approach, findings which aligned with previous research (Leggett et al. 2021).

Dental professionals highlighted that they saw their role in OHE as helping patients to understand that the focus of oral health maintenance lay with the patients and not with the dental team. Alongside the provision of self-care advice, OHE activities aimed to change patient attitudes to encourage a sense of shared responsibility and self-efficacy in patients to help them to look after their own oral health. However, dental professionals indicated that a proportion of patients were not interested in guidance or were not motivated to take responsibility for their own oral health. Analysis of dental professionals' accounts derived

four patient 'types' based on their varying expectations and approaches to dental care.

While these types aligned somewhat with patient typologies from other research into dentistry (e.g., Gilbert et al. 2000; Riley et al. 2006), these are the first 'types' generated specifically with regard to preventive dentistry.

While dental professionals stated that the aim of OHE was to encourage patient responsibility for their oral health, how patients conceptualised this responsibility varied in this study. Patients who talked of taking an active interest on their oral health in partnership with the dental team (shared responsibility) were contrasted with those who more passively relied on guidance from the dental team (adherence) and those who followed advice if it was acceptable to them or if their circumstances allowed (periodic adherence). While this allied with other research (e.g., Gilbert et al. 2000; Riley et al. 2006), the findings raise questions as to whether this concords with how dental professionals understand the concept of shared responsibility. If shared responsibility more closely matches the idea of patients actively working with the team and being active in the appointment (as portrayed in policy and concepts of patient-centred communication and shared decision making), then patients who are less active during appointments but who later adhere to advice may be incorrectly perceived as lacking interest. It is important that dental professionals, and other healthcare professionals involved in self-management interventions, are made aware of the different approaches that patients may display towards responsibility and adherence.

Regarding perceptions of reasons for not following advice, dental professionals and patients again provided broadly similar accounts. For example, both reported patients wanting to keep their teeth, wanting to maintain their appearance, wanting to avoid more treatment, and factors around the relationship with the dental professional. However, most

explanations from both groups centred on the patients' motivation or disposition compared to the socio-economic factors that influence or constrain health behaviours. Patients' accounts did provide insight into how the topics raised operated as barriers or facilitators depending on other factors relating to the individual which illustrate the complexity of behaviour change.

This study also extends understanding of the emotional impact of the patient outcomes of OHE activities. While previous research has indicated that dental professionals' may feel frustrated or demotivated following 'unsuccessful' OHE interactions (Watt et al. 2004; Richards and Filippini 2011; Andersson et al. 2012), this study highlights the protective influence of adopting a shared responsibility with patients. Acceptance that what happens outside the clinic is subject to numerous, multi-layered moderating influences was suggested to help dental professionals, and other healthcare professionals retain motivation for behaviour change interactions. By accepting the limits of their sphere of influence and appreciating the patients' lived experience, healthcare professionals can reflect that they have 'done their job' by being sure that they have provided the patient with appropriate advice in a supportive non-judgemental way.

7.7.3 Methodological contributions

While COM-B (Michie et al. 2011) and TDF (Cane et al. 2012) have been used in dental research previously, this is the first study to employ the frameworks to explore OHE and to provide a full account of the coded findings. A previous study has explored OHE in general dental practice (Templeton et al. 2016) but little detail was given of the type of barriers and

enablers they found. The authors of the study also encountered issues with applying the frameworks and recommended limiting the focus to small, specific groups or activities. This mirrors the researchers' experiences of coding the dental professionals and patients' findings. This study also demonstrates how employing COM-B/TDF may falsely over-emphasise Motivation factors at the expense of the vital Opportunity factors when coding qualitative interviews which rely on participant accounts. Despite methodological limitations, this study illustrates how the COM-B can be used to distill complex narrative descriptions into more accessible formats . However, the researcher would also argue for the inclusion of a full description of the complexity and interrelationships within the data that cannot be captured by such frameworks.

7.7.4 Policy contributions

While primarily exploring the influences on dental professionals OHE delivery to individual patients the findings of this study also highlight how the encounter is constrained or facilitated by contextual factors. Applying the COM-B model, dental professional participants possessed the Capability and Motivation but were constrained by Opportunity factors (environmental resources and patient social influence). The macro dental system of remuneration shaped the context of general dental provision, and in turn the provision of OHE in practice.

A high throughput of short appointments was said to be needed in order to see enough patients to achieve their UDA contract or to maintain a workable business case, even in those working in contract reform practices. The study also established that a team approach

to OHE was acknowledged as the most effective way to provide OHE by both patients and dental professional, supporting the recommendations of recent Welsh initiatives and guidelines (Public Health Wales 2013; Allen 2014; Welsh Government 2017e). This study provides support to the case for making skill-mix teams more achievable within the NHS to share the workload for OHE without the need for financial sacrifice on behalf of the practice.

Conclusions from the literature stating that funding mechanisms are a significant barrier to providing OHE for some dental professionals and greatly shape its inclusion in appointments by those who do provide it (Watt et al. 2004; Dyer and Robinson 2006; Sbaraini et al. 2013; Yusuf et al. 2015), were supported by the dental professionals' accounts in this study. As noted earlier, this study asserts that OHE and other forms of self-management support involve intensive work and should not be seen as a cheaper alternative to care. Addressing funding barriers would be an essential first step in optimising OHE provision.

There is a fine balance in educating both dental professionals and patients on the wider influences on health behaviour without portraying individuals as powerless over their own actions. Additionally, placing all responsibility for their behaviour on individuals has been noted to lead to a moralisation of health behaviour (Penn et al. 2015) with poor oral health being viewed as a 'failure' and a cause of personal shame. Public health measures are needed to remove barriers for patients in maintaining their own general and oral health, ranging from minimising income-related health inequalities, to widening access to dental care.

In the interim, greater knowledge of the social and structural influences on oral health would assist dental professionals to understand that non-adherence may not be a result of laziness or lack of interest. Understanding of the complex and multi-dimensional influences on behaviour change such as the patient-professional interaction, and the patients' social and economic circumstances may limit labelling patients as non-adherent (Ong et al. 2014; van de Bovenkamp and Dwarswaard 2017; Franklin et al. 2021). Again, there is the caveat that education must not portray patients as powerless and dental professionals must avoid stereotyping certain groups of patients as such. In this study, dental professionals reported remaining motivated to work with previously non-adherent patients owing to the unpredictability of patient outcomes and so emphasising the unpredictability of patient outcomes may be one way to avoid this. For patients, public health messages and interactions with dental professionals that are encouraging without suggesting blame are needed.

7.7.5 Areas of future research

Alongside raising specific implications of these findings for policy and practice, the contributions of this study also signal areas for further research. The insights gained into patients' understanding of oral health and what is important to them could be developed in further research.

The social/environmental influences on behaviour were little reported by either dental professionals or patients, aside from consideration of patients with more significant environmental constraints (e.g., poverty, mental illness, etc). There is still a mismatch

between patient and dental professional perceptions regarding patients' level of interest in self-care, OHE, and behaviour change and a lack of consideration of the social factors that influence behaviour. However, the motivations, and opportunity factors in making changes outlined in this study provide an insight into patients' understanding of oral health and what is important to them. These insights could be further developed in future research to help inform dental professionals' OHE expectations and approaches.

Patients' perceptions of dental professionals' status and its influence during the dental appointment, if any, could be explored further in future research. Patients indicated great trust in dental "*experts*" and perceived OHE and clinical work as more appropriate for some members of the dental team than others based on their role status and the length of their training. However, during the data gathering a number of patients were not sure whether they saw a dentist, DT, or DH during their appointments. The implications of perceived status of the dental professional in light of a lack of any prior knowledge of their role and how it informs the patients' perceptions of the OHE interaction may provide interesting information, particularly given the increasing move towards greater skill-mix.

Most dental professionals interviewed for this study worked in practices participating in the contract reform pilot. While participants noted that the processes involved in the pilot made OHE easier to raise with patients and formalised their discussions, at the time of interviews there was little talk of impact on UDA pressures or appointment times. As funding pressures were a key barrier to OHE provision, further exploration is needed of the longer-term impact of the reform pilot and whether it is sufficient to meet such challenges.

Research is needed to explore what the impact of the Covid-19 related disruption and temporary switch to teledentistry was for both dental professionals and patients and its implications for OHE provision and patients' notion of responsibility for their own oral health. Data gathering for this study began just prior to the Covid-19 disruption to 'normal' dental provision when face-to-face contact with patients was minimal. Issues were raised in this study that relied on personal contact such as time-pressured appointments, the dental clinic environment, the negotiated interaction based on the perceived responses of both parties, and the status of different dental team members. The impact of the changing context of dental professional-patient interaction deserves further exploration.

7.8 Concluding remarks

While recommendations on what would improve the effectiveness of OHE for patient oral health outcomes are beyond the scope of this study, the findings suggest that the provision of personalised advice during appointments is valued by patients and can benefit patients' oral health knowledge – whether they later act on it or not, for whatever reason. Structural changes to motivate and reward OHE in practice would remove practical constraints and concerns regarding opportunity to engage in meaningful discussions with patients.

Additionally, the results suggest that dental professionals would benefit from more support such as training or greater opportunities to share experiences. Discussing experiences of non-adherence and examples of best practice with peers would make the practical undertaking of an undervalued task more explicit. By increasing awareness of both the negative experiences and positive ways of working would help dental professionals form

realistic expectations of OHE interactions and outcomes and maintain motivation while adapting to the growing focus on prevention in dentistry.

The amount of decision making, and interactive 'work' being carried out in the dental appointment, often unremunerated and alongside other clinical work, highlights that OHE is a highly complex interaction for dental professionals. Variation in patient outcomes necessitate an understanding that shared responsibility operates beyond the patient - dental professional relationship and includes the social and structural factors that facilitate or constrain health behaviours.

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9 Appendices

9.1 Appendix 1: Literature search protocol

A literature search will be conducted to explore the current knowledge on the different factors influencing the provision of oral health education within general dental practice and how it is perceived/received by patients. The sourced literature will be written up as a narrative review. The narrative review method was chosen over a systematic review as it allowed analysis of a broader range of papers (e.g., topics addressed, methods used, and country of study) rather than is typical in the more narrowly defined set of eligibility criteria typical of systematic reviews.

Literature search strategy

While not striving for the rigour associated with a systematic review, the search strategy is designed to be comprehensive and efficient in the retrieval of the most relevant literature while also allowing for exploration emergent relevant areas. Electronic databases for papers from peer reviewed journals will be searched, using a range of keywords and combinations of these keywords.

Indicative search terms

Keywords were selected to search several aspects of oral health education provision and reception.

Group 1	Group 2	Group 3
Dental	Oral health	Education
Dentist*	Oral hygiene	Instruction
General practice	Dental health	Promotion
Primary care	Smoking cessation	Intervention
Patient	Diet*	Adherence
	Sugar	Views
	Alcohol	Opinions
	Lifestyle	
	Behaviour change	

Search strategy

Dental or Dentist* or (general dental practice) or (primary care) or patient AND (oral health) or (oral hygiene) or (dental health) or (smoking cessation) or diet* or sugar or alcohol or lifestyle or (behaviour change) AND education or instructions or promotion or intervention or adherence or views or opinions.

Databases covering a range of academic disciplines will be searched. The following electronic databases have been selected:

- Scopus
- Science Direct
- Web of Science
- CINAHL Plus
- ASSIA
- ERIC
- OVID SP (including PubMed)

The keywords will also be entered into Google Scholar to check for any other relevant papers. Additional papers will be sourced from suggestions of other relevant papers from databases and journals, from relevant citations within included papers (data mining), and from papers citing the included paper (data tracking).

Evidence selection criteria

Population

The population of interest is members of the dental team working mainly in NHS general dental practices and patients who receive dental care in NHS general dental practices.

Phenomena of interest

Studies and reports presenting data on the following elements will be considered for inclusion:

Inclusion	Exclusion
<ul style="list-style-type: none">• Post-1998;• English language;• Adult patients;• Oral health education – theory, research, best practice, patient perception, professional perception;• OHE delivered in general dental practices;• Patient-centred oral health care;• The importance of oral health and prevention;• Models/theories of health behaviour/adherence;• Social influences on oral health/health behaviour.	<ul style="list-style-type: none">• Language other than English.• OHE provided outside general dental practice (e.g., care homes, schools, etc.)• Focussed on children, or older adults.• Dental education unrelated to oral health/public health.• Generalised oral health promotion activities.• News article/research reporting/product reporting.

Context

Types of studies

A range of types of studies will be considered for inclusion in this review. Research papers and official reports will be included. Owing to the topics addressed (e.g., personal views and experiences of providing/receiving OHE), opinion articles and editorials will also be included in the initial screening.

Language

Only studies and reports written in English language will be included.

Study selection Step 1: Screening of Titles and Abstracts

During the first screening step, the researcher will employ the search function in EndNote to find and exclude any titles that include keywords from the exclusion criteria. For example, will be searched for words such as ‘children’ or ‘care homes’ and all results will be screened

and excluded where appropriate. This will be followed by a manual screen of the remaining titles to exclude papers that are outside the remit of this review.

Study selection Step 2: Screening of full papers

The next step will be to source the full papers for the remaining titles. Texts not available from Cardiff University library, will be sourced using an interlibrary loan request. Each text will be read in full and either relevant data will be extracted, or the paper will be excluded.

Data extraction

Papers will be coded using NVivo to create a repository of the data across the papers and as also as a means to generate understanding of the content of the available literature.

Data synthesis

The extracted data will be written up in narrative form. The key messages from the data will be written up as a narrative, describing the key themes that emerged from the literature on different aspects of the topic area.

9.2 Appendix 2: Consolidated criteria for reporting qualitative studies (COREQ)

Table 9.1: Appendix - Consolidated criteria for reporting qualitative studies (COREQ) (Tong et al. 2007)

No	Item	Guide questions/description	Page(s)
Domain 1: Research team and reflexivity			
Personal Characteristics			
1.	Interviewer/facilitator	Which author/s conducted the interview or focus group?	
2.	Credentials	What were the researcher's credentials? <i>e.g., PhD, MD</i>	80-82
3.	Occupation	What was their occupation at the time of the study?	80-82
4.	Gender	Was the researcher male or female?	80-82
5.	Experience and training	What experience or training did the researcher have?	80-82
Relationship with participants			
6.	Relationship established	Was a relationship established prior to study commencement?	
7.	Participant knowledge of the interviewer	What did the participants know about the researcher? <i>e.g., personal goals, reasons for doing the research</i>	107-8
8.	Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? <i>e.g., Bias, assumptions, reasons and interests in the research topic</i>	80-82
Domain 2: study design			
Theoretical framework			
9.	Methodological orientation and Theory	What methodological orientation was stated to underpin the study? <i>e.g., grounded theory, discourse analysis, ethnography, phenomenology, content analysis</i>	78-80, 82-89
Participant selection			
10.	Sampling	How were participants selected? <i>e.g., purposive, convenience, consecutive, snowball</i>	100-105
11.	Method of approach	How were participants approached? <i>e.g., face-to-face, telephone, mail, email</i>	105-112
12.	Sample size	How many participants were in the study?	196, 378
13.	Non-participation	How many people refused to participate or dropped out? Reasons?	109, 112

No	Item	Guide questions/description	Page(s)
Setting			
14.	Setting of data collection	Where was the data collected? <i>e.g., home, clinic, workplace</i>	116,117,119,120
15.	Presence of non-participants	Was anyone else present besides the participants and researchers?	116, 278
16.	Description of sample	What are the important characteristics of the sample? <i>e.g., demographic data, date</i>	113-15,118-21, 138-9,196-7
Data collection			
17.	Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	121-128
18.	Repeat interviews	Were repeat interviews carried out? If yes, how many?	No
19.	Audio/visual recording	Did the research use audio or visual recording to collect the data?	<i>e.g.,</i> 118
20.	Field notes	Were field notes made during and/or after the interview or focus group?	During, 129
21.	Duration	What was the duration of the interviews or focus group?	114,116,118-9
22.	Data saturation	Was data saturation discussed?	130
23.	Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No
Domain 3: analysis and findings			
Data analysis			
24.	Number of data coders	How many data coders coded the data?	129
25.	Description of the coding tree	Did authors provide a description of the coding tree?	154, 199
26.	Derivation of themes	Were themes identified in advance or derived from the data?	129-131
27.	Software	What software, if applicable, was used to manage the data?	129
28.	Participant checking	Did participants provide feedback on the findings?	No
Reporting			
29.	Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? <i>e.g., participant number</i>	Chapters 4 & 5
30.	Data and findings consistent	Was there consistency between the data presented and the findings?	Yes

No	Item	Guide questions/description	Page(s)
31.	Clarity of major themes	Were major themes clearly presented in the findings?	154,199
32.	Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	154,199

9.3 Appendix 3: Domain definitions and constructs of the Theoretical Domains Framework

Table 9.2: Appendix - Domains and definitions of the Theoretical Domains Framework

TDF domain	Definition	Constructs
Knowledge	An awareness of the existence of something.	Knowledge (including knowledge of condition/scientific rationale) Procedural knowledge Knowledge of task environment
Skills	An ability or proficiency acquired through practice.	Skills Skills development Competence Ability Interpersonal skills Practice Skill assessment
Social/Professional role and Identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting.	Professional identity Professional role Social identity Identity Professional boundaries Professional confidence Group identity Leadership Organisational commitment
Beliefs about capabilities	Acceptance of the truth, reality or validity about an ability, talent, or faculty that a person can put to constructive use.	Self-confidence Perceived competence Self-efficacy Perceived behavioural control Beliefs Self-esteem Empowerment Professional confidence
Optimism	The confidence that things will happen for the best, or that desired goals will be attained.	Optimism Pessimism Unrealistic optimism Identity
Beliefs about consequences	Acceptance of the truth, reality or validity about outcomes of a behaviour in a given situation.	Beliefs Outcome expectancies Characteristics of outcome expectancies Anticipated regret Consequents
Reinforcement	Increasing the probability of a response by arranging a dependent relationship or contingency,	Rewards (proximal/distal, valued/not valued, probable/improbable)

	between the response and a given stimulus.	Incentives Punishment Consequents Reinforcement Contingencies Sanctions
Intentions	A conscious decision to perform a behaviour or a resolve to act in a certain way.	Stability of intentions Stages of change model Transtheoretical model and stages of change
Goals	Mental representation of outcomes or end states that an individual wants to achieve.	Goals (distal/proximal) Goal priority Goal/target setting Goals (autonomous/controlled) Action planning Implementation intention
Memory, Attention and Decision Processes	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives.	Memory Attention Attention control Decision making Cognitive overload/tiredness
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour.	Environmental stressors Resources/material resources Organisational culture/climate Salient events/critical incidents Person × environment interaction Barriers and facilitators
Social influence	Those interpersonal processes that can cause an individual to change their thoughts, feelings, or behaviours.	Social pressure Social norms Group conformity Social comparisons Group norms Social support Power Intergroup conflict Alienation Group identity Modelling
Emotion	A complex reaction pattern, involving experiential, behavioural and physiological elements, by which the individual attempts to deal with a personally significant matter or event.	Fear Anxiety Affect Stress Depression Positive/negative affect Burn-out
Behavioural regulation	Anything aimed at managing or changing objectively observed or measured actions.	Self-monitoring Breaking habit Action planning

(Cane et al. 2012; Cane et al. 2015)

9.4 Appendix 4: Letter to potential case study practices



School of
Social Sciences

Ysgol y Gwyddorau
Cymdeithasol

Cardiff University

Glamorgan Building
King Edwards VII Avenue, Cardiff
CF10 3WT, Wales, UK
Tel +44(0)29 2087 5179
Fax +44(0)29 2087 4175
www.cardiff.ac.uk/social-sciences

Prifysgol Caerdydd

Dear XX,

My name is Emma Barnes and I am carrying out a research study as part of a Doctor of Philosophy (PhD) award at Cardiff University on oral health education in general dental practices. I am writing to you today as you have been selected from a grouping of dental practices, based on size and settings, that we have identified to help us explore dental professionals' and patients' views and experiences of preventive oral health education.

What will happen if I take part?

We will not be asking you to do anything differently, but we are looking to carry out **short interviews with members of the dental team and telephone interviews with a number of patients attending your practice**. All information will be anonymised. The interviews with the dental team members can be carried out at times that are most convenient for them and **we will seek to maintain the smooth operation of your practice**. I will approach patients attending for appointments to invite them to take part in a short telephone interview – **we will not be requesting access to any patient details or asking your team to contact patients on our behalf**. During the study period, we aim to interview 10 patients from your practice.

We understand that talking to us means a little bit of extra work for the team. As a thank you, we are able to offer the practice **£100 in high street vouchers** when all data gathering has been completed.

The next steps

I have enclosed an information sheet that explains the study. I will contact you within the next two weeks to discuss the project. This will be a chance for me to explain the project in more detail and for you to ask any questions. If you are happy to take part, then we can arrange a time to come and get things started. If you do not want to take part, that is no problem, please let me know as soon as is convenient and we will not contact you again about it.

If you would like to contact me about the study, my email is BarnesEJ@cardiff.ac.uk and my telephone number is 07773 176774.

I look forward to discussing the study with you.

Yours sincerely,



Emma Barnes



26.06.19 v.02, IRAS ref: 254020

THE QUEEN'S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2015



INVESTORS
IN PEOPLE



Athena
SWAN
Silver Award



QAA
Cymru

UK Quality Assured
Sicrwydd Ansawdd y DU

Registered Charity No. 1136855
Elusen Gofrestredig Rhif. 1136855

9.5 Appendix 5: Case study information sheet



The Oral Health Professional's Role in Supporting Patient Self-Care

Information Sheet for members of the dental team in the Case Studies

Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate, before you consent you will have an opportunity to ask questions about the study and your participation in it. If you decide not to take part, there will be no disadvantage to you of any kind.

What is the aim of the study?

Given increasing demands on dental services, socio-economic differences in oral health, and a growing emphasis on prevention, there is a need to research how members of the dental team can best support patient self-care and how they can be supported to deliver preventive messages. Similarly, there is a need to understand how patients view professionals' and their own responsibility for oral health care and ways to improve advice messages. The aim of this study is to explore how oral health education is conceptualised and delivered within a preventive approach, which encourages patient self-care.

Why have I been chosen?

For this study we are selecting a small number of general dental practices to explore dental professionals' and patients' views and experiences of preventive oral health advice. The selected practices will be working under the NHS contract and providing mainly NHS treatment. We will include a range of practice sizes and settings and are looking for geographic coverage in Aneurin Bevan and Cwm Taf Morgannwg University Health Boards.

Do I have to take part?

No. You can decide whether or not to take part. If you take part, you will be given this information sheet to keep and an opportunity to ask questions about the study. There are no consequences for the practice or staff in the practice if you decide not to take part. You can stop being part of the study at any time, without giving a reason

What will happen if I take part?

You will not be asked to change what you normally do. In the case study practices, we plan to interview all members of the dental team and a number of patients. A registered research nurse from your local University Health Board will support the researcher (Emma Barnes) with patient recruitment to the study. They will approach patients attending the practice, explain the research project and provide information sheets, answer questions and take consent.

The interviews with members of the dental team

We will negotiate with you a suitable day(s) to visit to meet and interview members of the dental team to gain individual perceptions and experiences of delivering preventive oral health advice within the practice. We expect these interviews to take 20-30 minutes. With permission, we will audio record the discussions. All discussion topics will be optional, and you will be free to withdraw from parts of the discussion.

The patient interviews

Patients attending appointments at the dental surgery will be invited to take part in a short one-to-one interview at a time that is convenient for them, ideally within a few days of their appointment. The interview will be held by telephone, away from the practice. During the study period, we aim to interview 5 patients from each dental professional who leads patient appointments at the practice. We will ask the patients about how they understand their own and the dental professionals' responsibilities for their oral health care and their reasons for following or not following recommended preventive advice.

Are there any advantages or disadvantages to taking part in the study?

If you take part, there are no direct benefits to you, but you will help us to understand more about the way dental professionals provide oral health advice to patients.

Being a case study practice will incur an element of inconvenience in terms of the time taken to be interviewed by a member of the research team. We will seek to cause minimal disruption by coming to your practice premises and completing the interviews at a time to suit staff and that fits with the smooth running of the practice.

We understand that this means a little bit of extra work for the team. We offer the practice £100 of high-street vouchers when all data gathering has been completed at your practice, as a thank you.

Will the information be confidential?

All audio recordings will be transcribed (a written record made of the conversation) and anonymised. The audio recordings will be downloaded from the digital recorder at the end of each day and deleted after transcription. The transcripts will not contain your names, or the names of your dental practice and your participation will be confidential.

In the event that a patient were to raise a serious concern about poor experience or practice, this would in the first instance be discussed with the student's clinical supervisor and a decision made on whether this should then be discussed with the practice manager, or if that were not appropriate, with the Health Board's Safeguarding team.

How will we use information about you?

We will need to use information from you for this research project. We will only use information that we need for the research study. This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead. We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

We will share the findings with our Advisory Group, but this will not include any information about individual professionals or patients. Our study results will be shared with decision and policy makers to help inform patient care. The wider results and conclusions from this study will inform dental professional education, explore mutually-acceptable and appropriate ways of promoting patient self-care and contribute to the development of healthcare workforce and patient care in the partner UHBs.

This study is being carried out as part of a Doctor of Philosophy (PhD) award. A summary of the final report will be publicly available and the full report available on request. We will share the study results at dental team events and in dental journals.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have. We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you. If you chose to withdraw shortly after taking part, your information will not be included in the final study. The final date to withdraw and have your information removed from the project is 4th December 2020.

How will my data be managed?

Cardiff University is the Sponsor for the study based in the UK. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Cardiff University will keep identifiable information about you for 2 years after the study has finished. It will then be destroyed. To safeguard your rights, we will use the minimum personally-identifiable information possible. The only people in Cardiff University who will have access to information that identifies you will be people who need to contact you to for the study or audit the data collection process.

Where can you find out more about how your information is used?

You can find out more about how we use your information

- at <https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection>
- at www.hra.nhs.uk/information-about-patients/
- by sending an email the University's Data Protection Officer: inforequest@cardiff.ac.uk
- by asking one of the research team
- by ringing us on 07773 176774

Who is organising the study?

The PhD studentship is funded by Knowledge Economy Skills Scholarships (KESS). The researcher (Emma Barnes) is a student at Cardiff University and is working in partnership with Aneurin Bevan University Health Board and Cwm Taf Morgannwg University Health Board. She is supervised by Prof Alison Bullock (School of Social Sciences) and Prof Ivor Chestnutt (School of Dentistry).

Who has reviewed the study?

The study has been reviewed and approved by an NHS research ethics committee (*North West - Greater Manchester West Research Ethics Committee; Ref No. 19/NW/0568, 06.09.19*). Aneurin Bevan and Cwm Taf Morgannwg University Health Boards have also given permission for the study to start.

What if I have any questions or if there is a problem?

If you have any questions or concerns about the study, please contact the Principal Investigator, Emma Barnes, who will do her best to answer your questions:

Emma Barnes

barnesej@cardiff.ac.uk Tel: 07773 176774

Cardiff University, School of Social Sciences, 12 Museum Place, Cardiff CF10 3BG

If you remain unhappy you can contact the Chief Investigator, Professor Alison Bullock, 02920 870780.

Should you wish to complain formally you can do this through the NHS Redress Scheme. Details can be obtained from the concerns teams at Cwm Taf Morgannwg University Health Board (01443 744800) or Aneurin Bevan University Health Board's (01495 745656).



Knowledge Economy Skills Scholarships (KESS) is a pan-Wales higher-level skills initiative led by Bangor University on behalf of the Higher Education sector in Wales. It is part-funded by the Welsh Government's European Social Fund (ESF) West Wales and the Valleys programme.

9.6 Appendix 6: Consent form



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Aneurin Bevan
University Health Board



GIG
CYMRU
NHS
WALES
Bwrdd Iechyd Prifysgol
Cwm Taf Morgannwg
University Health Board

Participant ID no: _____

The Oral Health Professional's Role in Supporting Patient Self-Care

Staff Consent Form

I have read the Information Sheet dated 30.09.19, v0.4 concerning this study and understand what it is about. Any questions I had have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

**Please
initial
box**

My participation in the study is entirely voluntary.	
My interview will be audio-recorded and my verbatim quotes may be used in the final study reports, publications and presentations, but no one will be able to identify me from my quotes.	
If I am interviewed I have the right not to answer particular question(s).	
My participation in the study should not lead to any harm or discomfort.	
I consent to the processing of my personal information provided in this consent form and my interview. I understand that such information will be held at Cardiff University in accordance with all applicable data protection legislation and in strict confidence unless disclosure is required by law or professional obligation. I understand that my data collected during the study may be looked at by authorised individuals from the Sponsor for the study and the UK Regulatory Authority in order to check that the study is being carried out correctly.	
After the interview, if I decide that I do not want my data to be included in the study, I can request this no later than 04/12/20.	
I am free to withdraw from the study without giving a reason and there will be no penalty.	
I agree to take part in this study.	

Print name: _____ Signed: _____ Date: _____

Thank you

Person Receiving Consent:

Name: _____ Signed: _____ Date: _____

9.7 Appendix 7: Patient information sheet



The Oral Health Professional's Role in Supporting Patient Self-Care

Patient Information Sheet

You are being asked to take part in a Cardiff University study about Oral Health Professionals and how they deliver oral health education or advice. An Oral Health Professional may be your dentist, dental nurse, dental hygienist, dental therapist, or another professional that you see during your dental appointment.

Please read this information before you decide to take part. If you decide not to take part, it will not affect your dental care in any way.

What is the aim of the study?

We would like to investigate advice you may be given during your dental appointment on looking after your teeth and general oral health.

Why have I been chosen?

The dental team at this practice have agreed to be part of the study. You have been approached as a patient who attends the practice.

Do I have to take part?

No. You can decide whether or not to take part. If you take part, you will be given this information sheet to keep and a chance to ask questions about the study. If you agree to take part and then later change your mind, you don't have to give a reason for not continuing in the study. Taking part, changing your mind, or not taking part will not affect your dental care in any way.

What will happen if I take part?

Your treatment will be the same, but you will be asked to take part in a short telephone interview (lasting around 15 minutes) about your appointment, at a time that is convenient for you. If you are willing to talk with us, we will ask for your telephone number and **Emma Barnes (the researcher) will call you using the telephone number 07773 176774** at the agreed time.

Are there any advantages or disadvantages to taking part in the study?

If you take part, there are no direct benefits to you, but you will help us to understand more about the way dental professionals provide oral health advice to patients. You will be making a valuable contribution to the study, which could help improve how the dental team advise patients about looking after the health of their mouth.

The only disadvantage to you is the time it takes for the telephone call. It will take around 15 minutes and will not cover anything upsetting or sensitive.

Will the information be confidential?

The information you give will be kept strictly confidential and will be anonymous. If you agree to a telephone interview, your telephone number will not be shared with anyone but the researcher (Emma Barnes) who will arrange and carry out the interview. Your interview will be audio recorded and will be transcribed (a written record made of the conversation) and anonymised. The audio recordings will be downloaded from the digital recorder at the end of each day and deleted after transcription. The transcripts will not contain your name or other identifiable details and your participation will be kept confidential. All information will be stored securely. The researchers will not have access to your dental records or medical history.

How will we use information about you?

We will need to use information from you for this research project. We will only use information that we need for the research study. This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly. People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead. We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

Information will only be used for the study. We will share the findings with our Advisory Group, but this will not include any information about individual patients. Our findings will help us to develop teaching materials (such as courses for members of the dental team) and guidance for dental practices on oral health advice for patients. We will share the study results at dental team events and in dental journals.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have. We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you. If you chose to withdraw shortly after taking part, your information will not be included in the final study. The final date to withdraw and have your information removed from the project is 4th December 2020.

How will my data be managed?

Cardiff University is the Sponsor for the study based in the UK. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Cardiff University will keep identifiable information about you for 2 years after the study has finished. It will then be destroyed. To safeguard your rights, we will use the minimum personally-identifiable information possible. The only people in Cardiff University who will have access to information that identifies you will be people who need to contact you to for the study or audit the data collection process.

Where can you find out more about how your information is used?

You can find out more about how we use your information

- at <https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection>
- at www.hra.nhs.uk/information-about-patients/
- by sending an email the University's Data Protection Officer: inforequest@cardiff.ac.uk

- by asking one of the research team
- by ringing us on 07773 176774

Who is organising the study?

This study is being carried out as part of a Doctor of Philosophy (PhD) award funded by Knowledge Economy Skills Scholarships (KESS). The researcher is a student at Cardiff University and is working in partnership with Aneurin Bevan University Health Board and Cwm Taf Morgannwg University Health Board.

Who has reviewed the study?

The study has been reviewed and approved by an NHS research ethics committee (*North West - Greater Manchester West Research Ethics Committee; Ref No. 19/NW/0568, 6th September 2019*). Aneurin Bevan and Cwm Taf Morgannwg University Health Boards have also given permission for the study to start.

What if I have any questions or if there is a problem?

If you have any questions or concerns about the study, please contact the Principal Investigator, Emma Barnes, on 07773 176774 who will do her best to answer your questions:

barnesej@cardiff.ac.uk Tel: 07773 176774

Cardiff University, School of Social Sciences, 12 Museum Place, Cardiff CF10 3BG

If you remain unhappy you can contact the Chief Investigator, Professor Alison Bullock, 02920 870780.

Should you wish to complain formally you can do this through the NHS Redress Scheme. Details can be obtained from the concerns teams at Cwm Taf Morgannwg University Health Board (01443 744800) or Aneurin Bevan University Health Board's (01495 745656).



Knowledge Economy Skills Scholarships (KESS) is a pan-Wales higher-level skills initiative led by Bangor University on behalf of the Higher Education sector in Wales. It is part-funded by the Welsh Government's European Social Fund (ESF) West Wales and the Valleys programme.

30.08.19 v.05, IRAS ref: 254020

9.8 Appendix 8: Patient consent form



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Aneurin Bevan
University Health Board



GIG
CYMRU
NHS
WALES
Bwrdd Iechyd Prifysgol
Cwm Taf Morgannwg
University Health Board

Participant ID no: _____

The Oral Health Professional's Role in Supporting Patient Self-Care

Patient consent form

I have read the Participant Information Sheet dated 30.08.19, v0.4 concerning this study and understand what it is about. Any questions I had have been answered to my satisfaction. I understand that I am free to request further information at any stage.

**Please
initial
box**

I know that:

My participation in the study is entirely voluntary.	
My interview will be audio-recorded and my word-for-word quotes may be used in the final study reports, publications and presentations, but no one will be able to identify me from my quotes.	
If I am interviewed I have the right not to answer particular question(s).	
My participation in the study should not lead to any harm or discomfort.	
I consent to the processing of my personal information provided in this consent form and my interview. I understand that such information will be held at Cardiff University in accordance with all applicable data protection legislation and in strict confidence unless disclosure is required by law or professional obligation. I understand that relevant sections of my data collected during the study, may be looked at by individuals from Cardiff University, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.	
After the interview, if I decide that I do not want my data to be included in the study, I can request this no later than 04/12/20.	
I am free to withdraw from the study without giving a reason and there will be no penalty.	
I agree to take part in this study.	

Name: _____ Date: _____

Telephone number: _____

The best time to call me is:

Thank you

Person Receiving Consent:

Name: _____ Signed: _____ Date: _____

26.06.19 v.03, IRAS ref: 254020

9.9 Appendix 9: Social media adverts for dental professional participants

Twitter (while Aneurin Bevan UHB suspended recruitment)

**SEEKING DENTAL THERAPISTS, DENTAL HYGIENISTS,
AND ORAL HEALTH EDUCATORS IN
CWM TAF MORGANNWG UHB**

Cardiff University
PRIFYSGOL
CAERDYDD

If you are:


- a dental therapist, dental hygienist, or oral health educator
- working in general dental practice
- in Cwm Taf Morgannwg University Health Board


Would you be willing to talk to me about your experiences of providing oral health education during routine appointments?

My name is Emma Barnes and I am a PhD student at Cardiff University. My study is exploring dental professionals' experiences of providing oral health education/preventive advice in general dental practices in South Wales.

I am aiming to carry out **one-off, telephone interviews** which should last around 25 minutes. The interview will be confidential and anonymous.

If you would like more information please
email: BarnesEJ@Cardiff.ac.uk

 **GIG Cymru NHS Wales** | Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

 **GIG Cymru NHS Wales** | Bwrdd Iechyd Prifysgol Cwm Taf Morgannwg University Health Board

Facebook BSDHT page advert.

**SEEKING DENTISTS, DENTAL THERAPISTS, AND
DENTAL HYGIENISTS
IN
ANEURIN BEVAN AND CWM TAF MORGANNWG UHBS**


Cardiff University
PRIFYSGOL
CAERDYDD


My name is Emma Barnes and I am a PhD student at Cardiff University. My study is exploring dental professionals' experiences of providing oral health education/preventive advice in general dental practices in South Wales.

I am seeking dentists, dental therapists, or dental hygienists working in general dental practices in Cwm Taf Morgannwg or Aneurin Bevan University Health Boards who would be willing to talk to me about their experiences of providing oral health education during routine appointments.

I am aiming to carry out one-off, telephone interviews which should last around 25 minutes. The interview will be confidential and anonymous.

If you would like more information please
email: BarnesEJ@Cardiff.ac.uk

 **GIG Cymru NHS Wales** | Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

 **GIG Cymru NHS Wales** | Bwrdd Iechyd Prifysgol Cwm Taf Morgannwg University Health Board

9.10 Appendix 10: HealthWise Wales patient recruitment email



Doeth am Iechyd
Cymru
HealthWise
Wales

How can Dentists support patients' self-care?

The most common diseases of the mouth are preventable through oral hygiene routines and regular professional care. Advice to help patients look after their mouth and their teeth is an increasingly important part of all general dental services. During your appointment dentists, dental therapists, dental hygienists, or dental nurses may demonstrate how to clean your teeth most effectively, give advice on sugar in your diet, or discuss the effects of smoking or alcohol on the mouth.

Researchers at Cardiff University School of Social Sciences and Dental School are exploring what kind of advice you have been given during your dental appointments, on looking after your teeth and general oral health. They are also interested in what kind of advice you would like to receive from your dental team.

Before lockdown - Did you attend the dentist regularly (**every 6-12 months**)?

or,

Have you received dental treatment in the last **12 months**?

If yes to either of these statements, we would like to invite you to take part in a short telephone interview about your experiences. If you are willing to take part or would like more information, please email barnesej@cardiff.ac.uk.

Take Part

EMAIL: healthwisewales@cardiff.ac.uk

9:00 - 17:00 Monday - Friday



9.11 Appendix 11: Dental team interview schedules

8.1 Original dental professional (case study) interview schedule

Background

- Please tell me a bit about your role
- How long have you worked at this practice?
- What year did you qualify?
- Where did you qualify?

OHE and preventive dentistry

- What do you understand by OHE/self-care advice?
 - What does it include?
- What are your views on OHE that encourages patient self-care?
- How do you think the provision of OHE/self-care advice fits within your role?
- Who in the dental team should be responsible for providing OHE?
 - Is that how it works in this practice?
- How much time do you spend on OHE/self-care advice?
- Do you feel confident about delivering OHE/self-care advice?
 - Have you had any formal training in OHE?

Influences on OHE and delivery

- Thinking about patients that you have seen over the previous week or so, what type of preventive advice did you give to those patients?
- What do you think about giving advice on:
 - toothbrushing
 - sugar or diet
 - smoking cessation
 - alcohol?
- What influences the *content* of the OHE/self-care advice you give? (guidelines/CPD/peers, etc.)
 - Is it based on any educational theories?
- How do you decide whether to give OHE/self-care advice to a patient?
 - Are there any situations when you wouldn't offer advice?

- Do you make a decision about which patients to spend time with on OHE and other's not?
 - What influences your decisions about this?
- Do you use to any supporting materials to deliver OHE/self-care advice? (e.g. demonstration, leaflets, instruments, referral to the internet)
 - Are these materials helpful?
- Have you changed how you give OHE/self-care advice over time?

FOR CONTRACT REFORM PRACTICES: Has participating in the contract reform pilot changed how you give OHE/self-care advice?

Patients and OHE

- What do you think patients should be doing to look after their oral health?
- Why do you think patients might not follow OHE/self-care advice?
 - How does it make you feel when patients don't follow self-care advice?
- Why do you think some do follow OHE/self-care advice?
- How well do you think you can tell in advance if a patient is likely to comply with advice that you give to them?
- Do you think patients see your role as preventive or restorative/interventionist?
 - What makes you think that?

Barriers and enablers

- What are the barriers to offering OHE/self-care advice?
- What would help you promote patient self-care?

Is there anything else you think we should know about OHE/self-care advice?

8.2 Amended dental professional (non-case study) interview schedule

Background

About you:

- Please tell me a bit about your role
- What year did you qualify?
- Where did you qualify?
- How long have you worked at your current practice?

What is the context of the practice?

- Size/Skill-mix
- Independent or corporate
- NHS/Private work
- Patients served

OHE and preventive dentistry

- What do you understand by OHE/self-care advice?
 - What does it include?
- What are your views on OHE that encourages patient self-care?
- How do you think the provision of OHE/self-care advice fits within your role?
- Who in the dental team should be responsible for providing OHE?
 - Is that how it works in your practice?
- How much time do you spend on OHE/self-care advice?
- Do you feel confident about delivering OHE/self-care advice?
 - Have you had any formal training in OHE?

Influences on OHE and delivery

- Thinking about patients that you have seen over the previous week or so, what type of preventive advice did you give to those patients?
- What do you think about giving advice on:
 - toothbrushing
 - sugar or diet
 - smoking cessation
 - alcohol?

- What influences the *content* of the OHE/self-care advice you give? (guidelines/CPD/peers, etc.)
 - Is it based on any educational theories?
- How do you decide whether to give OHE/self-care advice to a patient?
 - Are there any situations when you **wouldn't** offer advice?
- Do you use to any supporting materials to deliver OHE/self-care advice? (e.g. demonstration, leaflets, instruments, referral to the internet)
 - Are these materials helpful?
- Have you changed how you give OHE/self-care advice over time?
- Do you work in a contract reform pilot practice?
 - If so, has participating in the contract reform pilot changed how you give OHE/self-care advice?

Patients and OHE

- What do you think patients should be doing to look after their oral health?
- Why do you think patients might not follow OHE/self-care advice?
 - How does it make you feel when patients don't follow self-care advice?
- Why do you think some do follow OHE/self-care advice?
- How well do you think you can tell in advance if a patient is likely to comply with advice that you give to them?
- Do you think patients see your role as preventive or restorative/interventionist?
 - What makes you think that?

Barriers and enablers

- What are the barriers to offering OHE/self-care advice?
- What would help you promote patient self-care?
- Is there anything else you think we should know about OHE/self-care advice?

9.12 Appendix 12: Patient telephone interview schedules

9.1 Original case study interview schedule

READ THROUGH AND CHECK CONSENT

- What was your appointment for? (check-up/treatment)
- Who was your appointment with?
 - Have you seen them before?
 - How long have you been seeing them?
 - How long have you been with this practice?
 - Approximately how often do you attend?
- Are you on a payment plan or NHS?
- How would you describe your general oral health?
- Your age bracket:
 - 18-24 years
 - 25-34 years
 - 35-44 years
 - 45-54 years
 - 55-64 years
 - 65-74 years
 - 75 or over

The OHE:

- Thinking about your appointment with (ROLE/NAME) the other day, what advice were you given by (ROLE/NAME) on looking after your oral health?
 - Was the advice clear?
 - Was the advice helpful?
- Were you able to ask questions about the advice?
 - Now that you've had time to think about it, do you have any questions about the advice that you wished you had asked then?
- Were you able to change what you do after getting advice from (ROLE/NAME)?
 - If yes, what did you change?
 - How easy was it to make those changes?

IF NOT GIVEN ADVICE/PAST ADVICE:

- Can you remember any advice that they have given you in the past?

- Was the advice clear?
- Was the advice helpful?
- Were you able to ask questions about the advice?
 - Now that you've had time to think about it, do you have any questions about the advice that you wished you had asked then?
- Have you ever changed what you do after getting advice from (ROLE/NAME)?
 - If yes, what did you change?
 - How easy was it to make those changes?
- What might prevent you from taking on advice from (ROLE/NAME)?
- Have you ever been given advice that you haven't been able to follow?
 - Can you tell me a little bit more about the advice?
- How would you feel about the (ROLE/NAME) giving you advice on:
 - Keeping your mouth clean
 - Smoking
 - Sugar/diet
 - Alcohol consumption
 - Medication
 - Other health issues
- Is there a topic that you'd like to get advice on from (ROLE/NAME) but haven't had the chance to ask?
- Aside from when you see (ROLE/NAME), where else do you get information on looking after your oral health?
 - Have you ever made any changes to what you do to look after your teeth or mouth because of information from any other sources other than (ROLE/NAME)?
- What are the sort of things that people should be doing to look after their own oral health?
- What are the sort of things that (ROLE/NAME)'s should be doing to look after people's oral health?
- Is there anything else you'd like to add?

9.2 Amended patient (non-case study) interview schedule

READ THROUGH AND CHECK CONSENT:

- When was your last appointment?
- Who was your appointment with (role)?
 - Have you seen them before?
 - How long have you been seeing them?
 - How long have you been with that practice?
 - Approximately how often do you attend?
 - Which UHB?
- *Have you ever had an appointment with a dental hygienist or dental therapist?*
- Are you on a payment plan or NHS?
- How would you describe your general oral health?
- Your age bracket:
 - 18-24 years
 - 25-34 years
 - 35-44 years
 - 45-54 years
 - 55-64 years
 - 65-74 years
 - 75 or over

The OHE:

- *Can you remember any instances where you've had advice from your dentist or hygienist/therapist during your appointments?*
- Was the advice clear?
- Was the advice helpful?
- Were you able to ask questions about the advice?
- Now that you've had time to think about it, do you have any questions about the advice that you wished you had asked then?

- Have you ever changed what you do after getting advice from (ROLE/NAME)?
 - If yes, what did you change?
 - How easy was it to make those changes?
 - *What motivated you to make those changes?*
- Have you ever been given advice that you haven't been able to follow?
 - Can you tell me a little bit more about the advice?
- What might prevent you from taking on advice from (ROLE/NAME)?

Type of advice you might get:

- How would you feel about being given advice on X during your appointment?
 - Keeping your mouth clean

- Smoking
 - Sugar/diet
 - Alcohol consumption
 - Other health issues
- Is there a topic that you'd like to get advice on from (ROLE/NAME) but haven't had the chance to ask?

- **Who in the dental team would you prefer to receive advice from? (Dent/DH/DT)**
 - Why would you prefer it from them?

- Aside from the dental practice, where else do you get information on looking after your oral health?
 - Have you ever made any changes to what you do to look after your teeth or mouth because of information from any other sources other than (ROLE/NAME)?

Responsibilities:

- What are the sort of things that people should be doing to look after their own oral health?
- What are the sort of things that the dental team should be doing to look after people's oral health?

- Is there anything else you'd like to add?

9.13 Appendix 13: Sponsorship and ethical approval documents

9.13.1 Cardiff University sponsorship letter (SPON 1755-19)



Research and
Innovation Services
Gwasanaethau Ymchwil
ac Arloesi

Cardiff University
McKenzie House, 7th Floor
30-36 Newport Road, Cardiff
CF24 0DE, Wales, UK
Tel +44(0)29 2087 5834
www.cardiff.ac.uk

Prifysgol Caerdydd
Tŷ McKenzie, 7th Llawr
30-36 Heol Casnewydd, Caerdydd
CF24 0DE, Cymru, DU
Ffôn +44(0)29 2087 5834
www.caerdydd.ac.uk

23rd July 2019

Professor Alison Bullock
CUREMeDE
School of Social Sciences
Cardiff University
12 Museum Place
Cardiff
CF10 3BG

Dear Professor Bullock,

Understanding the Oral Health Professional's Role in Supporting Patient Self-Care in Contexts of Social and Economic Deprivation
Short Title: The Oral Health Professional's Role in Supporting Patient Self-Care

I understand that you are acting as Chief Investigator and Academic Supervisor for the above PhD project to be conducted by Emma Barnes.

I confirm that Cardiff University agrees in principle to act as Sponsor for the above project, as required by the UK Policy Framework for Health and Social Care Research.

Scientific Review

I can also confirm that Scientific Review has been obtained from: the Knowledge Economy Skills Scholarship fund (KESS 2), awarded by the Welsh European Funding Office.

Insurance

The necessary insurance provisions will be in place prior to the project commencement. Cardiff University is insured with UMAL. Copies of the insurance certificate are attached to this letter.

Approvals

On completion of your IRAS form (required for NHS REC and HRA/HCRW/NHS R&D permission), you will be required to obtain signature from the Research Governance team for the 'Declaration by the Sponsor Representative'. Please note that you are also required to provide the Organisation Information Document and Schedule of Events to the Research Governance team for review prior to submission to HRA/HCRW.

Please then submit the project to the following bodies for approval:

- an NHS Research Ethics Committee;
- Health & Care Research Wales (HCRW)- to arrange HRA/HCRW Approval for Welsh NHS sites.

The University is considered to have accepted Sponsorship when Research and Innovation Services has received evidence of the above approvals. **Responsibility for providing the Local Information Pack to NHS organisations is delegated from the Sponsor to the Chief Investigator (or their appropriate delegate). Once an NHS organisation has confirmed capacity and capability, responsibility lies with the Chief Investigator (or their appropriate delegate) to follow an appropriate 'green light' procedure to open the study at that Site.**

Roles and Responsibilities



Registered Charity, no. 1136885
Elusen Gofrestredig, rhif 1136885.

As Chief Investigator you have signed a Declaration with the Sponsor to confirm that you will adhere to the standard responsibilities as set out by the UK Policy Framework for Health and Social Care Research. In accordance with the University's Research Integrity & Governance Code of Practice, the Chief Investigator is also responsible for ensuring that each research team member is qualified and experienced to fulfil their delegated roles including ensuring adequate supervision, support and training.

If your study is adopted onto Health & Care Research Wales Clinical Research Portfolio you are required to upload recruitment data onto the portfolio database.

Contracts

- The HRA/HCRW Organisation Information Document will act as the agreement between the sponsor and participating NHS organisations.

May I take this opportunity to remind you that, as Chief Investigator, you are required to:

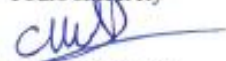
- register clinical trials in a publicly accessible database before recruitment of the first participant and ensure that the information is kept up to date
- ensure you are familiar with your responsibilities under the UK Policy Framework for Health and Social Care Research;
- undertake the study in accordance with Cardiff University's Research Integrity & Governance Code of Practice (available on the Cardiff University Staff and Student Intranet) and the principles of Good Clinical Practice;
- ensure the research complies with the General Data Protection Regulation 2016/679;
- where the study involves human tissue, ensure the research complies with the Human Tissue Act and the Cardiff University Code of Practice for Research involving Human Tissue (available on the Cardiff University Staff and Student Intranet);
- inform Research and Innovation Services of any amendments to the protocol or study design, (including changes to start /end dates) and submit amendments to the relevant approval bodies;
- respond to correspondence from the REC, HRA/HCRW and NHS organisation R&D offices within the required timeframes;
- co-operate with any audit, monitoring visit or inspection of the project files or any requests from Research and Innovation Services for further information.

You should quote the following unique reference number in any correspondence relating to Sponsorship for the above project:

SPON 1755-19

This reference number should be quoted on all documentation associated with this project.

Yours sincerely



Mr Chris Shaw
Research Governance Coordinator
Direct line: +44 (0) 29208 79277
Email: resgov@cardiff.ac.uk

Cc Emma Barnes; Professor Ivor Chestnutt (Co-Supervisor).

9.13.2 HRA ethical approval confirmation letter (North West – Greater Manchester West Research Ethics Committee, Ref: 19/NW/0568)



Health Research Authority

North West - Greater Manchester West Research Ethics Committee

Barlow House
3rd Floor
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0207 104 8021

19 September 2019

Prof Alison Bullock
CUREMeDE, School of Social Sciences
12 Museum Place
Cardiff University
CF10 3BG

Dear Prof Bullock

Study title: Understanding The Oral Health Professional's Role In Supporting Patient Self-Care In Contexts Of Social and Economic Deprivation.
REC reference: 19/NW/0568
Protocol number: SPON 1755-19
IRAS project ID: 254020

The Proportionate Review Sub-committee of the North West - Greater Manchester West Research Ethics Committee reviewed the above application on 06 September 2019.

Ethical opinion

On behalf of the Committee, the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Number	Conditions
1.	The following changes should be made to the Participant Information Sheet: <ul style="list-style-type: none"> a) Please add that the audio recordings would be deleted at the end of each day after transcription. b) Add wording to the control PIS, risks and benefits section, about notifying participants if something unusual was spotted. c) Add details about the possibility of disclosure of poor patient experience or practice and who would be informed.
2.	Please amend the patient consent form at point 5 to include the

	standard regulatory clause - I understand that relevant sections of my medical notes and data collected during the study, may be looked at by individuals from [COMPANY NAME], from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.
3.	Please amend the staff consent form at point 5 to include the standard regulatory clause - I understand that my records may be looked at by authorised individuals from the Sponsor for the study and the UK Regulatory Authority in order to check that the study is being carried out correctly'.

You should notify the REC once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. Revised documents should be submitted to the REC electronically from IRAS. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which you can make available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

Confirmation of Capacity and Capability (in England, Northern Ireland and Wales) or NHS management permission (in Scotland) should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

It is a condition of the REC favourable opinion that all clinical trials are registered on a publicly accessible database. For this purpose, clinical trials are defined as the first four project categories in IRAS project filter question 2. For [clinical trials of investigational medicinal products \(CTIMPs\)](#), other than adult phase I trials, registration is a legal requirement.

Registration should take place as early as possible and within six weeks of recruiting the first research participant at the latest. Failure to register is a breach of these approval conditions, unless a deferral has been agreed by or on behalf of the Research Ethics Committee (see here for more information on requesting a deferral: <https://www.hra.nhs.uk/planning-and-improving-research/research-planning/research-registration-research-project-identifiers/>)

As set out in the UK Policy Framework, research sponsors are responsible for making information about research publicly available before it starts e.g. by registering the research project on a publicly accessible register. Further guidance on registration is available at: <https://www.hra.nhs.uk/planning-and-improving-research/research-planning/transparency-responsibilities/>

You should notify the REC of the registration details. We routinely audit applications for compliance with these conditions.

Publication of Your Research Summary

We will publish your research summary for the above study on the research summaries section of our website, together with your contact details, no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, make a request to defer, or require further information, please visit: <https://www.hra.nhs.uk/planning-and-improving-research/application-summaries/research-summaries/>

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

After ethical review: Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study, including early termination of the study
- Final report

The latest guidance on these topics can be found at <https://www.hra.nhs.uk/approvals-amendments/managing-your-approval/>.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion").

Approved documents

The documents reviewed and approved were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering letter on headed paper [Cover letter]		05 August 2019
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor insurance]		23 July 2019
Interview schedules or topic guides for participants [Dental team interview schedule]	v.01	05 August 2019
Interview schedules or topic guides for participants [Patient interview schedule]	v.01	05 August 2019
IRAS Application Form [IRAS_Form_22082019]		22 August 2019
IRAS Application Form XML file [IRAS_Form_22082019]		22 August 2019
IRAS Checklist XML [Checklist_22082019]		22 August 2019
Letter from funder [Funder letter]		28 February 2018
Letter from sponsor [Sponsor letter]		23 July 2019
Letters of invitation to participant [Case study practice letter]	v.02	26 June 2019
Participant consent form [Patient consent form]	v.0.3	26 June 2019
Participant consent form [Dental team consent form]	v.02	26 June 2019
Participant information sheet (PIS) [Dental team PIS]	v.03	26 June 2019
Participant information sheet (PIS) [Patient PIS]	v.03	26 June 2019

Research protocol or project proposal [Protocol]	v.03	26 June 2019
Summary CV for Chief Investigator (CI) [CV - AB]		02 August 2019
Summary CV for student [CV - EB]		02 August 2019
Summary CV for supervisor (student research) [CV - IC]		05 August 2019

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: <http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: <https://www.hra.nhs.uk/planning-and-improving-research/learning/>

With the Committee's best wishes for the success of this project.

19/NW/0568	Please quote this number on all correspondence
------------	--

Yours sincerely



Dr Gideon Smith
Chair

Email: nrescommittee.northwest-gmwest@nhs.net

Enclosures: List of names and professions of members who took part in the review
 "After ethical review – guidance for researchers"

Copy to: Ms Helen Falconer

9.13.3 First Category C ethical amendment – dental professional recruitment methods

Partner Organisations:

Health Research Authority, England

NHS Research Scotland

HSC Research & Development, Public Health Agency, Northern Ireland

NIHR Clinical Research Network, England

NISCHR Permissions Co-ordinating Unit, Wales

Notification of Non-Substantial/Minor Amendments(s) for NHS Studies

This template must **only** be used to notify NHS/HSC R&D office(s) of amendments, which are **NOT** categorised as Substantial Amendments.

If you need to notify a Substantial Amendment to your study then you **MUST** use the appropriate Substantial Amendment form in IRAS.

Instructions for using this template

- For guidance on amendments refer to <http://www.hra.nhs.uk/research-community/during-your-research-project/amendments/>
- This template should be completed by the CI and optionally authorised by Sponsor, if required by sponsor guidelines.
- This form should be submitted according to the instructions provided for NHS/HSC R&D at <http://www.hra.nhs.uk/research-community/during-your-research-project/amendments/which-review-bodies-need-to-approve-or-be-notified-of-which-types-of-amendments/> . If you do not submit your notification in accordance with these instructions then processing of your submission may be significantly delayed.

1. Study Information

Full title of study:	Understanding the Oral Health Professional's Roles in Supporting Patient Self-Care in Contexts of Social and Economic Deprivation
IRAS Project ID:	254020
Sponsor Amendment Notification number:	NSA01
Sponsor Amendment Notification date:	01.04.20
Details of Chief Investigator:	
Name [first name and surname]	Alison Bullock
Address:	School of Social Sciences, 12 Museum Place, Cardiff University
Postcode:	CF10 3BG
Contact telephone number:	02920 870780
Email address:	BullockAD@cardiff.ac.uk
Details of Lead Sponsor:	
Name:	Helen Falconer
Contact email address:	FalconerHE@cardiff.ac.uk
Details of Lead Nation:	
Name of lead nation <i>delete as appropriate</i>	Wales
If England led is the study going through CSP? <i>delete as appropriate</i>	No
Name of lead R&D office:	Cwm Taf Morgannwg University Health Board

2. Summary of amendment(s)

This template must only be used to notify NHS/HSC R&D office(s) of amendments, which are NOT categorised as Substantial Amendments. If you need to notify a Substantial Amendment to your study then you MUST use the appropriate Substantial Amendment form in IRAS.

No.	Brief description of amendment <i>(please enter each separate amendment in a new row)</i>	Amendment applies to <i>(delete/ list as appropriate)</i>		List relevant supporting document(s), including version numbers <i>(please ensure all referenced supporting documents are submitted with this form)</i>		R&D category of amendment <i>(category A, B, C) For office use only</i>
		Nation	Sites	Document	Version	
1	Addition of individual telephone interviews with dental professionals not affiliated with case studies (to reduce face-to-face contact during the Covid-19 pandemic).	Wales	All sites or list affected sites	Protocol Dental professional information sheet Dental professional consent form	0.4 0.1 0.1	
2						
3						
4						
5						

[Add further rows as required]

Partner Organisations:

Health Research Authority, England

NHS Research Scotland

HSC Research & Development, Public Health Agency, Northern Ireland

NIHR Clinical Research Network, England

NISCHR Permissions Co-ordinating Unit, Wales

3. Declaration(s)

Declaration by Chief Investigator

- I confirm that the information in this form is accurate to the best of my knowledge and I take full responsibility for it.
- I consider that it would be reasonable for the proposed amendment(s) to be implemented.

Signature of Chief Investigator: ... 

Print name: A D BULLOCK.....


Date: ...01/04/20.....

Optional Declaration by the Sponsor's Representative (as per Sponsor Guidelines)

The sponsor of an approved study is responsible for all amendments made during its conduct.

The person authorising the declaration should be authorised to do so. There is no requirement for a particular level of seniority; the sponsor's rules on delegated authority should be adhered to.

- I confirm the sponsor's support for the amendment(s) in this notification.

Signature of sponsor's representative: 

Print name: Helen Falconer

Post: Research Governance Officer

Organisation: Cardiff University

Date: 02/04/20

9.13.4 Second Category C ethical amendment- Patient recruitment methods.

Amendment Tool				
v1.2 11 Jun 2020				For office use QC: No
Section 1: Project Information				
Short project title*:	The Oral Health Professional's Roles in Supporting Patient Self-Care			
IRAS project ID* (or REC reference if no IRAS project ID is available):	254020			
Sponsor amendment reference number*:	NSA02			
Sponsor amendment date* (enter as DD/MM/YY):	15 July 2020			
Summary of amendment including justification*:	Owing to Covid-19 and changes to general dental practices, this amendment is seeking to change the method of recruitment for dental patients from face-to-face methods within the dental practice to remote recruiting via HealthWise Wales email mailouts and social media posts. General dental practice is currently operating a reduced operation with no routine dental check-ups and only carrying out a restricted amount of procedures, typically emergency work. Attendance within the practice is not appropriate at this time owing to infection transmission measures. Involving the practice in recruitment is also an unreasonable ask at the moment. Data gathering itself was previously using remote methods (telephone interviews) and this will remain unchanged.			
Project type:	<input checked="" type="radio"/> Specific study <input type="radio"/> Research tissue bank <input type="radio"/> Research database			
Has the study been reviewed by a UKECA-recognised Research Ethics Committee (REC) prior to this amendment?:	<input checked="" type="radio"/> Yes <input type="radio"/> No			
What type of UKECA-recognised Research Ethics Committee (REC) review is applicable?:	<input checked="" type="radio"/> NHS/HSC REC <input type="radio"/> Ministry of Defence (MoDREC)			
Is all or part of this amendment being resubmitted to the Research Ethics Committee (REC) as a modified amendment?	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Where is the NHS/HSC Research Ethics Committee (REC) that reviewed the study based?:	England	Wales	Scotland	Northern Ireland
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Was the study a clinical trial of an Investigational medicinal product (CTIMP) OR does the amendment make it one?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Was the study a clinical investigation or other study of a medical device OR does the amendment make it one?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve the administration of radioactive substances, therefore requiring ARSAC review, OR does the amendment introduce this?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve the use of research exposures to ionising radiation (not involving the administration of radioactive substances) OR does the amendment introduce this?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve adults lacking capacity OR does the amendment introduce this?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve access to confidential patient information without consent OR does the amendment introduce this?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve prisoners OR does the amendment introduce this?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
Did the study involve NHS/HSC organisations prior to this amendment?:	<input checked="" type="radio"/> Yes <input type="radio"/> No			
Did the study involve non-NHS/HSC organisations OR does the amendment introduce them?:	<input type="radio"/> Yes <input checked="" type="radio"/> No			
	England	Wales	Scotland	Northern Ireland
Lead nation for the study:	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Which nations had participating NHS/HSC organisations prior to this amendment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Which nations will have participating NHS/HSC organisations after this amendment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2: Summary of change(s)

Please note: Each change being made as part of the amendment must be entered separately. For example, if an amendment to a clinical trial of an investigational medicinal product (CTIMP) involves an update to the Investigator's Brochure (IB), affecting the Reference Safety Information (RSI) and so the information documents to be given to participants, these should be entered into the amendment tool as three separate changes. A list of all possible changes is available on the "Glossary of Changes" tab. To add another change, tick the "Add another change" box.

Change 1				
Area of change (selected):	Participant Procedures			
Specific change (selected - only available when area of change is selected first):	Procedures - Change to the procedures undertaken by participants where there is no increased risk to the participant (e.g. changing site visits to phone calls or postal questionnaires)			
Further information (free text):	Previously, dental patients were to be recruited by the researcher face-to-face within the waiting rooms of general dental practices. This amendment seeks to move recruitment to remote methods such as email and social media posts. Healthwise Wales will issue invitations to people on their registered database. This will be supplemented by social media adverts posted on local area Facebook groups.			
Applicability:	England	Wales	Scotland	Northern Ireland
Where are the participating NHS/HSC organisations located that will be affected by this change?:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Will all participating NHS/HSC organisations be affected by this change, or only some?:	<input checked="" type="radio"/> All		<input type="radio"/> Some	

Add another change:

Section 3: Declaration(s) and look for submission

Declaration by the Sponsor or authorised delegate

- I confirm that the Sponsor takes responsibility for the completed amendment tool
- I confirm that I have been formally authorised by the sponsor to complete the amendment tool on their behalf

Name (first name and surname):	Chris Shaw
Email address:	resgov@cardiff.ac.uk

Look for submission

Please note: This button will only become available when all mandatory (*) fields have been completed. When the button is available, clicking it will generate a PDF copy of the completed amendment tool that can be included in the amendment submission. Please ensure that the amendment tool is completed correctly before locking it for submission.

Look for submission

After locking the tool, refer to the "Submission Guidance" tab for further information about the next steps for the amendment.

9.14 Appendix 14: Patient participant characteristics

Table 9.3: Appendix - Summary of patient participant characteristics

Participant	M/F	Age	NHS or private	Time with current dentist	Time with current practice	Ever seen a DH or DT	Attendance	Oral health	Interview length
AB1-02	M	85	NHS	3-4 years	3-4 years	Yes	/	Okay	17.14
AB1-04	M	70	NHS	4.5 years	4.5 years	Yes	6 monthly	Generally okay	16.24
AB1-05	M	45	NHS	~1 year	10 years	Yes	6 monthly	Pretty good, better in recent years	12.54
AB1-08	F	52	NHS	2-3 years	2-3 years	Yes	6 monthly	Not brilliant but not dire either	16.58
AB1-13	F	63	NHS	~13 years	~13 years	Yes	6 monthly	Adequate	5.59
AB1-16	F	87	NHS	~13 years	~13 years	Yes	12 monthly	Fine	11.31
AB1-17	F	72	NHS	A few years	A few years	Yes	6 monthly	Good	9.52
AB1-18	F	75	NHS	First appointment	6 years	Yes	6 monthly	Good	8.43
AB1-19	F	72	NHS	First appointment	~10 years	Yes	2 to 3 times a year	Alright	11.43
AB1-23	F	56	NHS	Second appointment	A few years	Yes	/	Okay	5.56
CTM1-02	F	45-54	Private	~6 years	~6 years	/	6 monthly	Not particularly great	7.40
CTM1-09	F	69	NHS	4-5 years	4-5 years	/	6 monthly	Mostly dentures	13.59
CTM1-11	M	60	NHS	>10 years	>10 years	/	6 monthly	Pretty good	11.54
CTM1-12	M	30	NHS	~1 year	~1 year	/	6 monthly	Fine	9.58

CTM1-14	F	42	NHS	First appointment	First appointment	/	Not attended for 20 years	/	11.32
CTM1-16	F	27	NHS	3 years	5 years	/	6 monthly	Not the best	6.03
CTM1-18	M	39	NHS	3-4 months	3-4 months	/	/	Fine	6.13
CTM1-20	F	53	NHS	~5 years	~15 years	/	Often, for treatment	Not great	18.36
CTM1-21	M	72	NHS	/	~10 years	/	6 monthly	Medium	8.06
CTM1-29	M	29	NHS	Second appointment	2 years	/	6 monthly	Fine	9.50
ABp-01	F	45-54	NHS	~30 years	~30 years	No	6 monthly	Pretty good	25.23
ABp-02	F	47	NHS	>10 years	>10 years	No	6 monthly	Good	15.28
CTMp-01	F	68	NHS	1 year	10 years	Yes, regularly	3 monthly (Dentist & DH)	Terrible	19.29
CTMp-02	M	68	NHS	Many years	Many years	No	6 monthly	Pretty good	12.53
CTMp-03	F	66	Private	25 years	Moved with them to several practices	Yes	6 monthly	Lost teeth when young so very strict now	20.01
CTMp-04	F	72	NHS	"Some years"	20 years	No	4 monthly	Issues with plaque	20.00
ABp-03	F	70	NHS	~5 years	~5 years	Yes	6 monthly, dentist and DH	Okay	15.10
ABp-04	F	57	NHS	3 years	3 years	Not sure	12 monthly	Better than it was, history of gingivitis	12.58
CTMp-05	F	29	NHS	~2 years	~2 years	Yes	6 monthly	Very good	18.12
CTMp-06	F	74	NHS	1.5 years	25 years	Yes	6 monthly	Good	13.50
CTMp-07	M	/	NHS	12 years	Longer	No	6 monthly	Fine	16.20

CTMp-08	F	58	NHS	Has seen several	15 years	Yes	6 monthly	Good	35.50
CTMp-09	F	65	NHS	7-8 years	7-8 years	No	6 monthly	Good for my age	20.14
CTMp-10	F	56	Private	>5 years	>5 years	No	6 monthly	Good generally	20.43
ABp-05	F	49	NHS	~2 years	~2 years	Yes	3 monthly	/	20.24
ABp-06	F	67	NHS	~25 years	~25years	Yes, regularly	Dentist 6 monthly, DH 3 monthly	Not good, history of gum issues	14.55
ABp-07	M	85	NHS	>20 years	>20 years	No	6 monthly	Quite good	15.03
CTMp-11	M	58	NHS	~10 years	Moved with them from other practices	No	6 monthly	/	13.31
ABp-08	F	62	NHS	~2 years	Longer	Yes	Dentist 6 monthly, DH 4 monthly	Very good	11.31
CTMp-12	M	72	NHS	~1 year	~1 year	No	6 monthly	Not what they should be	10.22
CTMp-13	M	72	NHS	40 years	40 years	No	6 monthly	Pretty good for my age	15.44
CTMp-14	M	67	NHS	~18 years	~18 years	Yes	6 or 12 monthly depending on oral health	Pretty good	16.50
ABp-09	M	67	NHS	Has seen three dentists over time	18 years	Yes	6 monthly	Good	12.04
CTMp-15	M	68	NHS	~20 years	~20 years	Yes	12 monthly	Pretty good	27.18
CTMp-16	F	81	NHS	/	~30 years	Yes	6 monthly	Not bad for my age	20.39
CTMp-17	M	65	Private	Unsure	> 40 years	No	6 monthly	Generally good	42.4
ABp-10	M	50	NHS	15 years	15 years	No	6 monthly	Good	26.45

CTMp-18	M	66	Private	~1 year	~1 year	Yes	6 monthly	Not brilliant	25.06
CTMp-19	F	69	NHS	~1 year	10 years	Yes, regularly	3 monthly	Okay, history of gum problems	12.57
ABp-11	M	59	NHS	~40 years	~40 years	Yes	3 monthly	Not good, gum disease	31.38
ABp-12	F	60	NHS	~2 years	~2 years	Yes, regularly	6 or 12 monthly depending on oral health	Not good, gum disease	24.12
ABp-13	F	48	NHS	/	>40 years	No	12 monthly	Good	22.33
CTMp-20	F	63	Private	~15 years	~15 years	Yes	6 monthly	Fine	15.32
CTMp-21	F	66	Private	~24 years	~24 years	Yes, regularly	Dentist 6 monthly, DH 3 monthly	Very good	24.42
CTMp-22	F	63	NHS	7-8 years	7-8 years	No	12 monthly	Good	19.48
ABp-14	F	65	Private	>20 years	>20 years	Yes	Dentist 6 monthly, DH 3 monthly	Good, but dry mouth	16.15
ABp-15	M	65	NHS	>20 years	>20 years	No	3 monthly	Okay	13.02
CTMp-23	M	68	NHS	~5 years	~5 years	No	12 monthly	Not too good, earlier tooth loss	16.56
ABp-16	M	73	NHS	/	~40 years	No	6 monthly	Not very good	15.48
CTMp-24	M	68	Private	~0.5 years	~6 months	No	6 monthly	Okay	22.56
ABp-17	M	72	NHS	6 years	6 years	Yes	6 monthly	Okay	5.59
ABp-18	F	68	Private	Several years	~30 years	Yes	Dentist 6 monthly, DH 3 monthly	Good	15.28
ABp-19	F	68	NHS	3 years	3 years	Yes	3 monthly	Generally pretty good	12.58
ABp-20	F	77	Private	~16 years	~16 years	Yes, regularly	Dentist 6 monthly, DH 3 monthly	Okay	31.47

ABp-21	F	59	NHS	Changed recently	20 years	Yes	6 monthly	Good	19.55
ABp-22	M	60	NHS	2 years	2 years	Yes	6 monthly	Pretty good	15.45
CTMp-25	F	27	NHS	4 years	4 years	No	6 monthly	Excellent	16.29
ABp-23	M	65	NHS	Several years	~36 years	Yes	6 monthly	Good	14.47
ABp-24	F	72	Private	Several years	33 years	Yes	3 monthly (DH)	Good	24.17
ABp-25	F	42	NHS	4 years	4 years	Yes	12 monthly	Good	16.22
CTMp-26	M	71	Private	1-2 years	1-2 years	Yes	6 months	Issues with lichen planus and missing teeth	13.41
CTMp-27	F	49	NHS	Sees several within the practice	4 years	Yes	6 monthly	Pretty good	16.17
CTMp-28	M	61	NHS	6 years	6 years	No	/	Pretty good	11.29
ABp-26	M	40	NHS	~1 year	>30 years	Yes	6 monthly	Pretty good	16.2
ABp-27	F	69	Private	>20 years	> 20 years	Yes	Dentist 6 monthly, DH 3 monthly	Very good	15.10
CTMp-29	M	65	NHS	~7 years	~7 years	No	6 monthly	Pretty good	17.59
CTMp-30	F	37	NHS	Sees different dentists there	20 years	No	6 monthly	Very good	12.3
ABp-28	M	66	NHS	3-4 years	3-4 years	Yes	6 monthly	Fine	14.45
ABp-29	F	51	NHS	18 months	27 years	Yes	6 monthly dentist and DH	Pretty good	21.17
CTMp-31	F	61	NHS	~10 years	~15 years	Yes	6 monthly	Good	15.12
CTMp-32	F	66	Private	20 years	20 years	Yes	/	Recent issues	21.00

ABp-30	F	64	NHS	Sees different dentists there	8-10 years	No	6 monthly	Okay, fine	12.40
ABp-31	F	66	NHS	5 years	5 years	Yes	6 monthly	Good	23.55
CTMp-33	F	51	NHS	15 years	15 years	No	6 monthly	Not too bad	13.07
ABp-32	F	35-45	NHS	~3 years	25-30 years	No	6 monthly	Good	15.39
CTMp-34	M	75	NHS	~3 years	Longer	No	6 monthly	Good for age	22.28
CTMp-35	F	73	NHS	42 years	42 years	Yes	6 monthly	Good	21.33