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Optimising the role of the Dental Health Support Worker in Childsmile Practice:
a comparative Realist approach

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Abstract

Background: Childsmile, the national oral health improvement programme for children in Scotland, aims to reduce oral health inequalities and improve access to dental services. Childsmile is delivered, in part, by a new category of lay or community-based worker known as a Dental Health Support Worker (DHSW) who supports families to improve oral health behaviours and attend a dental practice. Findings from Childsmile's national process evaluation indicated there was widespread variation in delivery of the DHSW role and additional research was required to further understand and develop programme theory for the DHSW role; and clarify areas of variation which were adaptive and which were a risk to the programme meeting its desired objectives.

Aims: The overarching aim was to gain further understanding of which factors and variants (contextual and those associated with programme delivery) impact on effectiveness of the DHSW role within Childsmile Practice. This research is a component study of the national Childsmile evaluation strategy. Findings will be fed back to the Childsmile programme to optimise delivery of the role and to enable future evaluation of the role's impact.

Methods: Learning and evidence generation was triangulated from two phases of research, comprising three component studies. Phase 1 comprised the sensitising study and comparative case studies: both provided learning from within Childsmile. The sensitising study was designed as a scoping exercise using qualitative data collection methods. The aim was to establish existing programme theory and explicate delivery of the DHSW role, while uncovering deviation (from programme theory) and variation within and between NHS boards. Findings were used to design three comparative case studies, comprising one DHSW and key stakeholders involved in delivery of the role from three NHS boards. The comparative case studies employed qualitative data collection methods; and were designed to address the overarching aim, and explore the casual links between context, delivery, and outcomes in delivery of the role using Realist-inspired analysis. Phase 2 comprised a Realist Review to provide learning from out with Childsmile. The aim was to gain an understanding of which components of child health interventions, delivered by lay health workers to parents, could influence 'child health parenting behaviours'.

Findings and Conclusions: Findings indicated that in terms of motivational readiness to engage with positive oral health parenting behaviours (POHPBs) there were three types of families referred to the DHSW for support: low, moderate, and high-risk. It was established that to address programme aims DHSWs ought to support moderate-high risk families, yet DHSWs only had capacity to support low-moderate risk families. Findings demonstrated that the Public Health Nurses/Health Visitors were best placed to triage families according to their needs and motivational readiness. The peer-ness of the DHSW role was found to positively influence parental engagement with the programme and facilitate person-centred support. However, an embedded 'sweetie culture' and health damaging environments were found to negatively impact on parents' self-efficacy and perceived locus of control to engage with POHPBs. Learning indicated that: delivery over a prolonged period of time; incorporation of the programme into the Early Years Pathway and GIRFEC policy; and recent changes to the Children and Young Person (Scotland) Act (2014), served to embed Childsmile within the NHS boards and facilitated stakeholder buy-in, which positively impacted on delivery of the role.

From the learning derived within and out with Childsmile the recommendations for the DHSW role included: (1) DHSW support should move away from a primarily information provision and facilitation of families into dental practice role, and incorporate socio-emotional and person-centred support; (2) The DHSW role should be redefined to support moderate-high risk families; and interpretation and application of referral criteria should be addressed to ensure continuity with who is referred for support; and (3) Programme theory for the DHSW role should be refined and future evaluative effort should concentrate on assessing impact.

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I dedicate this doctoral thesis and its four years of hard work to a man who has been an inspiration to *me* over the years: my brother, David. If anyone knows how far I've come and what a big personal achievement this PhD is for me, it's you bro. I look forward to celebrating more of your achievements and us looking back and saying, "All things considering, we did no bad eh?"

Author's Declaration

I declare that, except where explicit reference is made, that this thesis is the result of my own work and has not been submitted, partly or in whole, for any other degree at the University of Glasgow or any other institution.

Signature: ....

Printed Name: ....

Abbreviations

The following abbreviations are used throughout this thesis:

CERT	Central Evaluation and Research Team
CHP	Community Health Partnership
CMO	Context, Mechanism, and Outcome Configuration
DHSW	Dental Health Support Worker
FTA	Fail to Attend
FVA	Fluoride Varnish Application
GDS	General Dental Services
GIRFEC	Getting it Right for Every Child
HEAT	Health improvement, Efficiency, Access to treatment, and Treatment
LHW	Lay Health Worker
MIDAS	Management Information and Dental Accounting System
MRC	Medical Research Council
MRT	Mid-Range Theory
NHS	National Health Service
PDS	Public Dental Services
PHN/HV	Public Health Nurse/Health Visitor
POHPB	Positive Oral Health Parenting Behaviour
SIMD	Scottish Index of Multiple Deprivation

Chapter 1 Introduction

Chapter 1 outlines the public health concern that is dental caries and describes oral health inequalities within the context of Scotland. In doing so, this chapter provides background to the development of the Childsmile programme. The aetiology of dental caries in infants and young children is described; and the psychological, physiological, and wider social and economic impact of the disease considered. Measures to prevent caries are explored, particularly in relation to parents' adoption of positive oral health parenting behaviours including engagement with dental services.

1.1 Overview of Dental Caries

Oral health is defined as being free from "…mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing." (World Health Organization, 2012). Despite the relative ease of prevention, dental caries is one of the most common oral health diseases affecting "nearly 100% of adults [and] 60-90% of school age children [worldwide]" (World Health Organization, 2012). Dental caries is the most common infectious disease affecting humans (Balakrishnan, Simmonds, & Tagg, 2000).

1.1.1 Aetiology of Dental Caries

Dental caries is caused when the sugars in food and drink are metabolised by the bacteria of the material which forms on the teeth: known as dental plaque. The acids produced from this reaction in plaque can lead to loss of calcium and phosphate of the tooth enamel: a process called demineralisation. While saliva naturally dilutes the acids in plaque and leads to the remineralisation ('healing') of tooth enamel, dental caries occurs when this natural balance is disrupted (Dental Health Foundation Ireland, 2016).

The most common cause of dental caries is related to the consumption of high levels of sugars (Harris, Nicoll, Adair, & Pine, 2004). The high intake of free sugars (e.g. those added to food and beverages by manufacturers, cooks, and consumers) as opposed to intrinsic sugars found within the structure of food (e.g. fruit, vegetables), combined with the length of time the teeth are exposed to sugars, cause the greatest threat to oral health (World Health Organization, 2015).

The acid produced from plaque can remain in the mouth for 20-40 minutes after the consumption of food. If teeth are continually exposed to sugars throughout the day the risk of caries increases because the rate of demineralisation will exceed that of remineralisation (Colak, Dulgergil, Dalli, & Hamidi, 2013). This process of demineralisation and remineralisation of the teeth following sugar consumption is illustrated in Figure 1.1.

Plaque Level Acids
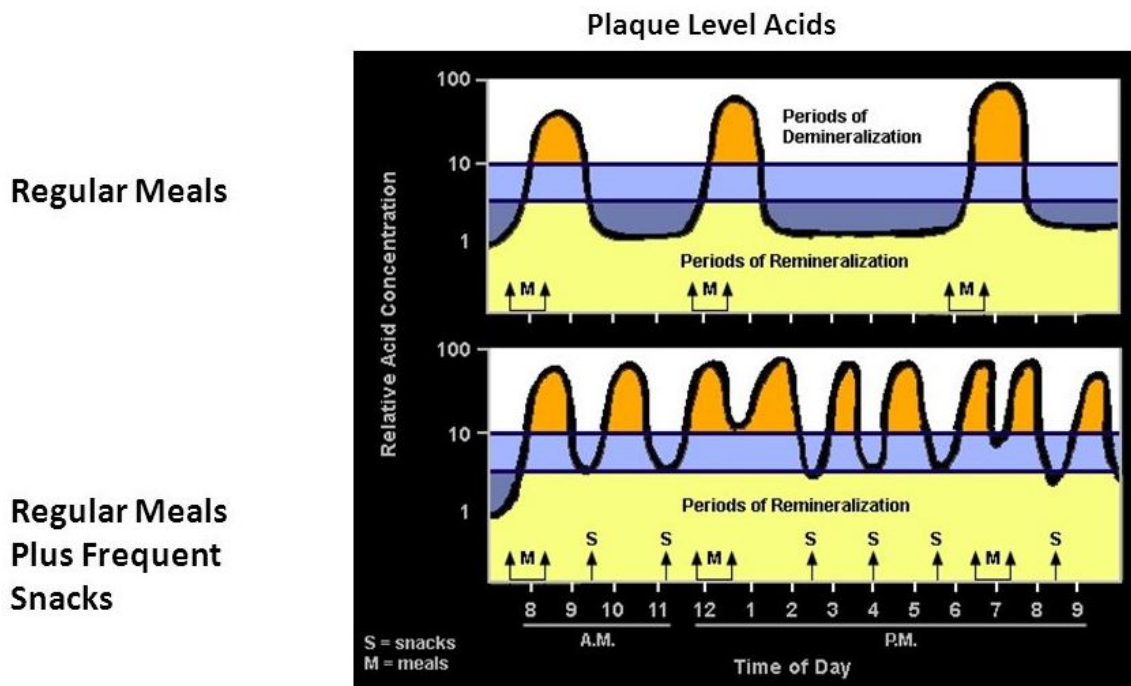
Figure 1:1: Effect on plaque pH when sugar is consumed at mealtimes Vs between meals.

Figure 1.1 presents two 'Stephan Curves' which illustrate how the frequent consumption of sugars can present a threat to oral health.

The upper graph illustrates that when sugars are restricted to mealtimes only (i.e. breakfast, lunch, and dinner) there are frequent opportunities throughout the day, between meals, whereby the teeth can undergo the process of remineralisation. In contrast, the lower graph demonstrates that when teeth are exposed to sugars during mealtimes *and* snacking between mealtimes, the opportunities for remineralisation are reduced. Consequently, dental caries occurs because the natural balance is disrupted (Dental Health Foundation Ireland, 2016). Current advice is to restrict sugars to mealtimes only, and limit between-meal snacking to low-sugar/sugar-free snacks to reduce the risk of dental caries.

1.1.1.1 Dental Caries in Infants and Young Children

The composition of children's primary ('baby') teeth make children more susceptible to caries compared to the permanent ('adult') teeth because of the reduced enamel levels (Royal College of Surgeons Faculty of Dental Surgery, 2015). Considering children within Scotland typically consume seven intakes of

food per day, many of which are rich in free sugars (Scottish Intercollegiate Guidelines Network, 2000), many children are at an increased risk of dental caries. Additionally, infants are at risk of dental caries via prolonged exposure to the sugars in drinks (including milk) via nocturnal exposure. For example, putting infants to bed with a bottle (Colak et al., 2013).

1.1.2 Impact of Dental Caries in Infants and Young Children

Dental caries in infants and young children is considered to be at epidemic levels across some low, middle, and high income countries; and is an indicator of tooth decay in later childhood and adolescence (Colak et al., 2013; Leong, Gussy, Barrow, De Silva Sanigorski, & Waters, 2013).

Failure to identify, prevent, or treat dental caries can have profound psychological and physiological consequences. Decay of the primary teeth can be painful and can impact a child's quality of life; dental caries can impact on children's capacity to eat, speak, and smile; and cause anxiety, pain, and embarrassment (Medeiros, Otero, Frencken, Bronkhurst, & Leal, 2014). If left untreated, dental caries can require hospitalisation for tooth extraction under general anaesthesia: a procedure which can be frightening and painful for young children (Colak et al., 2013). Such extraction can create further oral health difficulties when the permanent teeth grow in earlier than normal.

The economic burden and wider impact of dental caries is apparent. Primary and secondary dental care for adults and children within England costs the National Health Service (NHS) £3.4billion per year (Claxton, Taylor, & Kay, 2016). While hospitalisation for tooth extractions, due to dental caries, is reported to cost the NHS £30million (Royal College of Surgeons Faculty of Dental Surgery, 2015).

In England, dental caries is reported to be the most common reason for children aged between five and nine years to be admitted to hospital. In 2013-14, approximately 46,500 children aged up to 19 years were admitted to hospital with a primary diagnosis of dental caries, and admissions were highest among the five-nine year age group. Furthermore, the latter age group showed a 14 percent increase in hospital admissions between the period 2010-11 and 2013-14 (Royal College of Surgeons Faculty of Dental Surgery, 2015). Within Scotland,

these rates appear to be declining gradually over time. Figure 1.2 outlines the rates per 10,000 children (aged 0-17 years) within Scotland receiving general anaesthesia for dental extractions in the period 2002-2011.

The (2012) Annual Report of the Chief Dental Officer reported that across Scotland, general anaesthesia for dental extractions among children gradually decreased in the period 2002-2011. While this decreasing trend has continued in the period 2010-11 to 2014-15, the overall decrease within this timeframe is reported to be as low as 5% (NHS Scotland, 2012; Information Services Division Scotland, 2016b).

1.1.3 Prevention of Dental Caries in Infants and Young Children

Dental caries is a preventable disease which can be avoided via a combination of the following positive oral health behaviours:

- Exposure to optimal levels of fluoride via twice-daily tooth brushing using toothpaste containing 1450 parts per million (ppm[1]) fluoride or 1000ppm for children aged up to six years (Scottish Dental Clinical Effectiveness Programme, 2010).

- Regular attendance at a dental practice for preventative or curative care.

- Restricting sugars to mealtimes (Scottish Intercollegiate Guidelines Network, 2014).

Establishing positive oral health behaviours in early childhood can improve long term oral health outcomes (Adair et al., 2004; Elison, Norgate, Dugdill, & Pine, 2014).

1.1.3.1 Exposure to Optimal Levels of Fluoride

Fluoride is a naturally occurring mineral which is present, to a degree, in water and food. Fluoride can slow down the process of demineralisation of the tooth and enable remineralisation to occur, while long term exposure to optimal levels

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[1] Parts per million (ppm) refers to the level of fluoride within the toothpaste. 1450ppm means for every one million units of water, there is 1450 units of fluoride. (Oral Answers 2010)

of fluoride can reduce the prevalence of dental caries in children and adults (Dental Health Foundation Ireland, 2016; World Health Organization, 2012).

1.1.3.2 *Fluoridated Products*

Fluoridated products, such as toothpaste and mouthwash, are the most readily available and easily accessible form of fluoride and can reduce tooth decay in infants and young children compared to non-fluoridated products (Featherstone, 2004; Iheozor-Ejiofor et al., 2015). Additional exposure to fluoride can be via fluoride varnish or water fluoridation.

In recent years the use of fluoride varnish, a concentrated topical fluoride brushed onto teeth, has been shown to reduce the risk of tooth decay among young children by increasing exposure of the primary and permanent teeth to fluoride (Marinho, Worthington, Walsh, & Clarkson, 2013; Scottish Intercollegiate Guidelines Network, 2014).

Water fluoridation is the controlled treatment of public water supply with fluoride to reduce tooth decay. By exposing teeth to fluoride when the enamel is developing (via consumption of fluoridated water) teeth are strengthened and plaque resistance is increased thus enhancing the remineralisation process (NHS Choices, 2015; The British Fluoridation Society, 2012).

In the United Kingdom, the decision to treat water supplies with fluoride is made by local authorities. In 1964, water treatment to increase levels of fluoride to one milligram of fluoride per litre of water was established and to date, approximately six million people in England receive treated fluoridated water (NHS Choices, 2015a). The Scottish Government however reported widespread public concern due to perceived lack of sufficient evidence surrounding the safety of water fluoridation and a resistance to the "treatment to an entire population" (The Scottish Executive, 2005). Therefore, water in Scotland currently contains only naturally occurring low levels of fluoride and is not treated to increase levels of fluoridation. Nevertheless, it is important to note the absence of fluoride does not, in itself, cause dental caries (Dental Health Foundation Ireland, 2016).

1.1.3.3 Oral Health Parenting Behaviours

Infants and young children are solely dependent on their parents[2] for maintaining positive oral health. Parents play a critical role in the establishment and maintenance of positive oral health behaviours during childhood, and consequently the prevention of childhood dental caries (Duijster, Verrips, & van Loveren, 2014; Leroy, Bogaerts, Hoppenbrouwers, Martens, & Declerck, 2013).

The prevention of childhood dental caries can be achieved by engaging in three key 'positive oral health parenting behaviours' (POHPBs): tooth brushing, attendance at the dental practice, and limiting the consumption of sugars.

Parents are advised to brush their child's teeth twice-daily, using fluoridated toothpaste, from when the first tooth erupts (approximately six months old) until the child is aged seven-eight years (Scottish Dental Clinical Effectiveness Programme, 2010). After which, parents are advised to regularly supervise children's tooth brushing (NHS Choices, 2015).

In a random sample of 630 children aged five to six years in the Netherlands, it was evident that children whose parents establish tooth brushing routines in early infancy were less likely to experience dental caries (Duijster et al., 2014). Similar findings were also found in the UK (Trubey, Moore, & Chestnutt, 2013) in a smaller sample of fifteen parents of children aged three to six years.

NHS dental care for children is free and parents are advised to take their child to a dental appointment by the time the child's primary teeth appear. Regular attendance at the dental clinic, from a young age, for preventative care enables children to become familiar and comfortable with the environment, and can reduce the risk of dental caries (NHS Scotland, 2015). Current advice to parents is to restrict children's sugar intake to meal times and no more than four times throughout the day (Scottish Dental Clinical Effectiveness Programme, 2010). Furthermore, to reduce the risk of dental caries in infants and young children, sweetened drinks should not be given to children in a bottle at night (S. Chambers, 2012; Scottish Dental Clinical Effectiveness Programme, 2010).

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[2] For the purpose of this research, the term 'parent' refers to the child's primary care giver (e.g. biological parent, step-parent, adoptive parent etc).

1.2 Oral Health Inequalities

Health inequalities are differences in people's health experience, status or outcomes. Such differences in health are not considered to be random or unavoidable but instead are associated with socio-economic inequalities (The Marmot Review team, 2010; Walsh, Bendel, Jones, & Hanlon, 2010; R. G. Watt, 2012). Health inequalities are considered to be avoidable because they arise from the social and political environment (National Institute for Health and Care Excellence, 2012; NHS Health Scotland, 2015).

The relationship between dental caries and socioeconomic status is found in a stepwise graded fashion and is disproportionately higher among those experiencing socioeconomic deprivation (Duijster et al., 2014; R. G. Watt, 2012). For example, children with parents in the lowest income group are four times more likely to have decayed, missing, or filled teeth compared to children with parents in the highest income group (Colak et al., 2013).

1.3 Oral Health in Infants and Young Children in Scotland

While Scotland has persistently seen high rates of dental decay and low rates of dental registration among infants and young children (Macpherson et al., 2010), there has been a gradual improvement in children's oral health in recent years (Macpherson, Ball, King, Chalmers, & Gnich, 2015).

An improvement in oral health was also reported by the National Dental Inspection Programme (NDIP) in their recent detailed examinations of a random sample of Primary 7 (n=14,643) and Primary 1 (n=16,251) children in Scotland. NDIP reported a rise in the number of Primary 1 children with no obvious decay experience in their primary teeth from 45% to 68% from the period 2003 (the date data was first recorded) to 2014 (The Scottish Dental Epidemiology Co-ordinating Committee, 2014); and a rise in the number of Primary 7 children with no obvious decay experience in their permanent teeth from 53% to 75% from the period 2005 to 2015 (The Scottish Dental Epidemiology Co-ordinating Committee, 2015).

1.3.1 Dental Registration and Participation in Scotland

The number of children (and adults) registered with a NHS dentist in Scotland has also increased from the period September 2000 to March 2016, and can be seen in Figure 1.3.

Source: ISD, MIDAS
P Figures for March 2016 and September 2015 are provisional
R Figures for March 2015 have been revised
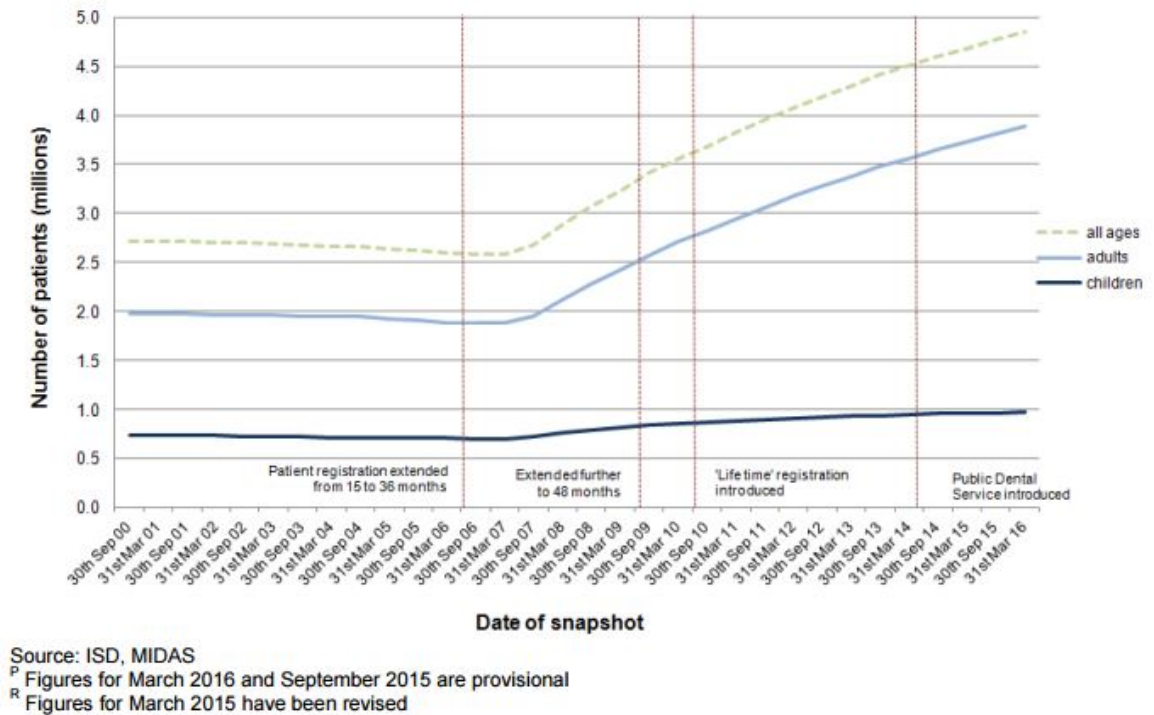
Figure 1:2: No. of children and adults registered with an NHS dentist in Scotland, September 2000 to March 2016 (p,r) (Information Services Division Scotland, 2016)

Figure 1.3 highlights that as of March 2016, 4.9 million patients were registered with a dentist within Scotland, reflecting an increase of 88% since March 2007. Prior to March 2007, there had been an overall *decline* in registration rates. However, this increasing trend in dental practice registration is attributed to the changes to dental registration policy as opposed to a change in attitudes.

Prior to April 2006, if a patient had not attended the dental practice after a period of 15 months their registration expired and they were required to then re-register with the practice. This policy was formally changed in April 2010 when 'lifetime registration' to a dental practice was introduced: hence the subsequent increase in dental practice registrations.

Despite the overall increase in dental practice registration, registration among infants remains relatively low. Figure 1.4 highlights that registration rates among infants and young children increases with age: 48% of children aged birth to two years, compared to (seemingly) 100% of children aged six and older, were registered with a dental practice by March 2016.
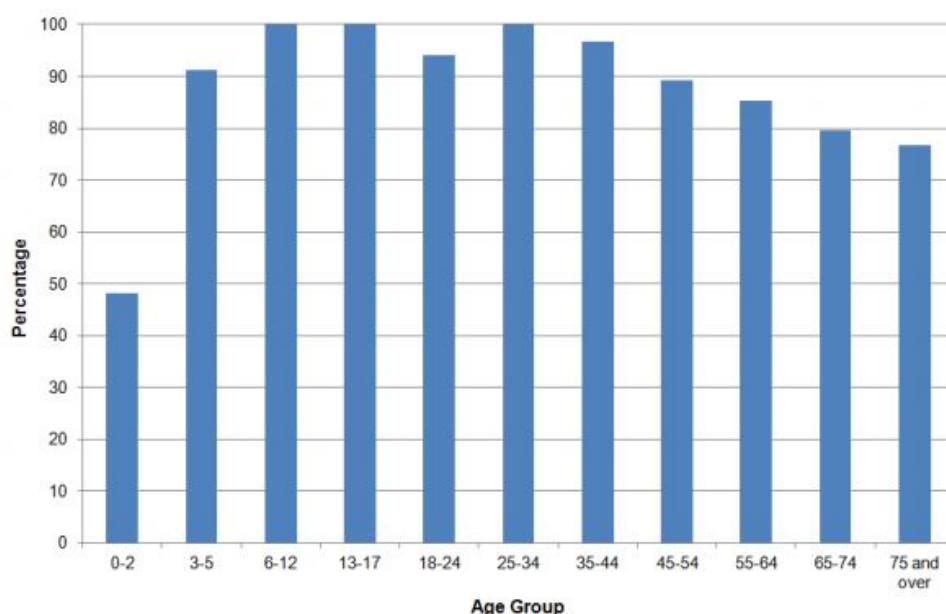
Source: ISD, MIDAS, data extracted in April 2016
C Figures are capped at 100%. The actual (uncapped) rates are provided in the attached figure, see list of tables and charts
P Figures for March 2016 are provisional

Figure 1:3: Percentage of the population registered with an NHS dentist in Scotland by age group as at 31st March 2016 (c,p) (Information Services Division Scotland, 2016)

This difference in dental registration across the ages is considered to be attributed to children attending Primary School and thus receiving dental inspections as part of NDIP (Information Services Division Scotland, 2016).

However, dental practice registration is not necessarily an indicator of attending a dental practice for examination or treatment: which is known as 'participation'. Participation rates for registered infants and young children fell from 100% to 90% from the period September 2006 to September 2010; then dropped to 85% in March 2016 (Information Services Division Scotland, 2016). Yet, participation rates do remain highest among children aged birth to two years.

Figure 1.5 demonstrates that 99% of children aged birth to two years registered with a dental practice and attended an appointment within the last two years. However this is not necessarily an indication of frequency of participation during this period and is instead attributed to a coincidence that the definition of participation and the patients' age cover the same period (e.g. attending the practice within the last two years, and the patient being aged up to two years).
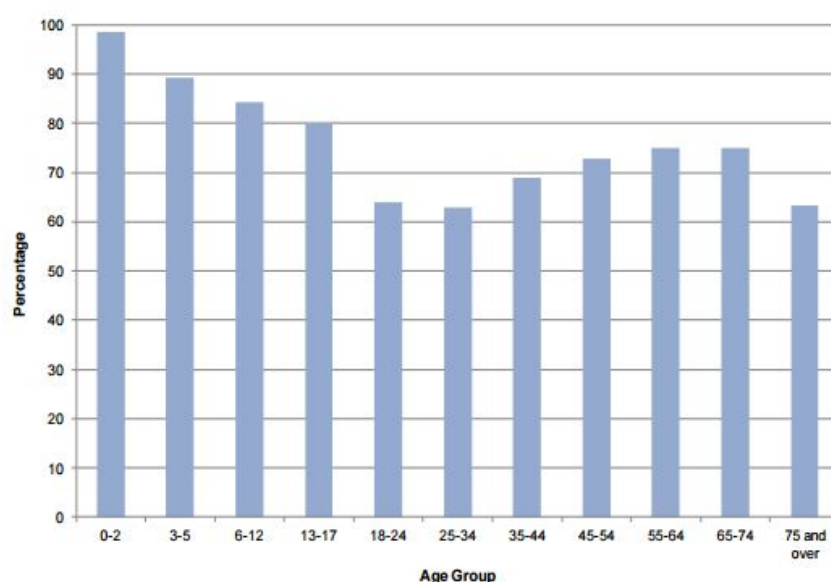
Source: ISD, MIDAS, data extracted in April 2016
P Figures for March 2016 are provisional

Figure 1:4: Percentage of the registered patients participating in GDS[3] by age group as at 31st March 2016 (p) (Information Services Division Scotland, 2016)

1.3.2 Oral Health Inequalities in Scotland

It is reported that there is no longer variation in the registration rates of infants and young children living in the most and least deprived areas. Nevertheless, children living within the most deprived areas were least likely to participate at a dental practice compared to those living in the least deprived areas (Information Services Division Scotland, 2016). These findings are illustrated in Figure 1.6 which highlights the percentage of registered children who are participating at a dental practice by Scottish Index of Multiple Deprivation (SIMD): an area-based measure of socio-economic deprivation.

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[3] General Dental Services (GDS)
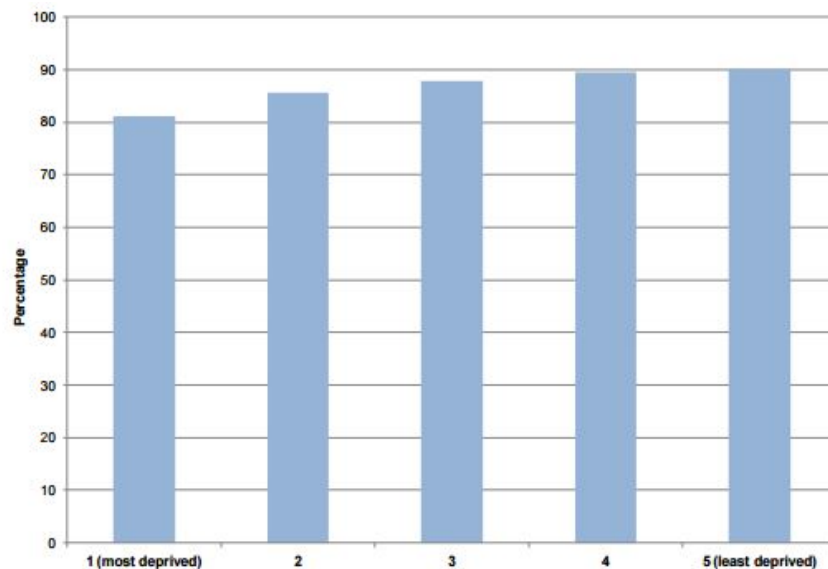
Source: ISD, MIDAS, data extracted in April 2016
P Figures for March 2016 are provisional
Figure 10a does not display 1% of data with missing patient postcode or where SIMD could not be identified. These are classed as unknown and included as a separate category in the supporting Excel workbook.

Figure 1:5: Percentage of the registered patients (children) participating in GDS by Scottish Index of Multiple Deprivation (SIMD) as at 31st March 2016 (p) (Information Services Division Scotland, 2016)

Figure 1.6 highlights that 81% of infants and young children living within SIMD 1 (the most deprived area) attended a dental practice compared to 90% of infants and young children living within SIMD 5 (the least deprived area). Furthermore, the gap between the most and least deprived areas (SIMD 1 and 5, respectively) has widened by nine percentage points as at March 2016 (Information Services Division Scotland, 2016).

Thus, with regards to dental practice participation among infants and young children, while there has been a gradual overall improvement persisting inequalities between the most and least deprived areas remains. This widening gap is further evidenced in the detailed NDIP inspection report of Primary 1 and Primary 7 children, respectively. Figures 1.7 and 1.8 illustrate the proportion of Primary 1 and Primary 7 children with no obvious signs of decay experience by SIMD from 2008 to 2015, respectively.
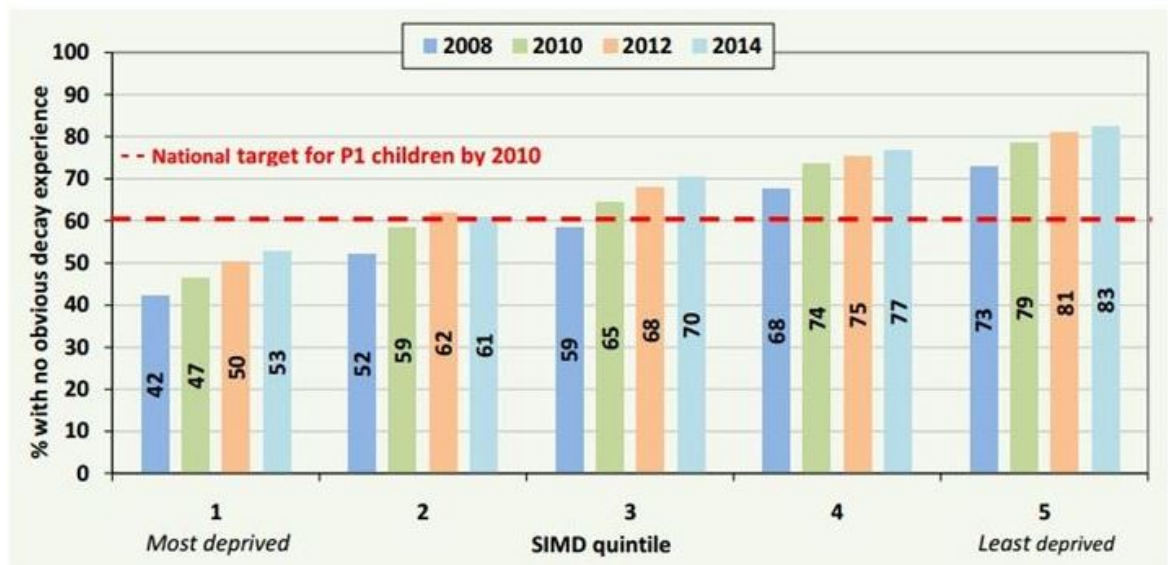
Figure 1:6: Change between 2008 and 2014 in percentage of P1 children in Scotland with no obvious decay experience by SIMD quintile (The Scottish Dental Epidemiology Co-ordinating Committee, 2014)

Figure 1.7 and Figure 1.8 both illustrate that between 2008 and 2015 there was a gradual improvement in the oral health of Primary 1 and Primary 7 children.
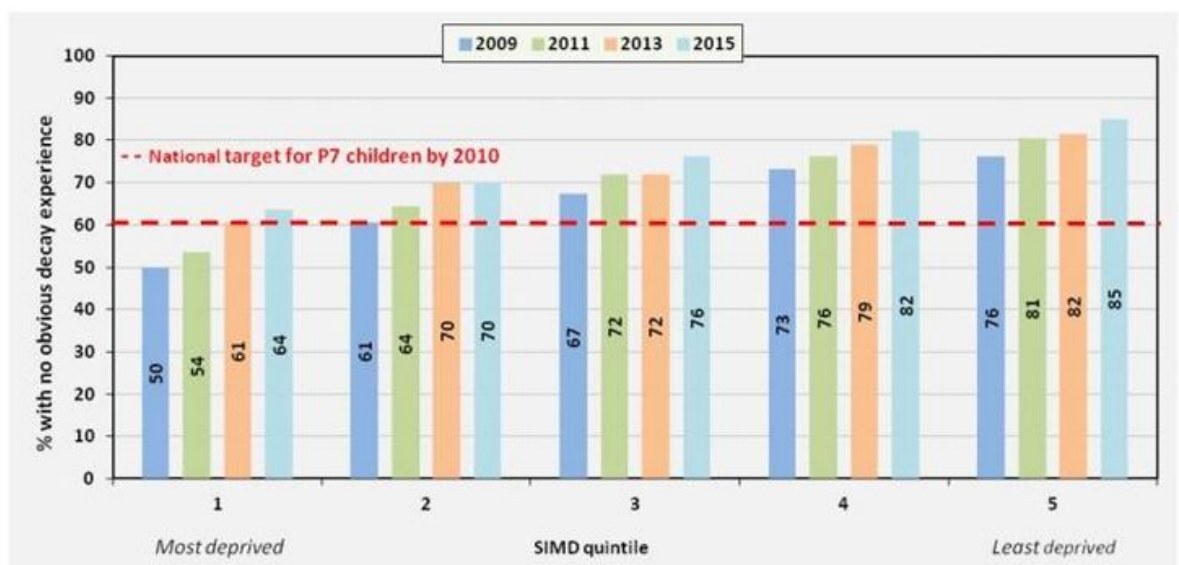
Figure 1:7: Change between 2009 and 2015 in percentage of P7 children in Scotland with no obvious decay experience by SIMD quintile (The Scottish Dental Epidemiology Co-ordinating Committee, 2015)

However, oral health improvement has continued to improve at a higher rate for those living in SIMD 5 compared to those living in SIMD 1. Figure 1.7 highlights

that the absolute inequality between SIMD 1 and SIMD 5 Primary 1 children as at 2008 and 2014 was 31% and 30%, respectively. Such inequalities are also evident among the Primary 7 children. Figure 1.8 highlights that the absolute inequality between SIMD 1 and SIMD 5 Primary 7 children as at 2009 and 2015 was 26% and 21%, respectively.

The NDIP report highlights that while absolute inequalities between SIMD 1 and 5 among Primary 7 children has reduced, there has been only a 1% improvement in the absolute inequality of between SIMD 1 and 5 among Primary 1 children.

Figures 1.7 and 1.8 also highlight that the 2010 national HEAT[4] target of achieving 60% of Primary 1 and Primary 7 children with no obvious decay experience was only achieved among children across *all* SIMD quintiles in 2013. Until this point, the HEAT target had only been achieved within SIMD 2-5.

1.4 Key Findings

Dental registration rates remains low among children aged birth to two years and participation declines by age for children and young adults. Oral health across Scotland is gradually improving across the socio-economic spectrum. Yet, despite a small narrowing of the gap between the oral health of children living within the most and least deprived areas, participation rates remain low and poor oral health remains disproportionately higher for those living in the most deprived areas. Chapter 2 Childsmile will outline the Scottish Governments' response to the growing public health concern of dental caries in infants and young children.

1.5 Chapter Summary

Chapter 1 has provided the context to the development of Scotland's national oral health improvement programme: Childsmile. Childsmile is described in Chapter 2, along with early findings from its national evaluation which suggested a need for this doctoral research.

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[4] HEAT targets are set by Scottish Government Health Directorates and NHS Scotland to ensure services are constantly monitored and improved. These targets focus on health improvement, efficiency, access to treatment, and treatment (NHS Greater Glasgow and Clyde, 2016)

Chapter 2 Childsmile

Chapter 2 introduces the Scottish Government's national oral health improvement programme: Childsmile which was funded and developed in response to the growing public health concern of childhood dental caries (as outlined in Chapter 1). An overview of the roll out of the three components of the integrated Childsmile programme, and the key stakeholders and structures involved in its implementation and evaluation, is provided. The role of the Dental Health Support Worker in Childsmile Practice, the primary focus of this thesis, is also introduced. Finally, the national evaluation strategy for Childsmile is described along with preliminary process evaluation findings which supported the need for this doctoral research.

2.1 Overview of Childsmile

As outlined in Chapter 1, in the late 20th and early 21st Century, Scotland was experiencing a public health problem of dental decay and low rates of dental registration among children living in Scotland. In response to this concern and following publication of An Action Plan for Modernising Dental Services in Scotland (Scottish Government, 2005), in 2005 the Chief Dental Officer commissioned, and the Scottish Executive (now the Scottish Government) funded, Childsmile.

Childsmile is an innovative, multi-disciplinary, complex, national oral health improvement programme. The programme is underpinned by policy, scientific evidence, clinical guidance, and practitioner experience (Appendix 1) with the overarching aims of: improving children's oral health, reducing inequalities in oral health, and reducing inequalities in access to dental services. Childsmile represents an attempt to shift towards preventive dental care and involves upstream and downstream interventions[5]: from national and local policy, legislation, oral health education, and clinical prevention (Macpherson et al., 2015).

2.2 Integrated Childsmile Programme

Childsmile has three distinct components: Core, Nursery and School, and Practice which form an integrated programme (Figure 2.1).

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[5] Upstream and downstream interventions create environments which support health and address health behaviours (Gehlert et al., 2008)
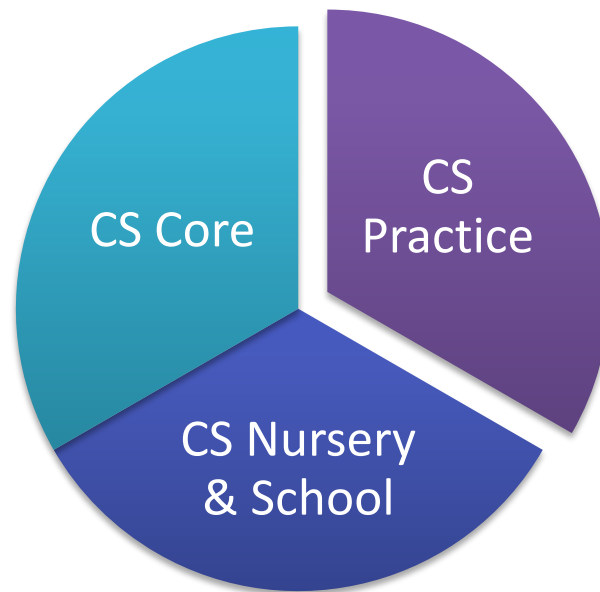
Figure 2:1: Components of the integrated Childsmile programme

The integrated programme is delivered to children from birth up to at least Primary 4 (approximately eight years old) and forms a comprehensive pathway of care. The primary focus of this thesis, the Dental Health Support Worker role within Childsmile Practice, is discussed in greater depth within this chapter.

The integrated Childsmile programme is underpinned by the concept of Proportionate Universalism, which recognises that in order to reduce the gradient of health inequalities, health action ought to be universal. However the intensity of action should be proportionate to disadvantage and need (The Marmot Review team, 2010). Therefore Childsmile resources are allocated according to need, with those children deemed to be in greatest need offered enhanced support (Macpherson et al., 2015). It is this targeting component of Childsmile which has the greatest potential to affect change in the oral health inequalities outlined in Chapter 1.

2.2.1 Childsmile Core

Childsmile Core has a universal and targeted component comprising:

- The provision of free oral health packs (toothbrush, toothpaste, and a drinking cup) for use at home.

- Oral health advice to parents of children from birth.

- Free daily supervised tooth brushing within all nurseries and targeted primary schools to children until at least Primary 2 (approximately six years old).

Childsmile Core is offered to all nursery establishments (local authority, voluntary, or private) across the NHS boards, and to 20% of primary schools within each NHS board who have the highest proportion of children attending who reside within the most deprived SIMD quintiles: SIMD 1-2 (Childsmile, 2016b).

Participation in Core is an 'opt-in' process therefore establishments and parents of children can choose *not* to participate. However, opt-in to the programme is high and appears to be increasing. For example, during the period June 2013 to June 2014, 88% and 61% of nursery and primary schools, respectively, were participating in CS Core (CERT, 2014). These figures later increased in the period June 2014 to June 2015 whereby 96% and 64% of nursery and primary schools, respectively, were participating (CERT, 2014, 2015).

2.2.2 Childsmile Nursery and School

Childsmile Nursery and School is a targeted intervention comprising preventative oral health care in the form of a Fluoride Varnish Application (FVA) delivered to children with parental consent twice each year. As outlined in Chapter 1, fluoride varnish is an effective method of preventing tooth decay (Marinho et al., 2013; Scottish Intercollegiate Guidelines Network, 2014).

The targeting component of Nursery and School is similar to Core in that it is targeted to area-based risk and operates with an 'opt-in' process. Nursery and School is offered to all children from aged three years attending participating nurseries, and to all children in Primaries 1-4 attending participating targeted primary schools.

2.2.3 Childsmile Practice

Childsmile Practice has a universal and targeted component and comprises free preventative oral health care and treatment within Primary Care Dental Services and, for families perceived to be in need, additional oral health support from a trained Dental Health Support Worker (DHSW).

The DHSW is a new category of lay or community-based health worker who supports families to improve oral health behaviours and attend a dental practice. The DHSW role is described later in this chapter.

Childsmile Practice is linked with the Public Health Nurse/Health Visitor (PHN/HV) and Child Health Surveillance Programme services. This linking of various services creates a pathway of oral health care for all children living in Scotland. During the PHN/HV universal child health review (known as the six-eight week health assessment) of new-born children, PHNs/HVs assess families oral health needs, provide basic oral health messages, and encourage parents to register their child with a dental practice from the age of six months. If the family requires additional oral health support, a referral will be made to a DHSW.

The targeting component of Practice involves DHSWs contacting referred families, when children are approximately three months old, to provide oral health advice to parents and assistance in registering the child with a dental practice. DHSWs also provide oral health packs (toothbrush, toothpaste, and a drinking cup) and signpost parents to community health initiatives. Such support is typically delivered within the family home.

The universal element of Practice involves free preventative oral health care and treatment from Primary Care Dental Services. In addition to regular oral health check-ups and clinical care, from when the child is aged six months parents will receive oral health advice; and from when the child is aged two years, children should receive two FVAs per year. For some, this will be in addition to the FVAs those may receive within Nursery and School (Scottish Dental Clinical Effectiveness Programme, 2010).

2.3 Roll out of the Integrated Childsmile Programme

Prior to Childsmile a tooth brushing programme was in operation within nurseries and primary schools in some NHS boards. In 2001 these individual programmes were incorporated into a national programme to enable systematic standardisation of implementation across Scotland (Macpherson et al., 2015). In 2006, the tooth brushing programme was incorporated into the Childsmile programme.

A three-year pilot phase commenced whereby Nursery and School was rolled out across the east of Scotland and Practice was rolled out across the west of Scotland. Following this piloting phase, Childsmile entered the 'Interim Phase' whereby the integrated programme was rolled out across the fourteen NHS boards in Scotland. Currently, Childsmile has been incorporated into mainstream dental services and the statement of dental remuneration[6], and provides holistic dental care to all children living in Scotland.

2.4 Delivery of Childsmile

Childsmile is a multi-disciplinary programme delivered by a range of health professionals and lay health workers; and is supported by partners within the NHS, education, voluntary, and community sectors.

The programme is overseen by two Programme Directors (one University based and one NHS based) responsible to the Chief Dental Officer, who are involved in the decision-making for the strategic development of the programme across Scotland.

Historically there were three Regional Managers (east, west, and north) while presently there are two in post, responsible for the strategic overview of the development and delivery of Childsmile throughout the country. Each Regional Manager has an additional specific responsibility for particular aspects of Childsmile (e.g. resources, website, training, and electronic monitoring systems).

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[6] The statement of dental remuneration (SDR) lists all items NHS General Dental Practices can provide to patients. Dentists claim payment for treatments using an SDR claim form. Childsmile treatments are currently included within the SDR (Information Services Division Scotland, 2016)

2.4.1 Key Childsmile Structures

Key national structures involved in the delivery of Childsmile are outlined in Table 2.1.

Table 2.1: Key Childsmile structures (Childsmile, 2016a)

Childsmile Executive Committee	Responsible for high-level strategic decisions regarding the planning and implementation of Childsmile, and answerable to the Chief Dental Officer for Scotland. Members include Programme Directors, Programme Managers, and Childsmile Evaluation and Research Team Manager.
Childsmile National Programme Board	Acts as a national steering group to oversee Childsmile. Responsible for ensuring efficient, effective, and accountable governance of the integrated programme. Provides expert advice to the Childsmile Executive, monitors the ongoing implementation of Childsmile, and provides advice on the allocation of resources. Members include: Programme directors, Programme Managers, head officers from geographical NHS boards (including consultants in dental public health), NHS Health Scotland, NHS Education for Scotland, NHS Information Services Division Scotland, and the Childsmile Evaluation and Research Team Manager.
Childsmile Evaluation and Research Team (CERT)	Responsible for implementing the national evaluation of Childsmile. Headed by a university-based Programme Director and academic support staff including a dedicated Research Team Manager, supported by three Regional Research Teams based within the north, west, and east Scotland.
Childsmile Evaluation Board	National advisory group to support the CERT. Remit to: ensure efficient, effective, and accountable governance of the Childsmile evaluation; and facilitate uptake of key learning from Childsmile evaluation at practice and policy level. Members include: Programme Directors, Programme Manager, CERT Manager, a representative from NHS Health Scotland, and NHS Consultants in Dental Public Health.

2.4.2 Key Childsmile Stakeholders

This section provides an overview of the key Childsmile stakeholders involved in delivery of the programme within the NHS boards.

2.4.2.1 Programme Coordinator

Programme Coordinators are employed by NHS boards and are responsible for implementing Childsmile in the NHS board. They are considered to be the link between the Childsmile Executive and staff delivering the programme 'on the ground'. Coordinators may also be responsible for oral health promotion across the wider population within the NHS board and many carry out additional clinical duties. Therefore planning and managing Childsmile is one aspect of the individual's role. The Programme Coordinator role has various titles (e.g. Principal Coordinator, Oral Health Improvement Manager) however, henceforth they will be referred to as Coordinators. While this number can fluctuate, there were 18 Coordinators across the 14 NHS boards at the time of writing.

2.4.2.2 Public Health Nurses / Health Visitors

PHNs/HVs are community based nurses who play a pivotal role in contributing to the health and wellbeing of children across Scotland. Among their priorities are early intervention, prevention, health promotion, and reducing inequalities in health (NHS Scotland, 2011). According to 'Getting it Right for Every Child' (GIRFEC[7]) policy, PHNs/HVs have a duty of care to children as the 'Named Person'. With regards to Childsmile, PHNs/HVs are responsible for assessing families' oral health needs in the early years, and referring those in need of oral health support to the DHSW.

2.4.2.3 Dental Health Support Workers

The DHSW role was informed by the Starting Well and Possilpark projects which demonstrated that intensive home visiting by a lay health worker (LHW) and community-based oral health promotion activities can positively influence child oral health related outcomes (Blair, Macpherson, McCall, & McMahon, 2006; Mackenzie, Shute, Berzins, & Judge, 2004).

While the Childsmile Executive's original intention to recruit peers from target communities was not achieved due to employment legalities within the NHS,

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[7] GIRFEC Policy outlines that every child from birth to eighteen years old has a Named Person responsible for safeguarding their wellbeing and development. This Named Person will typically be a Health Visitor or Senior Teacher already known to the family (The Scottish Government, 2016)

DHSWs can be considered as LHWs or para-professionals. In keeping with Lewin et al's definition of LHWs, although involved in health care delivery and in receipt of role-related training, DHSWs do not require formal professional education to deliver the role (Lewin et al, 2010).

The origins of LHW delivered interventions rapidly expanded during the 1970s, particularly within low and middle income settings. Later years saw increasing numbers of LHW delivered interventions as a result of a surge in infectious diseases and a failure of formal health care systems to provide adequate care for people suffering from chronic illnesses (Lewin et al, 2005).

LHWs are typically employed to address health behaviours and improve health outcomes within communities experiencing socio-economic deprivation (Cook & Wills, 2012; Dugdill, Coffey, Coufopoulos, Byrne, & Porcellato, 2009; Haider, Chang, Bolton, Gold, & Olson, 2014). LHWs are often recruited based on their personal qualities or their commonality with the target population group, as opposed to formal or professional qualifications (Cook & Wills, 2012; Dykes, 2005); and they are seen to bridge the gap between health services and members of the target community (Dugdill et al., 2009). Yet while there is substantial literature surrounding LHW delivered interventions, there is evidence to suggest such interventions are only effective among individuals who are motivated to engage with the target health behaviour (Fairbank et al., 2000).

Childsmile's DHSWs are employed by NHS boards and can be based within dental health services or PHN/HV departments. DHSWs may be referred to as Oral Health Support Workers but they will be henceforth referred to as DHSWs.

DHSWs are trained via a national programme, organised by NHS Education for Scotland, to deliver all three components of the integrated Childsmile programme. DHSWs who deliver more than one component are referred to as 'dual role' DHSWs as opposed to 'single role' DHSWs who deliver one component. DHSWs within some NHS health boards may also carry out additional duties out with the Childsmile remit (CERT and CS RRTs, 2010).

Core DHSWs support nursery and primary school staff to provide daily supervised tooth brushing, they also conduct monitoring visits to participating establishments, and may deliver tooth brushing resources.

Nursery and School DHSWs liaise with establishments to arrange FVA sessions. During FVA sessions DHSWs support Extended Duty Dental Nurses by collecting children from classrooms, checking consent forms, and recording information onto the Childsmile Health Informatics Centre software.

Practice DHSWs liaise with PHNs/HVs for referrals and provide oral health support to families which includes: oral health messages, signposting to community initiatives, and facilitation into a dental practice. DHSWs should liaise with dental practices to register families, book appointments, and follow up with families who have failed to attend an appointment.

2.4.2.4 Extended Duty Dental Nurses

Extended Duty Dental Nurses (EDDNs) are dental nurses involved in the delivery of Nursery and School, and Practice. EDDNs are employed by NHS health board's Primary Care Dental Services. EDDNs can deliver Childsmile appointments in a clinic setting, apply FVAs, and liaise with DHSWs regarding families who have failed to attend dental appointments (CERT and CS RRTs, 2010). EDDNs undertake a six-day training course, provided NHS Education for Scotland, which includes completion of a training portfolio relating to the role, observations of five FVAs, and conducting ten FVAs with one direct observation of FVA (CERT and CS RRTs, 2010).

2.5 Childsmile National Evaluation

The Central Evaluation and Research Team (CERT), based within the Community Oral Health department at the University of Glasgow Dental School are responsible for the implementation of a comprehensive national evaluation of Childsmile. Key evaluation questions include:

- Can the programme improve oral health?

- Can the programme reduce oral health inequalities?

- How do programme components contribute to its effectiveness and cost effectiveness?

The CERT employs a multi-faceted, multi-level, 'theory based' model of evaluation, incorporating formative and summative strategies to assess how and to what extent programme activities contribute to desired outcomes. The CERTs evaluative strategy is intended to enable programme implementers to strategically respond to emerging risks and engage in ongoing programme improvement. (CERT and CS RRTs, 2011).

2.5.1 Process Evaluation

A key component of the CERT's evaluation strategy is a comprehensive process evaluation which documents the ongoing development and implementation of Childsmile, while exploring regional variation in delivery and how context influences achievement of outcomes (CERT and CS RRTs, 2011).

Qualitative data is collected from stakeholders involved in the development and implementation of Childsmile by the Regional Research Teams. This is achieved via face to face, semi-structured interviews with key respondents (e.g. Coordinators, EDDNs, and DHSWs) from NHS boards. Programme Directors, Programme Managers, Consultants in Dental Public Health, and Stakeholders from NHS Education for Scotland are also interviewed (CERT and CS RRTs, 2011).

2.5.2 Early Process Evaluation Findings

While Childsmile's early process evaluation (CERT and CS RRTs, 2011) established that stakeholders shared largely positive views regarding the DHSW role and believed it made a necessary and valuable contribution to achieving desired programme outcomes, it was clear that:

- Childsmile's programme theory (as developed by key stakeholders and promoted by the Childsmile Executive) required further development.

- There was some deviation from programme theory as conceived at an executive level and delivery on the ground.

- There was substantial variation in delivery between and within NHS boards:

> "…the [DHSW] role does not lend itself to a single description […] most health boards were, in essence, carrying out the activities in the logic model. However, since detailed descriptions of how activities *should* be carried out where not made explicit…decisions shaping delivery at the operational level have largely been at the discretion of individual health boards. This has led to some variation…" (RRTs, 2012).

Moreover, specific risks to programme delivery and attainment of outcomes were evident. For example, stakeholder buy-in to the programme and the extent to which training were adequate for the DHSW role. Multiple areas of variation were evident from the process evaluation and are now discussed.

2.5.2.1 Where DHSWs are based within the NHS Board

Executive level stakeholders expected DHSWs to be organisationally situated within PHN/HV teams (as had been the case when Childsmile Practice delivery was piloted in the west of Scotland). However, with national roll-out this model was not adopted in all regions. Due to capacity and wider organisational and/or geographical constraints, DHSWs were often situated beside and line-managed by Coordinators.

Stakeholders held differing views with regards to DHSWs being situated beside and line managed by PHN/HV Team Leaders. Some suggested proximity to the PHN/HV teams facilitated PHNs/HVs understanding of and involvement in the Childsmile programme. While others suggested the link with Childsmile could be put at risk and were concerned that DHSWs may be encouraged to take on non-Childsmile duties out with their remit in an already time pressured role.

2.5.2.2 Components of Childsmile DHSW Deliver

The role of DHSWs also varied in terms of the number of programme components they were responsible for delivering. DHSWs could deliver a single role consisting of one component (e.g. Practice) or a dual role with responsibility for delivery of more than one component (e.g. Practice, and Nursery and School). Due to the

workload involved delivering a dual role some DHSWs reported having to prioritise Nursery and School duties over Practice duties:

> "It's just a matter of prioritising, cos obviously the nurseries and the schools take precedence over the house visits and its then trying to slot them in." **DHSW** (CERT and CS RRTs, 2011).

However some stakeholders agreed there were benefits in being able to follow children through the programme pathway (e.g. supporting children in their own homes, then applying fluoride varnish to their teeth within the nursery or school settings).

2.5.2.3 Referrals to the DHSW

Childsmile's programme theory outlined that families requiring additional or 'enhanced' oral health support would be referred by the PHN/HV to the DHSW via the PHN/HV six to eight week health assessment. However, Childsmile's early process evaluation (CERT, 2011) found there was considerable variation in the referral process across NHS boards, ranging from: referrals of all families; referrals via PHN/HV-led clinics; referrals made directly to the dental practice (where there was no DHSW in post); and DHSWs obtaining child health records to generate 'referrals'. Stakeholders held varying opinions as to which families should receive DHSW support and how these families could best be reached.

2.5.2.4 Nature of DHSW Support

The support provided by DHSWs to families was found to vary considerably across NHS boards. While Childsmile's programme theory recommended that DHSWs deliver 'enhanced home visits' this was not routinely carried out across all boards. For example, several island boards did not deliver home visits, and there were occasions were support was delivered within a PHN/HV-led clinic as opposed to the home setting which some PHNs/HVs reportedly preferred.

Additionally, the number of home visits delivered to families varied and there was a degree of ambiguity in relation to the strategies and messages that should be delivered to families by DHSWs. In particular the executive's vision of signposting to local community initiatives had not been well adopted:

> **Respondent 16**: "It's almost like a black box isn't it…there's the dental health support worker and there's the family, we'll put them together and something magical will happen and then they'll come out the other side and they'll all do what we want, but I'd like to have a look inside and see what is [happening]" (CERT and CS RRTs, 2011).

Furthermore, stakeholders recognised that changing parents' oral health parenting knowledge and behaviours were central to meeting programme outcomes, and that a key strategy for achieving this was information provision. However:

> "…respondents did not explain *how* they perceived that their provision of information would lead to behaviour change among parents (i.e. how the increased knowledge would be turned into action) (CERT and CS RRTs, 2011).

2.5.2.5 Further Areas of Risk

The more general risks to programme implementation and achievement of desired outcomes were uncovered in Childsmile's process evaluation are now discussed.

2.5.2.6 Stakeholder Buy-in

The need for ongoing communication with stakeholders to facilitate engagement with the programme was highlighted by the process evaluation. Considerable challenges relating to stakeholder buy-in were reported. For example, the extent to which dental practices delivered Childsmile treatments (e.g. FVAs), and PHN/HVs perceived lack of awareness surrounding Childsmile and oral health.

2.5.2.7 DHSW Training

Training for the DHSW role was criticised for not preparing DHSWs to deliver the Practice role, nor was it seen to equip DHSWs for suitable techniques for supporting families. Instead, DHSWs developed practical skills 'on the job':

> "The training only gives them a wee bit of a taster of what is done. The work is done when they start to do it; that's only when they know how to do the job…they need to work this out for themselves…" (CERT and CS RRTs, 2011)

2.6 Key Learning and Rationale for Research

Childsmile can be described as an 'adaptive programme' in that a degree of variation in programme characteristics was expected as the programme was rolled out nationally across varied localities (Perez, Van der Stuyft, Zabala, Castro, & Lefevre, 2016).

Key stakeholders agreed that a 'one-size fits-all' model of delivery was unsuitable and variation in implementation or adaptation of the programme theory (or a 'blueprint') to local circumstances was necessary for successful delivery. However, although informed by the Possilpark and Starting Well project the programme theory for the DHSW role required further development and a greater degree of specification. The impact of observed variation in delivery of the DHSW role on programme outcomes was not fully understood or agreed upon.

Findings from Childsmile's early process evaluation suggested that additional research was required to further understand and develop the programme theory for the DHSW role, and clarity was required regarding the areas of programme variation that are adaptive and those that are a risk to the programme meeting its desired objectives. It was clear that the DHSW role should be clarified and improved before an assessment of its impact was made. It was also clear that optimising the DHSW role would require evidence generation from within the Childsmile programme, and from best practice out with.

2.7 Chapter Summary

This Chapter introduced the Childsmile programme and the Dental Health Support Worker role which is the focus of this thesis. A rationale for focussing research on the DHSW role was established. Chapter 3 outlines the resultant aims and approach, developed from this early identification of need, and provides an overview of subsequent research design.

Chapter 3 Aims and Approach

Chapter 3 describes the overarching aims and objectives, and approach (Realist and Qualitative) underpinning this doctoral research. The research consists of two phases, comprising three component studies, which provide learning from within and out with the Childsmile programme. The design of the component studies is outlined and the studies' alignment with the Medical Research Council framework for evaluating complex interventions is explained.

3.1 Overarching Aim and Objectives

This research is a component study of the national Childsmile evaluation strategy. The overarching aim was to gain further understanding of which factors and variants (contextual and those associated with programme delivery) impact on effectiveness of the Dental Health Support Worker (DHSW) role within Childsmile Practice. The research is formative in nature and results will be fed back to the Childsmile programme to optimise delivery of the DHSW role, and thus enable future evaluation of the role's impact.

Overarching research objectives are to:

1. Identify programme theory for the DHSW role in Childsmile Practice and gaps within it.

2. Identify how programme delivery differs from programme theory, and explicate variation in delivery of the role between and within NHS boards.

3. Gain further understanding of which aspects of variation in the DHSW role have a positive and which have a negative impact on programme outcomes.

4. Identify which components of child health interventions, delivered by lay health workers to parents (including Childsmile), influence 'positive child health parenting behaviours'.

Research objectives one to three will be achieved with learning *only* from within the Childsmile programme. While objective four will be achieved with evidence generation and learning from within and out with the Childsmile programme.

3.2 Research Approach

The research approach and design is Realist and employs qualitative methods to address the overarching aim and objectives.

The key features of Realist and qualitative research are discussed by discussing the Realist philosophical approach to research in comparison to Positivist and Constructivist approaches (Figure 3.1).
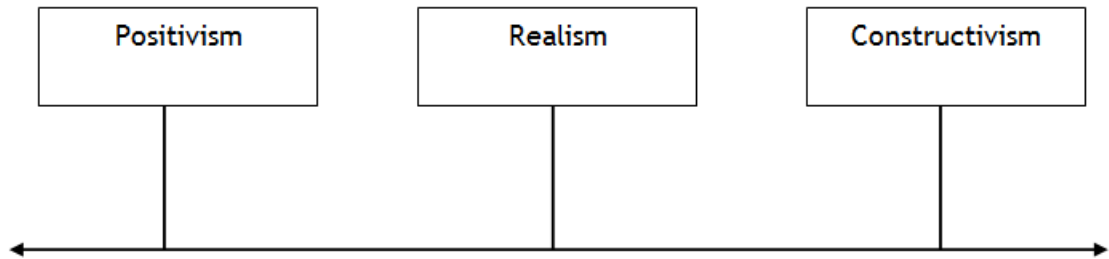
Figure 3:1. Research Paradigm Scale

3.2.1 Positivist Approach

The Positivist approach to research is typically regarded as providing objective evidence whereby reality or 'the truth' can be observed and measured via testable and empirical methods (Dudovskiy, 2016; Edirisingha, 2012). The aim is to predict and control phenomena to establish the truth and create generalisable findings (Krauss, 2005). As positivists believe reality is a stable concept, so they believe it can be observed and described from an objective viewpoint without interfering with the phenomena being studied (Krauss, 2005).

The Positivist approach to research is grounded in the natural sciences and its associated research methods (e.g. surveys, correlational, and experimental methods). This posits that under the right circumstances, some research methods are more transparent and objective than others, thus creating a methodological hierarchy which places randomised controlled trials as gold standard for investigation (Maxwell, 2012). Statistical and mathematical techniques are central to positivist research and findings are typically quantifiable (Edirisingha, 2012).

Causality is determined by isolating, and manipulating or controlling, contextual factors and variables of the phenomena and observing the output. Thus creating a linear model of causality (e.g. A + B = C). However, a problem when applying

positivistic methods to social systems is that the processes and mechanisms are often underspecified, and harder to isolate (Maxwell, 2012).

The Positivist approach to research is designed to be free from researcher bias or error (and replication of research is carried out to achieve this) thus the role of the researcher is limited to data collection and objective interpretation only (Dudovskiy, 2016; Edirisingha, 2012). Positivism seeks to create a general rule to explain phenomena and carefully controls contextual factors to be investigated, thus its reductionist and deductive nature means findings are often difficult to apply to real-world settings.

The extent to which all variables can be identified and controlled for in the real-world is debatable, as is the positivist claim that human behaviour is predictable and influenced by the specified intervention or mechanism alone, independent of context. Arguably, this approach (to a degree) de-humanises individuals and does not account for their influence on real-world phenomena. Consequently, a pure positivist approach to research may not be suited to evaluating complex and applied programmes.

3.2.2 Constructivist Approach

At the other end of the continuum there is the constructivist approach to research which posits that truth (or reality) is the product of individual interpretation and:

> "…there is no possibility of attaining a single, 'correct' understanding of the world [or]…a 'Gods eye view' that is independent of any particular viewpoint." (Maxwell, 2012) (p. 5).

Therefore constructivists reject the notion there is one truth and advocate that multiple truths are equally valid. As such, this approach to research is grounded in phenomenology and rather than seeking to develop and test a hypothesis, constructivists attempt to uncover the varied individual meaning and understanding surrounding the phenomena. Consequently, rather than create one generalisable rule (as is found within Positivism) constructivists aim to create a form of context-specific theory to explain phenomena (Dudovskiy, 2016).

Constructivist approach to research is associated with subjectivity and inductive reasoning thus the researcher plays a central role in what is being observed with the aim of developing theory of a pattern of meaning (Creswell 2003). The researcher is likely to rely on qualitative data collection methods (e.g. semi-structured interviews, case study, and observations).

3.2.3 Realist Approach

The Realist approach can be seen as a middle ground within the continuum and reflects elements of Positivist and Constructivist approaches in a somewhat more pragmatic or 'common sense approach' (Maxwell, 2012) (p.6).

Distinctive features of Realist research include the belief that while there is a 'real' truth it cannot be wholly understood, observed, or measured objectively. Therefore, determining causation does not provide *the* answer to explaining phenomena but instead aims to assert *an* answer (or a set of answers) based on the context of the phenomena (Pawson, Greenhalgh, Harvey, & Walshe, 2004).

Realist causation is determined by measuring the mechanism(s) which underpin the relationship between context and outcome. Thus acknowledges the influence of context and the semi-predictable nature of behaviour which (in part) arises from contextual differences on resulting outcomes (Wong, Westhorp, Pawson, & Greenhalgh, 2013).

Causation can be identified by applying a heuristic[8] called a Context, Mechanism and Outcome (CMO) configuration (Jagosh et al 2012). CMO configuring requires a degree of theorising, or what Realist researchers refer to as retroduction: a process which allows for the development of insights, concepts, understanding, patterns, and relationships within data, and leads to development of theory (Wong, Westhorp, Pawson & Greenhalgh 2013). Consequently the role of the researcher is similar to that within Constructivist approach to research whereby they play an active role in the identification and development of causation.

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[8] A heuristic is defined as "…an aid to learning, discovery, or problem-solving by experimental and especially trial-and-error methods (Merriam-Webster Dictionary, 2016)

Retroduction enables the researcher to look beyond what is solely observable and develop theory which can be implemented and tested. The resulting theory is labelled 'mid-range theory' which denotes the theory is both abstract to the extent that it can be applied to other settings but remains close enough to the data to derive testable hypotheses (Jagosh et al., 2012; Wong, Westhorp, et al., 2013).

Part of the appeal of Realist research is its flexibility: researchers can adopt inductive or deductive reasoning, and there is no methodological hierarchy meaning the Realist approach can be applied pragmatically to suit the research aims or setting. Therefore this approach can be useful for evaluating complex interventions and is applicable to real world research.

As identified in Chapter 2, programme theory for the DHSW role was not fully evidenced or developed therefore adopting a Realist approach to this doctoral research enabled programme theory to be developed from within and out with the Childsmile programme. Furthermore, programme theory developed using this approach is abstract and thus applicable to external settings. Therefore there was scope to contribute to wider learning surrounding lay or community health worker delivered interventions out with the scope of Childsmile and oral health domains.

3.2.4 Qualitative Research

Qualitative research originated in the social and behavioural sciences and in its simplest term, is any form of research which produces findings not derived by statistical procedures or any other method of quantification. Qualitative in the social and behavioural sciences context is exploratory and can provide in-depth understanding or explanation to behaviour, and develop or refine theory.

Due to its exploratory and explanatory nature, qualitative research can be used to explore substantive areas about which little is known. Consequently, qualitative research has made a lasting impact, both conceptually and theoretically, on the social sciences (Maxwell, 2012).

Qualitative methods can include focus groups, in-depth and semi-structured interviews, and observations; and data can be in the form of quotes, field notes, transcripts, visual data (and often a combination thereof) thus are richly descriptive (Merriam & associates, 2002).

The appeal of qualitative research lies in the flexibility of its design and methods can be adopted across various theoretical paradigms. While procedures and research questions can be specified from the onset, the research setting can evolve depending on the contexts, individuals, processes, and outcomes encountered. Therefore research design ought to be viewed as a fluid entity rather than a formal and abstract plan (Maxwell, 2012).

Qualitative methods were selected for all phases of this doctoral research because it facilitated exploration and rich descriptions of the DHSW role and stakeholders involved in delivery of the role, in addition to exploring the experiences and views of stakeholders.

3.3 Design

This section outlines how the research design is aligned with the Medical Research Council (Medical Research Council, 2000) framework for evaluating complex interventions. An overview of the design of each phase of the research is provided.

3.3.1 MRC Framework

The Medical Research Council (MRC) framework for developing and evaluating complex interventions consists of five steps, each outlining a set of objectives. While the framework is listed as a sequential process, the authors maintain it retains a degree of flexibility which enables researchers to apply it to 'the extent to which it is relevant' (Medical Research Council, 2000 p.3). Figure 3.2 outlines the MRC framework and illustrates how it can be applied in an iterative nature. A summary of each of these steps is provided:
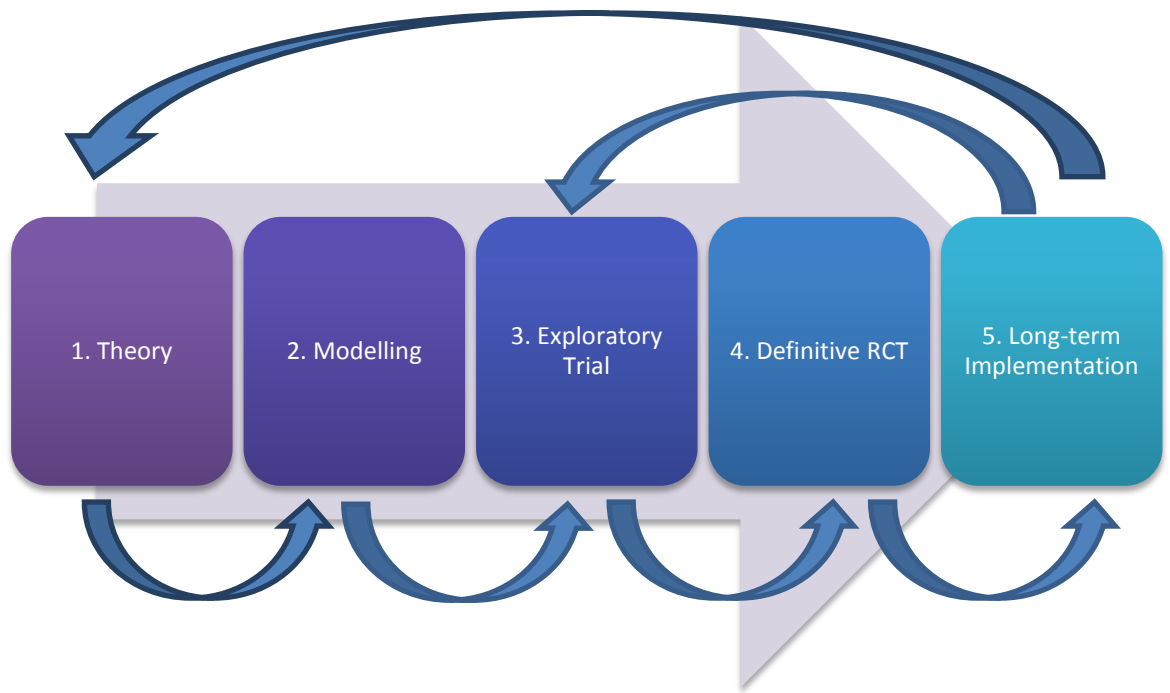
Figure 3:2: MRC framework for evaluating complex interventions (Medical Research Council, 2000).

1. **Theory**: Aims to establish programme theory and expected outcomes. This step may enable the researcher to identify the intervention required and develop the study design. If the intervention is already widely practised the theoretical base may not be required. Additionally, for pragmatic reasons it may not be feasible to conduct this step of research.

2. **Modelling**: Aims to develop understanding of the programme and outcomes. This requires outlining programme components, the relationships between components, and how these relate to outcomes. This step can involve simulation, modelling, or qualitative testing.

3. **Exploratory Trial**: Aims to pilot test evidence gathered from steps one and two. This can involve adapting the nature, design, context, and delivery of the programme before step four is conducted.

4. **Definitive Randomised Controlled Trial (or other rigorous research design):** Aims to evaluate the programme, where feasible, using the standard features of a randomised controlled trial design although other forms of rigorous research can be applied where appropriate.

5. **Long-term Implementation**: Aims to establish the long-term and real-life effectiveness of the programme, often using an observational study.

In the context of Childsmile, programme theory for the integrated programme had already been established and the programme was widely delivered. However, as outlined in Chapter 2, programme theory for the DHSW role was not sufficiently evidenced and required further development before it could be evaluated to assess impact.

Therefore, the overarching research design of this doctoral thesis incorporates the design and objectives associated with step one (theory) and step two (modelling) of the MRC framework. Findings will be fed back to the Childsmile programme to optimise delivery of the role before it will be evaluated to assess impact using design and objectives associated with steps three, four, and five.

3.3.2 Evidence Generation and Learning: Research Design

Since Childsmile's early process evaluation uncovered gaps in the programme theory depicting the DHSW role, it was considered essential to learn from external studies in addition to gathering insight from those involved in delivering the DHSW role within the Childsmile context. Therefore evidence generation and learning will be triangulated from two phases of research, comprising three component studies, which provide learning from within and out with the Childsmile programme. The overarching design can be seen in Figure 3.3.
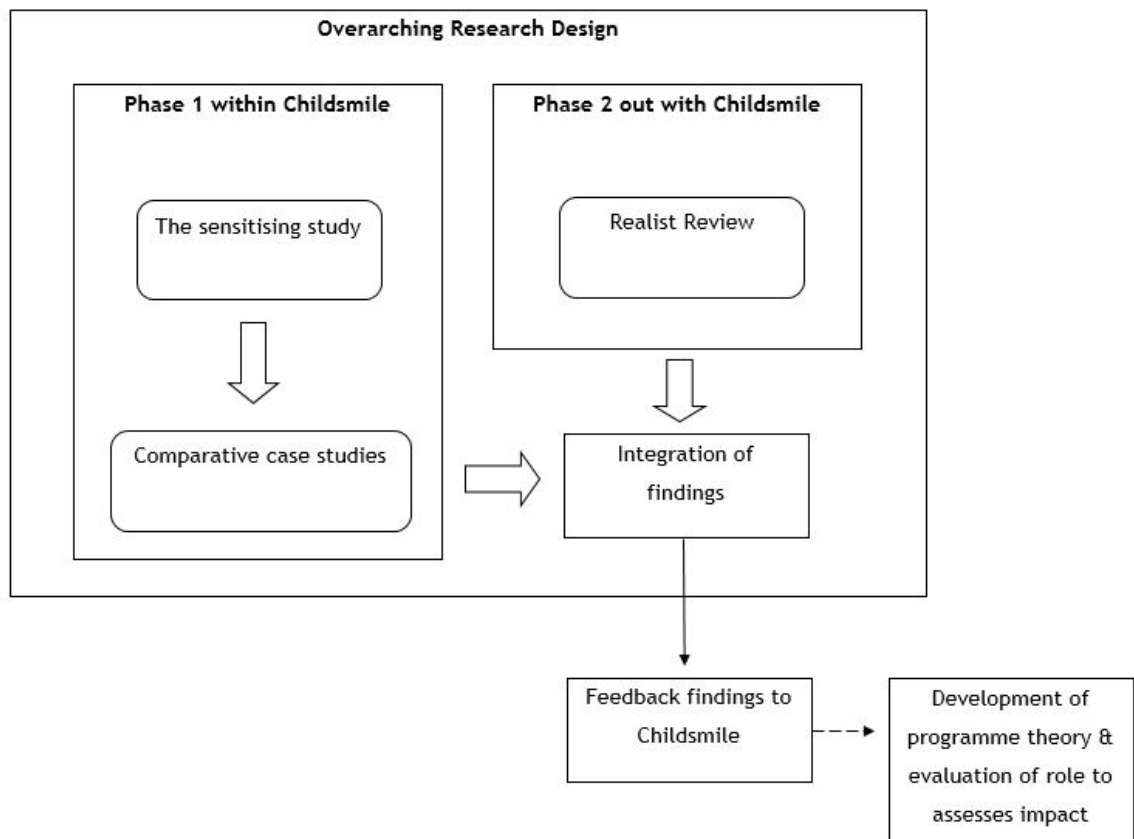
Figure 3:3: Overarching research design and feedback to Childsmile

A summary of the three component studies is now provided. Detailed information regarding research questions, design, and methodology for individual studies can be found within the subsequent chapters.

3.3.2.1 Phase 1: Learning from Within Childsmile

Phase 1 consists of two component studies: the sensitising study and comparative case studies, which provided learning from within the Childsmile programme.

The sensitising study was designed as a scoping study using qualitative data collection methods. The aim was to establish existing programme theory for the DHSW role within Childsmile Practice, and explicate 'on the ground' delivery of the role with a particular emphasis on uncovering deviations (from the programme theory) and variation within and between NHS boards.

The sensitising study was designed to generate research questions and identify participants for the comparative case studies. Findings from the sensitising study were used to design comparative case studies to further explore the DHSW role within Childsmile Practice. The aim was to gain a more in-depth understanding of what factors and variants (contextual and those associated with programme delivery) impact on the effectiveness of the DHSW role within Practice.

3.3.2.2 Phase 2: Learning out with Childsmile

Phase 2 consists of a realist review providing learning from out with the Childsmile programme. The aim was to gain an understanding of which components of child health interventions, delivered by lay health workers to parents, could influence 'child health parenting behaviours'. The design of the review was based on Jagosh et al's realist review protocol (Jagosh et al., 2011) and guided by publication quality standards (Wong, Greenhalgh, Westhorp, Buckingham, & Pawson, 2013) and training materials (Wong, Westhorp, et al., 2013) for conducting Realist research.

3.3.2.3 Integration of Findings and Feedback to Childsmile

The research design was pragmatic and Realist in nature, and the research was guided by the overarching aim and research objectives from the onset. Nevertheless, the design retained the fluidity and flexibility characteristic of qualitative and Realist research.

A key strength of the research design lies in the triangulation of multiple sources of evidence, within and out with the Childsmile programme, converging to address the overarching aim and research objectives. It is argued that triangulation can further add to the reliability of the findings because each source of information is corroborated by one another (Yin, 2009). A classic criticism of triangulation is the risk of sources contradicting one another. However, as Greene (2007) argues, triangulation is useful for not only corroborating findings but also for complementing and expanding on lines of enquiry thus revealing aspects of the phenomena unknown to the researcher.

As illustrated in Figure 3.3, findings from Phases 1 and 2 were integrated to provide recommendations to feed back to the Childsmile programme.

Thereafter, findings will be used to refine programme theory surrounding the DHSW role in Childsmile Practice and evaluate the role to assess impact. The underlying Realist nature of the research enabled recommendations to be made for lay worker delivered child health interventions more generally.

3.4 Chapter Summary

This chapter described the overall aims and approach of this doctoral work. The design of its three component studies was also outlined. Chapter 4 describes the ethical considerations and processes followed in undertaking the research.

Chapter 4 Ethical Considerations

Chapter 4 outlines the ethical considerations in relation to the three studies comprising this doctoral research. The processes followed in relation to University of Glasgow and NHS ethical approval, and general ethical considerations are outlined.

4.1 University of Glasgow

All phases of the doctoral research were included within the existing University of Glasgow, Medical Veterinary and Life Science College, Ethics Committee approval for the Evaluation of the Integrated Childsmile Programme: Process evaluation components (project id: 2649) therefore no further approval was required. Documentation confirming ethical approval can be seen in Appendix 2.

4.2 NHS

The principal researcher received advice from west of Scotland Research Ethics Service that all phases of the doctoral research could be classed as 'Service Evaluation' as opposed to 'Research' (Appendix 3). Consequently no further NHS ethical review was required.

Clinical governance was granted from selected NHS boards for the sensitising study and comparative case studies (Appendix 4). Based on NHS requirements, the principal researcher received Protecting Vulnerable Groups scheme membership and Disclosure checks.

4.3 General Ethical Considerations

Confidentiality was maintained throughout. While anonymity of participants could not be guaranteed all possible measures were taken to protect participants' identities. This included:

- Removing identifiable information from the transcripts (e.g. names, locations).

- Labelling quotes with the individual's role rather than their name (e.g. DHSW or PHN/HV) or in the instances where there were fewer individuals within the stakeholder group, labelling quotes as 'strategic stakeholder'.

- Anonymising NHS boards and labelling boards by region and number.

- Giving participants the opportunity to remove any information from the transcript which they believed could identify them further. When

requested, this information was noted and later permanently removed from the text transcript.

Transcripts and recordings were stored on a secured drive and original recordings were permanently deleted from the recording device. All hard copies of the data were stored within a locked cabinet. Further information pertaining to consent and recruitment of participants is outlined in the corresponding chapters.

4.4 Chapter Summary

This chapter presented ethical considerations in relation to the research undertaken as part of this thesis. Chapter 5 presents the specific aims, methods, and findings for the first component study of this doctoral work, drawing learning from within Childsmile: the sensitising study.

Chapter 5 Phase 1: The Sensitising Study

Chapter 5 presents the aims, methods, and findings for the first component study of this doctoral work: the sensitising study, which draws learning from within Childsmile. The sensitising study was designed to explicate the Dental Health Support Worker role in Childsmile Practice, and map variation in its delivery, in order to inform the design and method of the comparative case studies.

5.1 Overarching Aims

The overarching aims of the sensitising study were to:

1. Identify programme theory for the DHSW role in Childsmile Practice and the gaps within it.

2. Identify how programme delivery differs from programme theory, and explicate variation in delivery of the DHSW between and within NHS boards.

3. Produce learning to design qualitative, comparative case studies to further understand the impact of the DHSW role.

5.2 Design

The sensitising study was designed as a scoping exercise using qualitative data collection methods. Scoping exercises are typically conducted for the purpose of mapping or exploring the nature of a phenomena in order to determine which line of enquiry to adopt (Levac, Colquhoun, & O'Brien, 2010). Such studies, while retaining methodological rigour, can incorporate a range of designs, data collection methods, and analytic strategies although are typically synonymous with qualitative research (Levac et al., 2010).

Two stages of research were developed to address the overarching aims:

1. Mapping the delivery of the DHSW role in Childsmile Practice

2. Exploring variation in delivery of the DHSW role in Childsmile Practice

5.3 Methods Stage 1

Stage 1 of the sensitising study was carried out from October 2012 to April 2013 and involved a review of existing Childsmile documentation, informal meetings with Childsmile stakeholders, and observations of DHSW training.

5.3.1 Review of Childsmile Documentation

An informal review (Yew-Jin, 2004) of existing Childsmile documentation was carried out from October 2012 to February 2013. The purpose was to become familiarised with the integrated Childsmile programme and the methods used within the process evaluation in order to inform further exploration with Childsmile stakeholders.

Documents reviewed were recommended by the principal researcher's primary supervisor (the CERT evaluation manager) and included, but were not limited to:

- **Childsmile monitoring reports**: document progress for the integrated Childsmile programme at a national level.

- **Childsmile programme manual**: provide information to support frontline staff in implementing and delivering the Childsmile programme.

- **Childsmile logic models**: a representation of what the integrated Childsmile programme is trying to achieve. Illustrates the links between intended inputs, activities, outputs, and outcomes.

- **Early Years Pathway**: outlines the pathway that all children follow in the integrated Childsmile programme from birth.

- **Process evaluation reports**: a key component of the Childsmile evaluation strategy. Aims to explore whether the programme is being implemented as intended, identifies which factors impact on this, documents ongoing learning, and feedback any necessary changes to the programme.

- **Peer reviewed publications and guidance**: helped to shape the programme (see Appendix 1).

The process for reviewing Childsmile documentation is summarised in Appendix 5. Learning from the documentary review was contextualised and built upon through additional informal meetings with various Childsmile stakeholders.

5.3.2 Informal Meetings with Childsmile Stakeholders

The principal researcher met with key stakeholders involved in the delivery and evaluation of the DHSW role in Childsmile Practice with the objective of familiarisation with the programme, the DHSW role, and the overarching evaluation. Due to the breadth of published material surrounding the Childsmile programme and its evaluation, including the available guidance from the supervisory team, meetings with Childsmile Executive stakeholders were not deemed necessary for this stage of work.

The principal researcher met with the Coordinator from one of the first NHS boards to deliver the Practice programme. During this meeting, the Coordinator discussed the dual DHSW role, the difficulties encountered since the programme has rolled out, and how the role has developed over the years. The principal researcher met with two of the three regional researchers who carry out the annual process evaluation and thus hold in-depth knowledge of the integrated Childsmile programme. The regional researchers provided detailed information regarding the programme theory and delivery of the DHSW role, and how the role varied between and within the NHS boards.

5.3.3 Observations of Childsmile Training

The principal researcher observed two and a half days Childsmile training for DHSWs and EDDNs, facilitated by NHS Education for Scotland, with the purpose of obtaining a greater understanding of the remit of the DHSW role.

The observations included one and half days of the national training course and one day of 'continued professional development' training. During observations, the content of the training, and key concepts and ideas covered were noted. Attention was paid to how the training was delivered and the extent to which the DHSWs and EDDNs actively participated. There were also opportunities to closely observe group work and to (briefly) speak to EDDNs and DHSWs on a one-to-one basis. It was noted that the number of EDDNs attending the training course considerably outnumbered that of DHSWs.

5.4 Methods Stage 2

Stage 2 of the sensitising study was carried out from June to November 2013 and involved interviews with Coordinators, and focus groups with DHSWs delivering Childsmile Practice.

5.4.1 NHS Board and Participant selection

NHS boards were selected followed by selection of individual stakeholders from these NHS boards who were involved in delivering Childsmile Practice.

5.4.1.1 NHS Board Selection

Scotland is divided into 14 NHS boards across three regions (Appendix 6). Within these NHS boards exist Community Health Partnerships (CHPs): committees who along with the local authority, develop local health services with the aim of ensuring seamless and integrated health and social care services within the community (NHS Health Scotland, 2014)[9].

The aim was to select a group of NHS boards/CHPs which differed on key points of variation that had the potential to impact on delivery of the DHSW role. The selection of NHS boards/CHPs was achieved using data from the process evaluation 'Health Board Summaries'[10] (CERT and CS RRTs, 2011) and identification of key characteristics which were known to influence delivery and variation of the DHSW role. From this process, five characteristics were identified:

1. Geographical characteristics of the NHS board

2. Where the DHSW is situated within the NHS board

3. Components of Childsmile the DHSW delivers

4. DHSWs engagement with stakeholders

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[9] As of April 2015, CHPs ceased to exist when their functions were taken over by the Health and Social Care Partnership

[10] Provides data for individual CHPs within NHS Highland only

5. Intensity of DHSW support

Detailed descriptions of these characteristics can be seen in Appendix 7.

These five characteristics were used to create a selection matrix (Appendix 8). The selection matrix was reviewed with the intention of selecting a group of NHS boards/CHPs[11] which varied between one another on these five characteristics. Consequently, eight heterogeneous NHS boards/CHPs, across three regions, were selected (Table 5.1).

Table 5.1: Sensitising study selected NHS boards/CHPs

North Region	East Region	West Region
NHS Highland: Mid Highland CHP	NHS Fife	NHS Greater Glasgow & Clyde
NHS Highland: Argyll & Bute CHP	NHS Forth Valley	NHS Lanarkshire
NHS Highland: Moray CHP		
NHS Shetland		

Of the eight selected NHS boards/CHPs (henceforth referred to as selected NHS boards), only two shared similar characteristics: NHS Forth Valley and NHS Fife.

While the aim was to select NHS boards which varied from one another on the five characteristics, NHS Forth Valley and NHS Fife were retained for selection because home visits were due to commence within these areas. Despite their similarities, selection of both NHS boards provided an opportunity to explore the piloting phase of the home visiting element of Childsmile Practice and compare how duration of implementation of Practice impacted on delivery.

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[11] Variation in delivery of the DHSW role was known to vary at the NHS board and the CHP level, therefore selection was conducted for NHS boards and CHPs

5.4.1.2 Participant Selection

A selection pool of stakeholders (Appendix 9) involved in the delivery of Childsmile Practice within the selected NHS boards was developed using the process evaluation (CERT and CS RRTs, 2011). This selection pool was reviewed by the regional researchers to ensure accuracy. Of this selection pool, Coordinators and DHSWs delivering Childsmile Practice were deemed best placed to address the overarching aims.

At the time of data collection the regional researchers were organising interviews with Coordinators as part of the annual process evaluation. Rather than organise additional interviews (and thus duplicate effort) the principal researcher attended the (2013) process evaluation interviews with eight Coordinators from the selected NHS boards held by regional researchers. This not only avoided a duplication of effort and provided the information required to address the overarching aims but the principal researcher also had the opportunity to explain the study aims and intended methods to Coordinators. This facilitated recruitment of DHSWs for the sensitising study and later recruitment of stakeholders for the comparative case studies.

Recruitment of DHSWs, delivering Childsmile Practice, to participate in focus group discussions was conducted with the support of Coordinators from the selected NHS boards. Coordinators supplied DHSWs with an information sheet (Appendix 10) and referred DHSWs who were interested in participating to the principal researcher. Consequently, Coordinators were aware of which DHSWs from their localities were participating within the study.

5.4.2 Data Collection Methods

Data collection methods were interviews with Coordinators and focus group discussions with DHSWs.

5.4.2.1 Interviews with Coordinators

Interviews are a targeted method of data collection, guided by the research topic, which enable researchers to address predetermined lines of enquiry. Yet the flexibility and nature of one-to-one interviews enables researchers to probe

further into participants responses, pick up on social cues, gain descriptive information about events, and thus gain a richer understanding of the phenomena being investigated (Yin, 2009). Furthermore, interviews enable researchers to develop lines of enquiry by following up participant recommended 'leads' of unknown topics, or recommendations of potential participants which are deemed pertinent to the overarching aims (Yin, 2009).

The regional researchers developed an interview schedule for the process evaluation interviews with Coordinators (Appendix 11). The aim of these interviews were to gather detailed information on the implementation of the integrated Childsmile programme at a local level, and capture perspectives on the barriers, facilitators, and mechanisms of change to the programme. While interviews were intended to cover all aspects of Childsmile they focused on Practice in greater detail.

Interview schedules were reviewed by the principal researcher prior to data collection to ensure that all necessary questions to address the overarching aims of the sensitising study were covered. However, no changes were required.

5.4.2.2 Focus Groups with DHSWs

Focus groups share similar features with semi-structured interviews in that they are guided, monitored, and recorded; and are a useful tool for gathering *collective* views, and generating rich understanding of participants' experiences and views. Focus groups are often conducted to clarify or qualify the data collected via other methods (Gill, Stewart, Treasure, & Chadwick, 2008; Kitzinger, 1995) although can be used as a standalone data collection method in its own right.

While smaller focus groups can create challenges with discussion flow and larger groups can be difficult to manage, there is no 'ideal' focus group size. Instead, researchers should give consideration to the participants and their ability to answer the research questions (Gill et al., 2008). Researchers are advised to aim for group homogeneity in order to isolate and develop rich understanding of shared experiences (Kitzinger, 1995).

The focus groups with DHSWs delivering Childsmile Practice aimed to gather detailed information of delivery of the role at a local level, and explore variation in delivery of the role between and within NHS boards.

Discussion schedules for focus groups (Appendix 12) were developed using the findings from stage 1 of the sensitising study. Discussion schedules consisted of open-ended questions and covered the topics outlined in Table 5.2. The process of how schedules were developed can be seen in Appendix 13.

Table 5.2: The sensitising study: topics of focus group discussions with DHSWs

- Dual/single DHSW role and workload

- Training

- Communication and engagement with stakeholders

- Referral process and contacting families

- Home visits and strategies of supporting families

- Behaviour change

- Fail to attend procedure

- Barriers and facilitators to the role

Similar questions to those in process evaluation interviews with Coordinators were posed to DHSWs. However, as different information could be obtained from DHSWs, particularly those who were not based with or line managed by the Coordinator, this was not considered a duplication of effort. Discussion schedules were reviewed by the regional researchers to ensure the concepts and wording would be understood by DHSWs.

5.4.3 Procedure

As a courtesy, Programme Managers and regional researchers were advised of the selected NHS boards and when data collection was expected to commence.

5.4.3.1 Interviews with Coordinators

Prior to the process evaluation interviews, the regional researchers advised Coordinators from the selected NHS boards of the sensitising study research aims and of the principal researcher's attendance at the interview. Coordinators were provided with the interview schedule so they could prepare in advance.

Coordinators participated with informed consent as arranged by the regional researchers. Interviews were conducted from June to August 2013 and lasted approximately three hours each. Interviews were guided by the interview schedule and the question order and wording was posed as listed. The principal researcher was encouraged to pose additional questions to Coordinators if and when they arose during the interview. This was carried out when clarification was required. Sessions were audio recorded by the regional researchers and transcribed by an external transcription service. The principal researcher retained copies of all transcripts for separate analysis however only those sections pertaining to Childsmile Practice were analysed.

5.4.3.2 Focus Groups with DHSWs

Four focus groups, three paired interviews, and one telephone interview (henceforth collectively referred to as sessions) with DHSWs across the selected NHS boards were conducted by the principal researcher. A summary of the number of participants for each session can be seen in Table 5.3. 24 DHSWs participated with informed consent (Appendix 10) from September to November 2013.

Table 5.3: The sensitising study: data collection methods and number of participants

NHS Boards	No. of DHSWs	Method of Data Collection
NHS Greater Glasgow & Clyde	6	Focus Group
NHS Lanarkshire	4	Focus Group
NHS Fife	2	Focus Group
NHS Forth Valley	4	Focus Group
NHS Highland: Mid Highland CHP	3	Focus Group
NHS Highland: Argyll & Bute CHP	2	Focus Group
NHS Highland: Moray CHP	2	Focus Group
NHS Shetland	1	Telephone Interview

The first session was used to pilot the discussion schedule after which a 'funnel' approach was taken with future sessions. This approach involved starting each session in such a manner that facilitated free discussion between the DHSWs before moving onto the questions. This opportunity for free discussion at the start of each session encouraged DHSWs to open up with their own issues and allow them to feel that their opinions were valued. Later, when structured questions were introduced, the DHSWs were more likely to stay 'on topic' (Morgan, 1997). This funnel approach focused the sessions and ensured all key issues were discussed (Dawson & Manderson, 1993).

The sessions retained a degree of flexibility so that further topics, of which the principal researcher was not aware of, could arise. This was particularly critical for those NHS boards where minimal information regarding aspects of delivery (e.g. home visiting within NHS Forth Valley) was available. While the question order was flexible and question wording was often formulated in situ, the

principal researcher ensured that all listed questions were posed to the participants.

Sessions were audio recorded and transcribed by the principal researcher. Debriefing involved an (unrecorded) informal discussion. All identifying information for participants (e.g. name, NHS board, town name) was removed from the transcripts. Participants' names were replaced with a number and NHS boards were identified by the region and a number (e.g. DHSW 1, west board 1).

5.4.4 Analysis

Childsmile documentation was examined to explicate existing programme theory for the DHSW role in Childsmile Practice. All data were used to further identify gaps in the programme theory, explore the extent to which the role was being delivered as intended, and identify areas of variation in delivery of the role between and within NHS boards.

Descriptive models were developed for each NHS board to illustrate the key areas of variation. These 'delivery of Practice' models depicted: the delivery of the Practice programme and the DHSW role; the referral process; DHSW support; and support via dental practices. To ensure accuracy, the regional researchers commented on draft versions and suggested changes were made.

Interviews and focus group data were analysed using Thematic Analysis. QSR NVIVO 10 was used as a data management tool.

5.4.4.1 Analytic Theory

Thematic Analysis is a qualitative analytic method which aims to identify themes, patterns, and relationships across the data. Thematic Analysis organises data into smaller individual units to enable researchers to make sense of the data (Braun & Clarke, 2006). The appeal of Thematic Analysis lies primarily in its theoretical and practical flexibility: by not being tied to a particular epistemology it can be applied to a wide range of theoretical frameworks and research designs (Braun & Clarke, 2006).

Fundamentally, research goals and the researcher's epistemological stance do impact on the identification of themes because the researcher is using their judgement to determine whether the information is critical to the phenomena being studied. Hence Braun & Clarke (2006) emphasise the importance of researchers setting out their assumptions and approach to the data from the onset as well as reporting, in sufficient detail, the analytic strategy employed.

5.4.4.2 Analytic Strategy

The overarching analytic approach is summarised in Table 5.4.

Table 5.4: The sensitising study: analytic approach

- Data were analysed across the entire data set. This provided a rich and detailed description of the DHSW role in Childsmile Practice.

- The analysis took a deductive (top down) approach and data were analysed with the study aims in mind.

- Themes were identified at a latent level therefore analysis sought to identify and examine the underlying beliefs and meanings.

The five-step analytic protocol for the sensitising study, developed using Braun & Clarke (2006) guidelines is now described.

5.4.1.1 Familiarisation

The data were transcribed to include verbal and non-verbal responses. The process of transcription was in itself a useful familiarisation technique. Transcripts were actively read several times to gain an overall idea of content, and notes and summaries were made within the margins alongside points of interest. A reflective diary was used to record thoughts and points of interest during the data collection and analysis phase, and aided later comparisons between NHS boards. The use of a reflective diary is considered to be a useful tool for transparency because it can pinpoint early analytic decisions (Ortlipp, 2008).

5.4.1.2 Summarising

Transcripts were summarised to aid the identification of initial codes. This summarising process was achieved by creating a three columned table (Table 5.5).

Questions and responses were recorded in the 'data' column; participants responses were then summarised in the 'summary' column; and the summaries were then used to generate initial codes which were recorded in the 'initial codes' column.

The initial codes were created by simplifying the data to its most basic component in order to identify meaning. Summarising the data and recording the codes in this manner ensured the codes and findings remained data-driven.

Table 5.5: The sensitising study: Example of summarising

Data	Summary	Initial Codes
PR: "How would you rate your confidence and your competence after you completed training?" Donna[12]: "I think it took me a wee while to get confident, I did a lot of going out with colleagues …on visits to the homes and things.	Takes time to feel confident & able to deliver the role. Shadow other DHSWs	Confidence Time in post Shadowing Learning on the job

5.4.1.3 Creating a Coding Scheme

The data tables from the summarising step were uploaded into QSR NVIVO 10. Codes were then organised into a coding scheme of super-ordinate (high level) and sub (low level) codes. The coding scheme was created using an iterative process until all codes and data were incorporated. The structure and content of

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[12] Participants names were replaced with randomised pseudonyms

the coding scheme (Appendix 14) was validated by a regional researcher and the supervisory team.

5.4.1.4 Identifying Themes

Codes were clustered into themes and given a temporary descriptive name. This process involved clustering codes into conceptual groups and using mind maps (Wheeldon & Faubert, 2009) to identify the relationships between and within conceptual groups. Theme content was continuously reviewed against the transcripts to ensure the results remained data-driven. At this point, salience or variation in delivery of the role, between and within NHS boards were recorded in the reflective diary.

5.4.1.5 Reviewing Themes

Super-ordinate themes, which represented central concepts, were selected. This involved prioritising themes according to those which were deemed relevant to the research aims, rather than solely how often they appeared across the data. Theme content was reviewed to ensure 'internal homogeneity and external heterogeneity' (Braun & Clarke, 2006, p. 20). This reviewing process ensured the codes within each theme were coherent and related to one another, but there were clear differences between themes.

Once the final themes were identified, transcripts were re-read to ensure the codes and themes accurately reflected the story being shared. A narrative for each theme was developed: this included a summary of the theme, the variation in the DHSW role between and within NHS boards, and the relationships between and within themes. Accompanying excerpts from the data were selected to support the points made. The structure and content of the coding scheme, and high level themes and narratives, were validated by a regional researcher and the supervisory team.

5.5 Findings

The findings for the sensitising study are presented in the following order:

1. The DHSW role as intended: programme theory

2. The DHSW role as delivered: variation in delivery

3. Key themes impacting on delivery of the DHSW role

4. Implications and research questions for comparative case studies

5.5.1 The DHSW Role as Intended: Programme Theory

In addition to the informal discussions with stakeholders, four further sources were found to be useful for explicating the programme theory for the DHSW role in Childsmile Practice.

5.5.1.1 Childsmile Practice Logic Model

Programme theory for Childsmile Practice, and Nursery and School were developed with the use of logic modelling. The Childsmile logic models enable the evaluation team to assess the delivery of activities, processes, and outcomes within Childsmile.

The Childsmile Practice logic model depicted in figure 5.1 provides a description of the intended activities and target groups; and the short-term, interim, and long-term outcomes for the Practice programme as a whole. While the Childsmile Practice logic model depicted in figure 5.2 isolates the programme theory for the DHSW role.

Childsmile Practice Logic Model
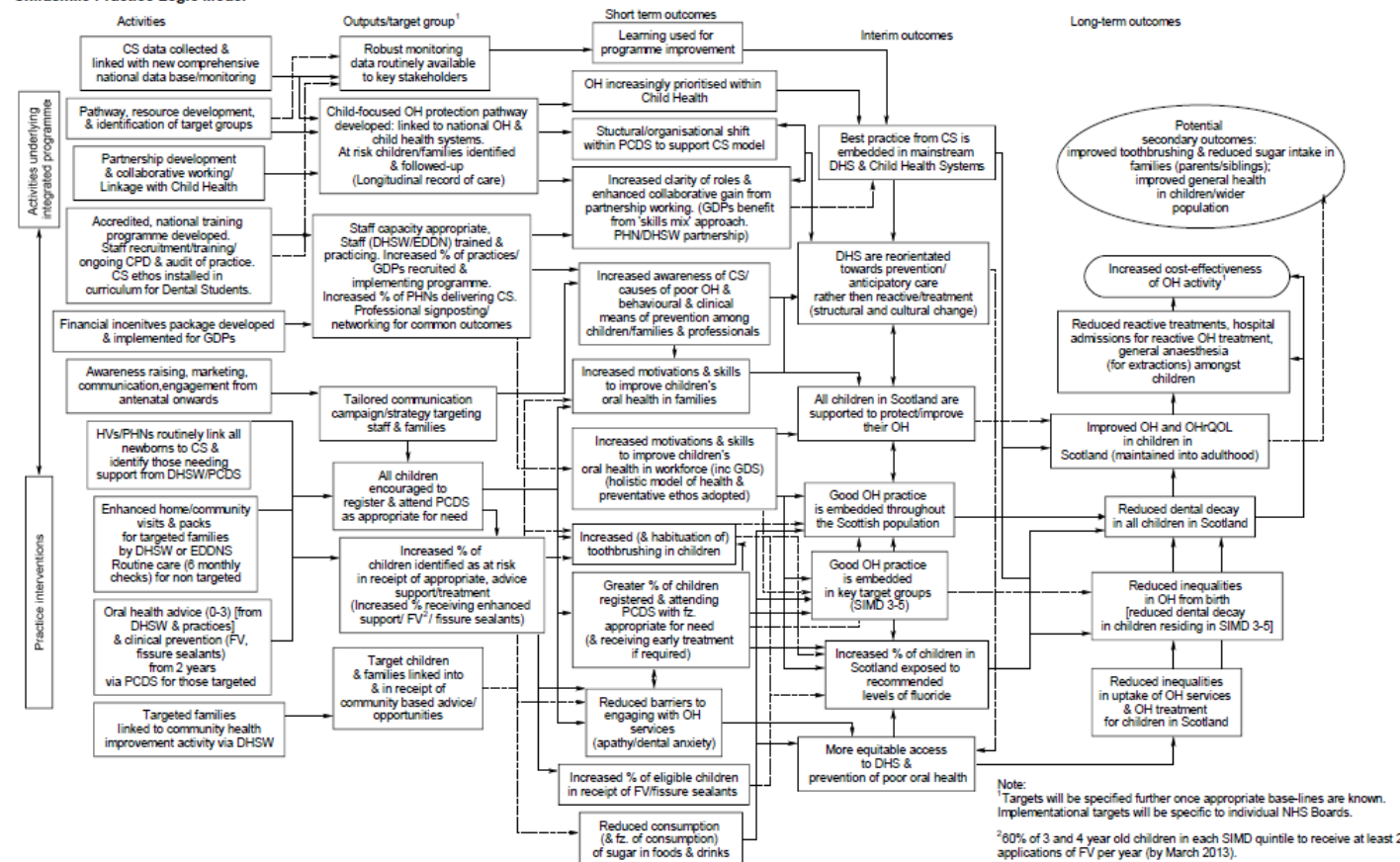
Agreed November 2009

Figure 5:1: Childsmile Practice logic model (Childsmile, 2010)
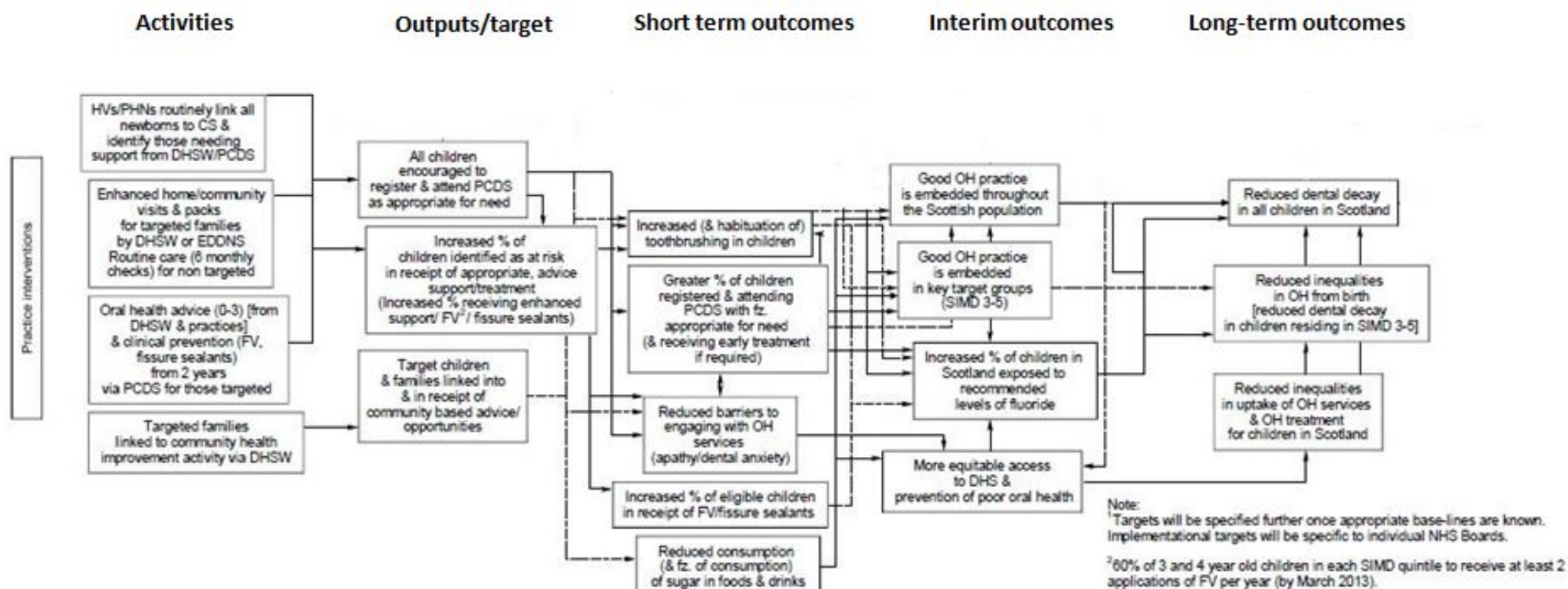
Figure 5:2: Childsmile Practice logic model, DHSW role only (Childsmile, 2010)

The logic model depicted in Figure 5.2 highlights that PHNs/HVs should refer all new-born babies to Childsmile Practice for routine care and identify which families are in need of DHSW support. DHSWs should then deliver 'enhanced home visits' to those families who are considered in need of support. Enhanced home visits should include oral health advice, facilitation into a dental practice, and linking the family with community health improvement activities. The anticipated short-term outcomes of these activities, as outlined in Figure 5.2 include:

- Increased (and habituation of) tooth brushing in children.

- A greater percentage of children become registered with and attend a dental practice.

- A reduction in the barriers to engaging with oral health services (i.e. anxiety).

- Increased percentage of eligible children receiving FVAs.

- Reduced sugar consumption among children.

The anticipated interim outcomes of these activities are: good oral health practice is embedded throughout the population in Scotland and within key target groups; there is an increased percentage of children are exposed to recommended levels of fluoride; and there is equitable access to dental health services and prevention of poor oral health. While the anticipated long-term outcomes are: reduced dental decay in Scotland; reduced inequalities in oral health from birth; and reduced inequalities in the uptake of oral health services and treatment.

5.5.1.2 The Childsmile Early Years Pathway

Further detail of the programme theory for the DHSW role is also outlined within the Childsmile Early Years Pathway which is illustrated in Figure 5.3.
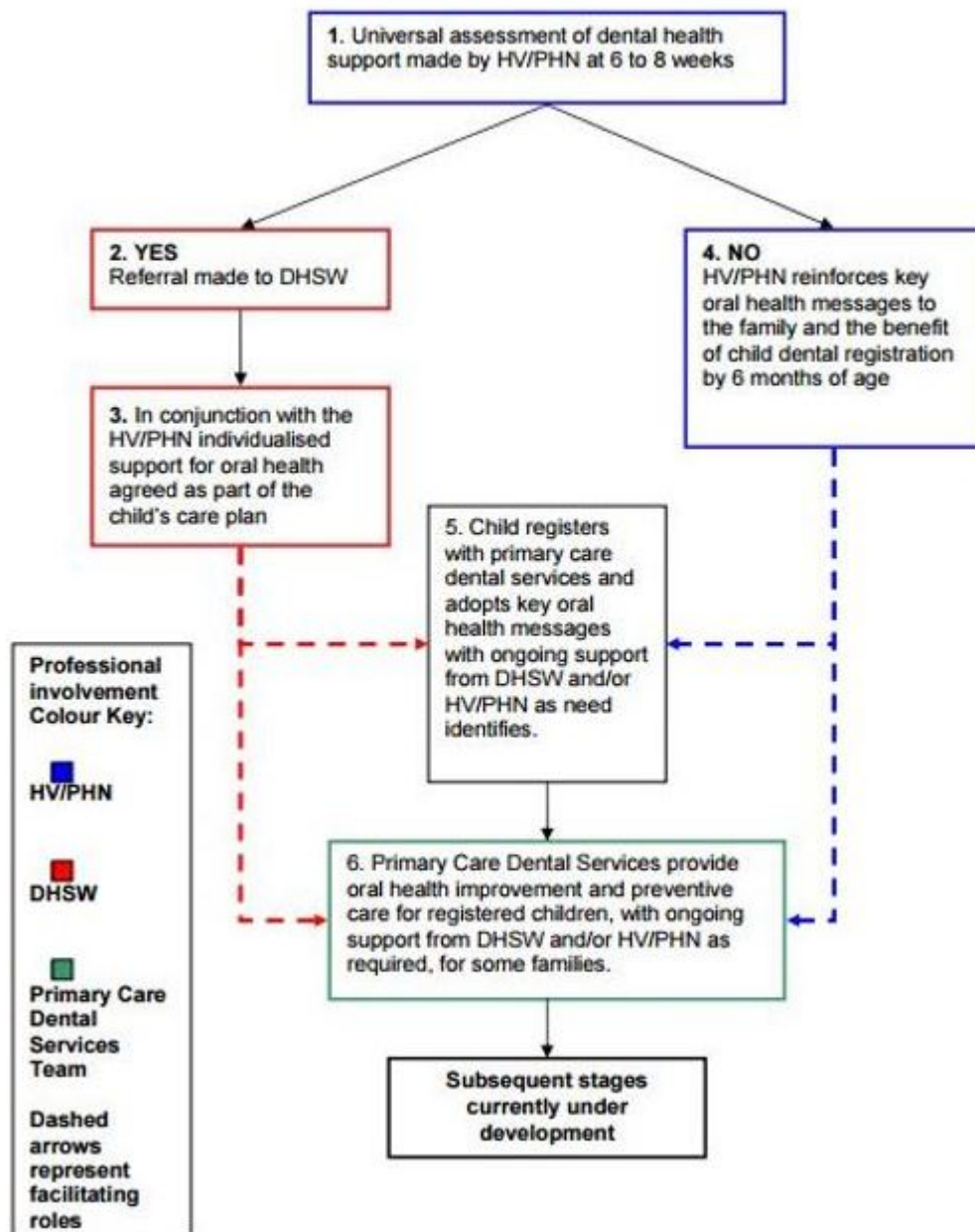
Figure 5:3: Childsmile Early Years Pathway (RRTs, 2012)

The Early Years Pathway in Figure 5.3 illustrates that when children are aged six-eight weeks old, PHNs/HVs carry out a universal child health review to assess the health, development, and wellbeing of the parent and child: this is called the 'six-eight week health assessment'. During this assessment, PHN/HVs carry out a universal assessment of children's oral health needs (Box 1). In 2011, Childsmile was incorporated into this assessment (NHS Scotland, 2014) and families whom PHNs/HVs deem in need of oral health support are referred to the Childsmile Practice DHSW *if* the family consents to the referral (Box 2).

With the support of PHNs/HVs, DHSWs provide individualised oral health support to families (Box 3). Families who decline a DHSW referral will be encouraged by PHNs/HVs to register the child with a dental practice by the time the child is six months old (Box 4). The intended outcome of these actions would be that the family registers the child with a dentist and adopts the key oral health messages. However, ongoing support from DHSWs and PHNs/HVs can be provided if necessary (Box 5).

Following dental registration, Primary Care Dental Services provide oral health improvement and preventative care although ongoing support from DHSWs and PHNs/HVs can be provided if necessary (Box 6).

The routine 27-30 month PHN/HV assessment was later added to the Childsmile Early Years Pathway in April 2013 (NHS Scotland, 2014) and provides PHNs/HVs with the opportunity to review children's oral health and support families if children who have not attended a dental practice in the preceding 12 months (Macpherson et al., 2015).

5.5.1.3 The Childsmile Programme Manual

The Childsmile programme manual (NHS Scotland, 2015) is used by Coordinators as a guide for implementing and delivering Practice at a local level, and provides additional information regarding programme theory to that from the aforementioned sources.

The programme manual outlines that on receipt of referral from PHNs/HVs, DHSWs should contact families before the child is three months old to provide oral health support and (if required) provide assistance in registering the child with a dental practice (p.33). The recommended and suggested oral health support provided by DHSWs is outlined in Table 5.6.

Table 5.6: Childsmile programme manual (NHS Scotland, 2015) (p.33)

Recommended:

Communicate oral health messages to parents and explain the benefits of joining the Childsmile programme.

Link the family with local activities in the community which support good oral health (e.g. weaning groups).

Explain the reasons for registering with and attending the dental practice before the child has teeth, and explain what will happen at a dental appointment.

Link the child into a local dental practice and ensure the family know how to get to the dental practice.

Contact the dental practice for the family and arrange an appointment at a suitable time and date for the family.

Attend the dental appointment with the family if they are anxious.

Work closely with the PHN/HV, when required, to ensure appropriate support is available to families when required.

Suggested:

Send a reminder (e.g. text message) to the family before the dental appointment and ensure the time and date is still suitable.

Contact the family after the first dental appointment to discuss how it went.

The Childsmile programme manual outlines that an extended period of home visiting can be provided by DHSWs to 'vulnerable' families (p.9) however home support should only be a short-term measure.

Programme theory regarding support from the dental practice outlines that from six months old children can receive tailored Childsmile care (p.9) which includes:

- Oral health advice (e.g. weaning, teething, and tooth brushing advice)

- Free oral health packs (toothbrush and toothpaste) for use at home

From 18 months old children receive regular dental check-ups, and from age two years they can receive twice yearly FVAs in addition to what they may already be receiving via Childsmile Nursery and School.

The Childsmile programme manual also outlines the extent to which stakeholders should work together to support families. The manual recommends that dental practices should contact DHSWs if children fail to attend (FTA) a dental appointment on two occasions. In these instances, DHSWs collaborate with the PHN/HV on how best to support the family (p.33). Furthermore, if families are experiencing difficulties engaging with oral health behaviours, the PHNs/HVs should be notified to reassess families' needs; and it is the responsibility of the DHSW, EDDN, and dental practice to update PHNs/HVs in these circumstances (p. 31).

5.5.1.4 The Childsmile National Training Programme

The Childsmile national training programme (NHS Education for Scotland, 2016) is delivered by NHS Education for Scotland to DHSWs over six consecutive days.

Training consists of six modules and a portfolio of short essays. The portfolio is expected to take a minimum of 30 hours to complete and should be submitted 12 weeks from the start date of the course. The theoretical elements of the training are classed by the Scottish Qualifications Authority as 'SCQF[13] Level 7' (NHS Education for Scotland, 2016).

Childsmile training is designed for DHSWs delivering the integrated programme, and for EDDNs delivering Nursery and School. The topics covered within the training programme are summarised in Appendix 15.

NHS Education for Scotland recommends that DHSWs carry out a period of local workplace shadowing before attending training, and additional training needs

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[13] SCQF (Scottish Credit and Qualifications Framework)

should be identified at a local level. The local 'mandatory' and 'useful' (as seen in Appendix 15) training is delivered at the discretion and arrangement of the individual NHS boards, and 'continued professional development' training is delivered by NHS Education for Scotland (NHS Education for Scotland, 2016).

5.5.1.5 Gaps in Programme Theory for the DHSW Role

Based on the learning derived thus far it was recognised that despite programme theory for the DHSW role being outlined within several resources, a degree of ambiguity exists and gaps in the knowledge surrounding how the role is delivered were evident. The identified gaps in programme theory for the role are now outlined in Table 5.7.

Table 5.7: Gaps in the programme theory for DHSW role in Childsmile Practice

Referrals:

- How are families identified as being in need of support and what types of families are being referred?

- What types of families are supposed to be referred?

- What does 'vulnerable' mean?

Support:

- What oral health messages are communicated to families?

- How do DHSWs ensure parents retention or understanding of the oral health messages?

- How do DHSW identify the family's needs to tailor support?

- How do DHSWs obtain the information about community initiatives for signposting?

- What constitutes short and long term support?

- How are PHN/HVs involved in DHSWs supporting families?

- What techniques do DHSWs use to deliver oral health messages and signposting?

- How support is tailored to family's needs? And how do DHSWs signpost to community initiatives?

- What is the difference in the information provided to families who receive one visit compared to those who receive several?

- How many visits do DHSWs deliver to families who require long term support?

Facilitating families into a dental practice:

- What happens when a family cannot be facilitated into a dental practice?

- What is the PHN/HVs role in supporting families who FTA a dental appointment?

- What action is taken for families who repeatedly FTA?

- What support is provided to families who FTA?

- At what point do referrals cease going to a DHSW following FTAs? (I.e. How many FTAs does it take?)

- At what point does the DHSW 'give up' or refer back to PHN/HV?

Given that Coordinators use these resources as a guide on how to implement and deliver Childsmile Practice, and the identified gaps and ambiguity, programme theory surrounding the DHSW role is arguably subject to interpretation. Furthermore, as established in Chapter 2, programme theory for the DHSW role was not sufficiently evidenced or fully developed. Both factors could account for at least some of the variation in delivery of the role between and within NHS boards. This resultant variation, as uncovered from the sensitising study, is now discussed in greater detail.

5.5.2 The DHSW Role as Delivered: Variation in Delivery

Examination of existing programme theory for the DHSW role has highlighted extensive variation in how the role was delivered across NHS boards. This variation was categorised into nine key areas of delivery of the role and are now described.

5.5.2.1 Where DHSWs are based

Where DHSWs are based refers to the department or office in which the DHSW is based in within the NHS board.

DHSWs are either situated within the PHN/HV teams and line managed by the PHN/HV Team Leader or the Childsmile Coordinator; or they are based within dental health services and line managed by the Coordinator.

5.5.2.2 DHSW Training for the Role

DHSW training for the role refers to the training and support DHSWs receive.

There is variation between DHSWs in how prepared they feel on completion of national and local training courses. Shadowing and 'learning on the job' provide DHSWs with learning opportunities in how to deliver the role. There is variation in how DHSWs perceive the usefulness and relevance of national and local training courses.

5.5.2.3 Components of Childsmile DHSWs deliver

The number of components delivered refers to whether DHSWs deliver a single or a dual role.

DHSWs deliver either a single role of one component of Childsmile, or a dual role of two or three components of Childsmile.

5.5.2.4 DHSWs' Autonomy

Autonomy refers to the level of freedom or independence DHSWs have in their role.

There is variation in the degree to which DHSWs are autonomous to support families, how they prioritise their workload, and in their communication with stakeholders.

5.5.2.5 Characteristics of the DHSW

Characteristics of the DHSW refer to the DHSWs attitudes, beliefs, and personal background.

Many DHSWs disagreed with the targeting component of Childsmile Practice because they perceived it to be 'unfair' and many argued that all children should receive support.

5.5.2.6 The Role of the PHNs/HVs

The role of the PHNs/HVs refers to the degree of input that PHNs/HVs have on the DHSW role.

There is variation in the level and methods of communication between DHSWs and PHNs/HVs, between and within NHS boards. The extent to which PHNs/HVs provide advice to DHSWs on how to support families is unclear. There is also variation, between and within NHS boards, regarding how PHNs/HVs triage families according to need for referral.

5.5.2.7 Targeting and Referrals

Targeting and referrals refers to which families are prioritised for a referral to the DHSW for support, how families are triaged for referral, and the method of referrals.

Many NHS boards operate with a targeted referral system whereby only children and families who are identified as being in need of support are referred to the DHSW for support. Some NHS boards operate with a universal referral system whereby *all* children and families are referred to the DHSW for support. Referrals are received via: the PHN/HV six-eight week assessment form; a local referral form; PHN/HV-led baby clinics; or the PHN/HV birth book.

5.5.2.8 Nature of DHSW Support

The nature of DHSW support refers to the intensity and type of support provided by DHSWs to referred families.

Between and within NHS boards there is variation in: the age of children referred to DHSWs for support, ranging from three to nine months old; and the intensity and type of support offered to families' boards. At the time of data collection, one NHS board was not delivering home visits and two boards had only recently begun to deliver the home visits.

5.5.2.9 DHSWs Engagement with Dental Practices

DHSWs engagement with dental practices refers to the level of communication between DHSWs and dental practice staff.

Not all dental practices communicate which FTA a dental appointment, and there are often barriers with DHSWs booking dental appointments for families. There is also variation in engagement from dental practices, and variation between dental practices in the level of support and advice provided to parents.

5.5.2.10 Wider Context

The wider context refers to the geographical and population size of the NHS board and the length of time the Childsmile programme have been operating within the board.

NHS boards within Scotland vary geographically and in population size, and the length of time Childsmile has been operating within the boards varies. NHS boards in the west of Scotland piloted Childsmile Practice only, while east of Scotland piloted Nursery & School, before each region rolled out the integrated programme. There have also been delays in the home visiting element of Practice within several NHS boards.

5.5.2.11 Delivery of Practice Models

The variation in delivery of the DHSW role, as outlined above, was used to develop a model illustrating delivery of the DHSW role in Childsmile Practice within each of the NHS boards. An example of this model can be seen in Figure 5.4.
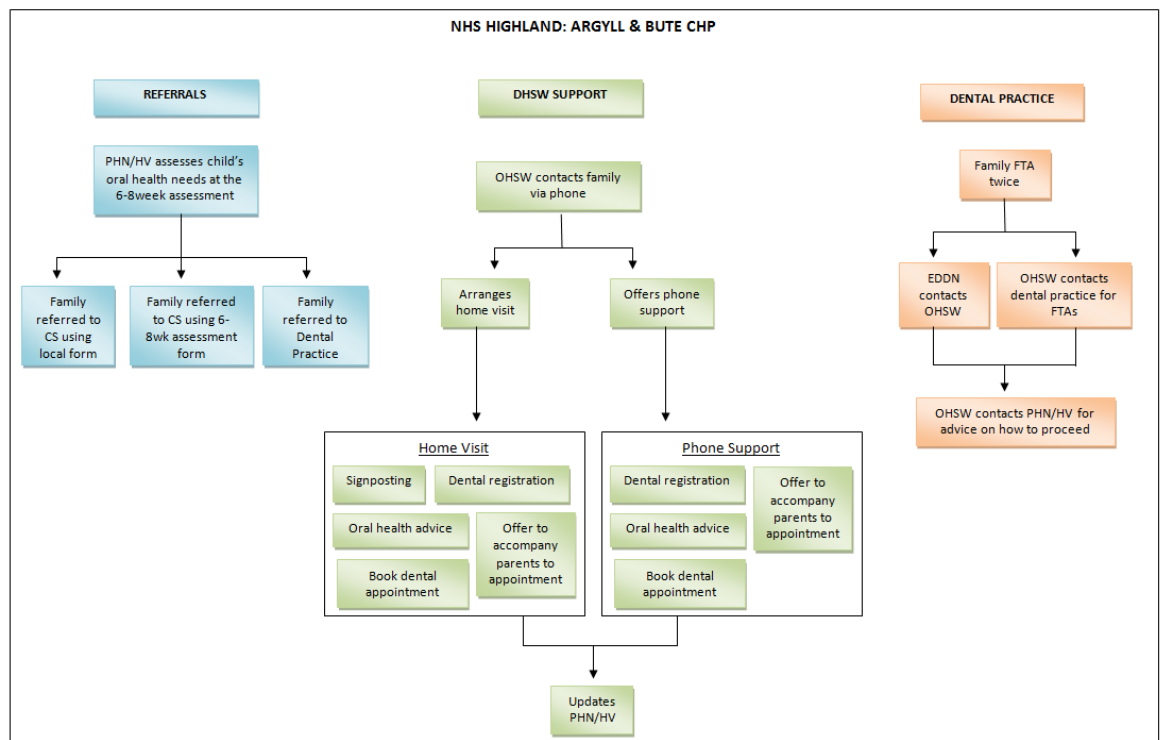
Figure 5:4: Delivery of Childsmile Practice model

The 'Delivery of Practice' models, as exampled in Figure 5.4, highlight three key areas of delivery of Childsmile Practice and the DHSW role: Referrals to the DHSW; DHSW support; and Support from the dental practice. These models provided an opportunity to compare delivery of the DHSW and identify points of variation in delivery of the role between NHS boards. Delivery of Practice models for all eighteen NHS boards/CHPs can be seen in Appendix 16.

5.5.3 Key Themes Impacting on Delivery of the DHSW Role

This section presents six key themes which impact on delivery of the DHSW role in Childsmile Practice as derived from interviews and focus groups with stakeholders. These key themes, and their relationship with one another, are illustrated in Figure 5.5.
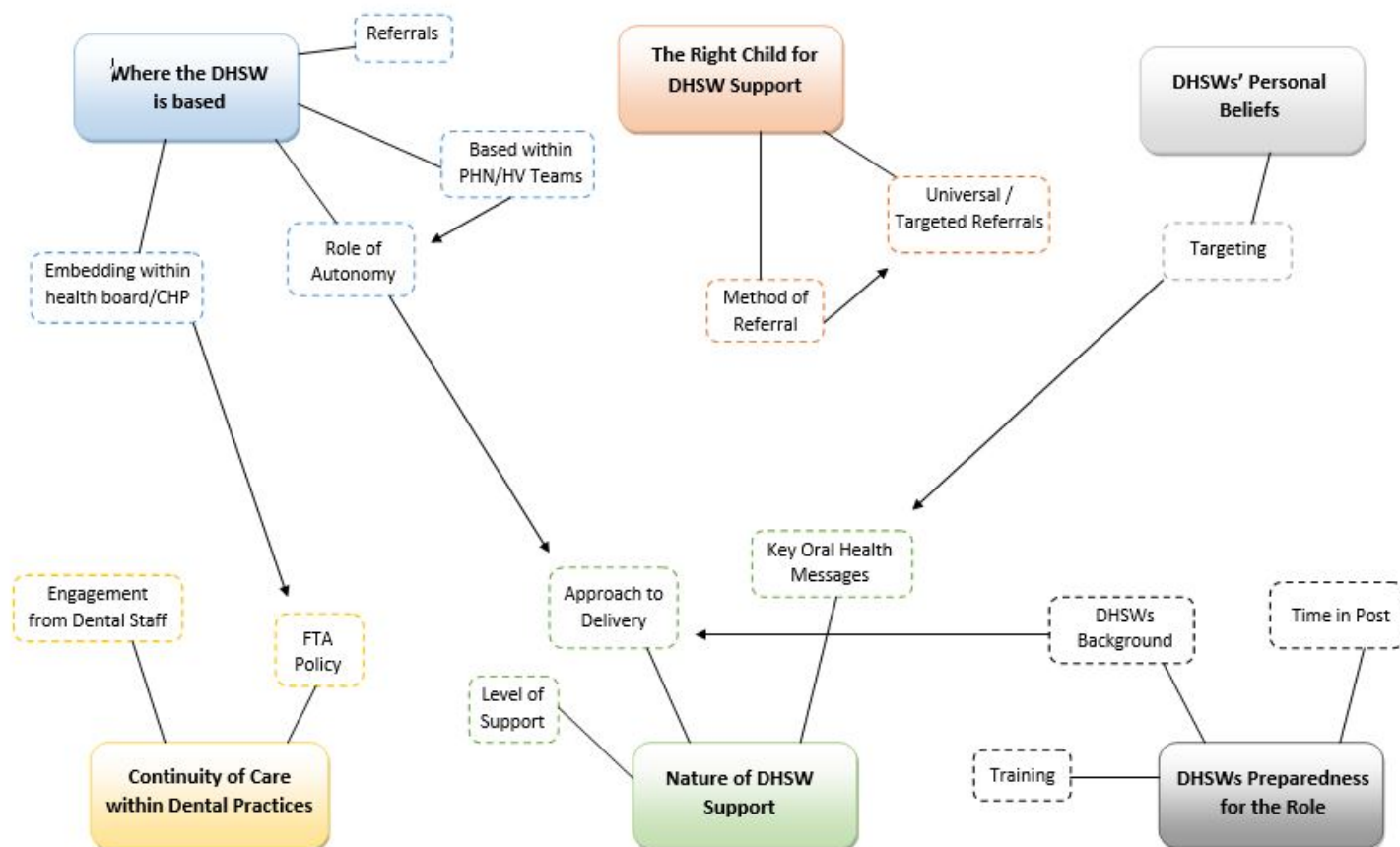
Figure 5:5: The sensitising study thematic map of findings

5.5.3.1 Theme 1: Where DHSWs are based

Theme one was: the department or office in which the DHSW is based within the NHS board, and its impact on the role. Autonomy, duration of implementation within the NHS board, and referrals are discussed in relation to how they benefit the relationship between DHSW and PHNs/HVs.

During the piloting phase of Childsmile Practice within the west of Scotland, DHSWs were based within the PHN/HV team and in some instances, line managed by the PHN/HV Team Leader. Since the programme was rolled out nationwide there exists widespread variation in where DHSWs are based and who line manages them. Findings showed that DHSWs are based either within dental health services and line managed by the Coordinator, or DHSWs are based within PHN/HV teams and line managed by Coordinator or the PHN/HV Team Leader.

5.5.3.2 DHSWs Based within PHN/HV Teams

According to programme theory, the primary benefit of DHSWs being based within the PHN/HV team is that it facilitates communication regarding referrals between stakeholders, and DHSWs could turn to PHNs/HVs for support when required:

> **DHSW (West Board 1):** "...they'll [PHNs/HVs] come and say to you 'listen, you're going to be going out shortly to see so and so, there's a big dog in there.' Or they've maybe had bereavement in the house and things like that...they will come and say if there is issues."

Findings indicate that while placement within PHN/HV teams aids communication and support, it may not be necessary because the relationship between DHSW and PHNs/HVs is mediated by DHSWs autonomy in the role.

5.5.3.3 Autonomy in the DHSW Role

Autonomy in the DHSW role serves multiple functions. To begin with, autonomy positive influences the relationship between DHSWs and PHNs/HVs: when DHSWs are in control of their own diaries they have more flexibility regarding how and when they communicate with PHNs/HVs. DHSWs autonomy over their time management also facilitates regular face to face communication with the PHNs/HVs which is vital to maintaining a positive relationship:

> **DHSW (East Board 2):** "I think it's just about keeping your face in with them [PHN/HVs] and making it clear you're still here and they can see us anytime...our Coordinator is letting us do that. We get that freedom. I can say on a Monday morning 'right, I'm nipping up to [town] baby clinic'...that's why we have such a good relationship with the Health Visitors..."

This flexibility, or 'freedom' as DHSWs label it, is of high value to DHSWs because it reinforces the concept that 'one size doesn't fit all' when supporting families. Yet, while autonomy provides DHSWs with a degree of independence they still retain a safety net of support from Coordinators and PHNs/HVs when required:

> **DHSW (West Board 1):** "Personally I think the Coordinator knows the calibre of work that we put out into the community and she is always there, personally speaking, to give you support, to ensure YOU'RE alright and YOUR needs are being met."

Additionally, having a degree of autonomy in the role means the responsibility over what level of support to provide to families lies with the DHSW. This enables DHSWs to respond to individual needs and provide person-centred care:

> **DHSW (East Board 2):** "Our Coordinator is fantastic, she is all about helping the families, she understands that's the role we're doing and we get the freedom to go out as many times as we want. If a family says to us 'oh can you come next week?' we'll do that."

5.5.3.4 Duration of Programme Implementation

There is a positive relationship between the length of time Childsmile has been operating within the NHS board and engagement from PHNs/HVs. Findings indicate NHS boards are seeing an increase in the numbers of referrals from PHNs/HVs which is thought to be attributed to the duration of programme implementation:

> **DHSW (West Board 1):** "...I think they've [PHN/HVs] embraced us a lot better now. As they've got used with us being there they've learned to utilise some of our time."

An increase in referrals suggests PHNs/HVs are endorsing the programme and it could be argued that this endorsement occurs once the PHNs/HVs have had an opportunity to understand and witness the positive outcomes of the programme.

This process is perhaps further aided when DHSWs are based within the PHN/HV teams.

5.5.3.5 Referrals from PHNs/HVs

A benefit often cited for DHSWs being based within PHN/HV teams is that the DHSWs have access to the PHN/HV birth book for referrals. Yet, as outlined in Theme 2, the PHN/HV birth book may undermine the targeting component of Practice. Therefore DHSWs proximity to PHNs/HVs for the sole purpose of access to the birth book for referrals is perhaps unnecessary.

5.5.3.6 Theme 2: The Right Child for DHSW Support

Theme two was: who the right child is for DHSW support. The criteria used for triaging families for referral, the method of referral, and targeting component of Childsmile Practice are discussed in relation to their impact on delivery of the DHSW role.

The programme theory outlined in the Childsmile programme manual identifies the right child for DHSW support is someone from "…the most vulnerable families and…families most in need" (NHS Scotland, 2015, p. 9) and it is the responsibility of PHNs/HVs to identify these families and refer to the DHSW for support.

The criteria for referring children to the DHSW vary between and within the NHS boards. Findings indicate that some DHSWs receive referrals for families who may not need support which suggests that there is miscommunication between Childsmile and the PHNs/HVs regarding the referral criteria and who the right child is.

The number of referrals made to DHSWs was often cited as a measure of success as it signified that PHNs/HVs had bought-in to the programme:

> **Coordinator (East Board 2):** "…since last August we have certainly been getting more requests [referrals] in…Numbers have increased, so I think personally it's more embedded now."

However this success is arguably diminished if the 'wrong' child is referred for DHSW support. If the DHSWs workload is consumed with supporting families who do *not* require support then there is a chance this could impact on the level of support provided to families who *do* require it. Therefore, the type of child being referred for DHSW support and referral methods ought to be explored.

Across the NHS boards, referrals were made to DHSWs via four methods:

1. The PHN/HV six-eight week assessment

2. A local referral form

3. The PHN/HV birth book

4. PHN/HV-led baby clinics

While some NHS boards used one method for referral, most were using a combination of the four.

5.5.3.7 PHN/HV six-eight week Assessment Form

The PHN/HV six-eight week assessment form was used across the eight selected NHS boards. According to Coordinators, when using this method of referral PHNs/HVs assessed families using:

> **Coordinator (East Board 2):** "…the indicators that are in the Childsmile manual…professional judgement; siblings have decay; maybe go to the dentist, but when you prompt them they've not actually been regularly; and of course, do they actually need help finding a dentist."

PHN/HV triaging using this criteria should theoretically ensure that only children who are in need of support are referred to the DHSW, yet triaging is dependent on the PHNs/HVs understanding of what constitutes need. Furthermore, the criteria for referrals are not outlined within the Childsmile programme manual, which poses a concern if stakeholders are using this resource as guidance for delivering the programme. In fact, the criteria for referral are only outlined within the Early Years Pathway. This lack of clarification in the referral criteria

may account for a degree of variation in stakeholders' understanding of who the right child for DHSW support is.

5.5.3.8 Local Referral Form

Local referral forms are used in five of the eight selected NHS boards. These are tailor-made forms, designed at a local level, and are typically used in addition to the six-eight week assessment form.

The primary function of local referral forms is to ensure DHSWs can visit families shortly after a referral is made by the PHN/HV, because in some areas, referrals via the six-eight week assessment can take several months to be processed.

The secondary function is that local referral forms provide the opportunity for PHN/HVs to outline the families' needs and provide additional information to the DHSW where necessary. This information is often communicated via notes on the local referral form. Some NHS boards have designed their forms specifically to categorise need and outline what support is required:

> **Coordinator (East Board 1):** "…we have a referral form which has three boxes. Box one, the family needs registering…Box two just *the child* wants registering and box three they need intensive support…"

5.5.3.9 PHN/HV Birth Book

Four out of the eight selected NHS boards accepted referrals via the PHN/HV 'birth book'. PHN/HV birth books record every child born into the local area. DHSWs access the birth book to identify families who have recently had a baby and contact them to arrange a home visit. Consequently the triaging and targeting element of the referral process is lost. In two NHS boards, the PHN/HV birth book is the sole method of referral which indicates these boards are operating with universal referrals.

5.5.3.10   PHN/HV-led Baby Clinics

Five out of eight selected NHS boards accepted referrals via PHN/HV-led baby clinics, which are typically immunisation or weigh-in clinics. Parents who attend these baby clinics are directed by PHNs/HVs to DHSWs, and DHSWs will then

formally 'refer' families for a home visit using the local referral form. Attending baby clinics is often used to boost the number of referrals and provide an opportunity to register all infants with a dental practice:

> **Coordinator (East Board 1):** "The Teething Ring was a trial to see if we'd increase referrals from health Visitors…we were actually in the baby clinics offering support and advice…we did have a fifty percent increase in referrals…it was quite huge but very very time consuming as well, but it did work…"

The key concern with baby clinic referrals is that there is no opportunity for triaging by the PHN/HV. Yet many Coordinators and DHSWs who use this method maintain it is effective because "tooth decay occurs everywhere and not just in SIMD one and two." **(Coordinator: North Board 1).**

5.5.3.11 Universal Referrals

Three out of the eight selected NHS boards operated with universal referrals, whereby all children could be referred to the DHSW regardless of need. Aside from deviating from programme theory, the concerns with universal referrals are threefold. First, universal referrals may impact negatively on programme outcomes. Secondly, there are concerns as to whether DHSWs can cope with the increased workload produced by universal referrals, particularly when delivering a dual role:

> **Coordinator (West Board 2):** "…it's something like 36.3% are actually referred. So the issue is, if you go to a blanket approach of maybe 70 or 80% of children being referred to Childsmile, as they should be, would they [DHSWs] be able to cope with the amount of work?"

Thirdly, there are concerns as to whether the additional workload produced by universal referrals impacts on the support provided to families. Nonetheless, many Coordinators and DHSWs maintained that while all families may be referred for DHSW support the support itself is in fact tailored to families' needs.

Further clarification is needed to understand what support is offered to families and how the support is tailored to family's needs. Additionally, if DHSW support *is* being tailored to families' needs then some form of triaging must be carried

out by DHSWs. Therefore further information is required regarding how the DHSWs are triaging and what criteria they are using.

5.5.3.12   Targeted Referrals

Five out of the eight selected NHS boards were operating with targeted referrals whereby only children who were identified as being in need of support were referred to the DHSW:

> **Coordinator (East Board 1):** "Well we're quite clear on who should be referred in. It is children that need continued support and not just the ones who need a dentist…"

DHSWs and Coordinators within these NHS boards used the level of support that families required as a proxy indicator of whether they are the right child. In most cases, Coordinators and DHSWs were confident that they were reaching the right child because of the amount of time DHSWs spent with families. Some DHSWs also trusted the triaging judgement of PHNs/HVs and agreed they were supporting the right child simply because they were referred:

> **DHSW (North Board 2):** "That's difficult to say who *are* the right children… if they [PHNs/HVs] refer them then probably they are the right person."

Many DHSWs reported that they received referrals for families who arguably did not require support, and DHSWs were in agreement that there are families who are *not* being referred but who may require support. These problems may demonstrate the variation in stakeholders understanding who the right child is and how this influences referrals. Overall, most DHSWs were undeterred by universal referrals despite the additional workload it created. DHSWs argued that families who were not identified as being most in need were more likely to listen to oral health advice and carry it out.

5.5.3.13   Theme 3: Nature of DHSW Support

Theme 3 was: the support that DHSWs provide to families. This theme explores the factors which may influence variation in DHSW support between and within the NHS boards.

The key oral health messages that DHSWs, across the NHS boards, delivered were: tooth brushing advice, dietary advice, and regular attendance at the dental practice, all tailored to the child's age. DHSWs may also use resources to deliver these messages and signpost families to community services.

5.5.3.14 *Tooth brushing Advice*

A summary of the tooth brushing advice provided to parents by DHSWs across the NHS boards can be seen in Appendix 17.

When delivering tooth brushing advice many DHSWs provided practical tips or shared personal experiences with parents in an attempt to address the barriers and difficulties of brushing children's teeth:

> **DHSW (North Board 4):** "I always recommend, just as I did with [my] wee boy, to [do it] when the kid is at their most relaxed. [do the] night time one in the bath…"

DHSWs suggested that parents would be more willing to take on board tooth brushing advice if they knew the DHSW had experienced similar problems as a parent. This technique of sharing personal experiences demonstrates to the parent that the DHSW not only empathises with them, but that they understand first-hand the difficulties of engaging with POHPBs. Furthermore, because DHSWs are using their own experiences as a parent they are presenting themselves as a peer, as opposed to a health professional.

While DHSWs do answer parents questions regarding tooth brushing, few enquire about the families' current tooth brushing habits. Thus one must question the extent to which the information is tailored to the individual family and, if DHSWs are tailoring the advice, what information are they using to do so?

Despite advice from the Childsmile programme manual (NHS Scotland, 2015) (p.34) tooth brushing demonstrations are not always delivered by the DHSW on the child and instead are delivered using puppets or tooth models. While Coordinators and DHSWs acknowledge the benefits of tooth brushing demonstrations there was a consensus that they were not always suitable for the setting or for the role. Many believed that further training was required to deliver this level of support:

> **Coordinator (North):** *"...you've got a young baby in your lap...it's not easy to access that mouth and you could possibly have to be taking out a dummy. If you take that out, a child's going to start crying and you really don't want that..."*

5.5.3.15 *Dietary Advice*

A summary of dietary advice provided to parents by DHSWs, across the NHS boards, can be seen in Appendix 17. Delivering dietary advice involved empowering parents to make better choices for their child's oral health. This included encouraging positive dietary behaviours (e.g. substituting juice for milk or water) and acknowledging the influence that family members may have on their child's eating habits.

While ideally the child's diet would be free from sugars for the sake of their oral health, DHSWs recognised this was not realistic for most families. Instead, DHSWs provided realistic goals (e.g. restricting sugars to mealtimes) in the hope that parents would be more likely to adopt the behaviour.

Visual aids were recognised as an effective technique for delivering dietary advice because they illustrate the negative impact of sugars on children's teeth and encourage parents to reconsider their choices. DHSWs within one NHS board developed their own resources for these purposes: they purchased several popular children's drinks and snacks, cleaned the containers, calculated how much sugar was in the product, and measured this amount of sugar into a clear plastic bag. These 'sugar bags' (Figure 5.6) were used to demonstrate the sugar content of drinks and snacks in an effort to encourage parents to swap to low-sugar/sugar-free alternatives.

Figure 5:6: 'Sugar Bags' for delivering dietary advice

5.5.3.16   Facilitation into a Dental Practice

The techniques DHSWs, across the NHS boards, used to facilitate families into a dental practice can be seen in Appendix 17. Encouraging parents to take their child to a dental practice is a particular challenge with parents who experience fear or anxiety of the dentist.

While DHSWs were primarily concerned with the child attending a dental practice (although many DHSWs do also encourage parental attendance) it is often the parents who required intensive support to overcome *their* fears before their child could attend. In these circumstances, DHSWs sought to draw the parent's attention to the changes in dentistry and/or encouraged parents to take the child to the dental appointment even if parents choose not to attend for their own oral health:

> Coordinator (East Board 1): "...our DHSWs work really hard and they go along to dentist appointments with them [parents], you know, they chaperone them to the dentist, they go into the surgery with them, they hold their hand..."

Such methods of support gives an indication of the types of barriers that families face when accessing dental services and emphasise that DHSWs have to target

parental behaviours in order to improve children's oral health. Whether behaviour change to this extent is within the remit of the DHSW role requires further exploration.

5.5.3.17   *Signposting to Local Services*

The services that DHSWs signpost parents to can be seen in Appendix 17. DHSWs carry out signposting by responding to the environmental cues within the home or to verbal cues from parents. Signposting is typically informal and carried out as part of a natural conversation with the parent, yet it is not routinely carried out by DHSWs in each home visit nor is it routinely recorded.

Coordinators suggest a lack of signposting may be due to the DHSWs uncertainty in how to signpost. Whereas failure to record signposting is attributed to DHSWs not being aware that they are signposting because they do so informally:

> **Coordinator (East Board 1):** "I think they [DHSWs] do that [signposting] automatically... I think, you're doing it already you just need to record it but they don't realise they're doing it...one of them works in this area and has 2 young children in this area, I know she says 'oh that's on, because my son went to it' but she wouldn't think that was signposting."

If DHSWs are not signposting then they may not be using the available community resources to support families. In which case DHSWs are either over-extending themselves by supporting families beyond their capacity, or families are not being supported to the extent required. On the other hand, if DHSWs are lacking confidence or they do not know how to signpost then preparation for the role may require further review.

The extent to which DHSWs are aware of the community services they ought to signpost families to also requires consideration. If signposting is occurring and is not being recorded then it is difficult to obtain an accurate picture of what support families are receiving.

5.5.3.18 Resources

A list of the resources available to DHSWs, across the NHS boards, for supporting families can be seen in Appendix 17. However not all of the resources listed are available across the NHS boards.

Resources are distributed to families on a case by case basis, at the discretion of DHSWs, and have four key functions for supporting families:

1. **Parental Engagement**: Parents are more responsive and allow DHSWs into their home if they are receiving a 'freebie'.

2. **Demonstrations:** Models or puppets with teeth are used to demonstrate the correct tooth brushing technique to the child and parent. DHSWs use these models to distract children during the home visit by asking the child to brush the puppets teeth, and this distraction gives the parent and DHSW time to talk.

3. **Structure:** Many DHSWs structure their home visit around what resources they have and what 'freebies' they can give to parents:

   DHSW (North Board 1): "...I have my stuff with me. I say "I'm sure you're aware of this already but I've got it with me so I'll show you' and I'll take out things that I think that maybe they need to see."

4. **Impact:** Visual aids have a stronger impact than the advice alone. Resources such as 'sugar bags' (see Figure 5.6) grab parent's attention and demonstrate the consequences of poor oral health behaviours.

5.5.3.19 The Level of DHSW Support

The most noticeable variation in delivery of the DHSW role across the NHS boards lies in the level of support provided to families. Support provided by DHSWs can be categorised as diluted or concentrated: the features of both are outlined in Table 5.8.

Table 5.8: Characteristics of diluted and concentrated DHSW support

Diluted DHSW support	Concentrated DHSW support
• Information only	• Two-way conversation
• Information tailored to child's age	• Information tailored to family's needs
• Short sessions	• Long sessions
• 1 visit per family	• Multiple visits per family
• Universal referrals	• Targeted referrals
• Multiple DHSW role	• Single DHSW role

Diluted DHSW support can be characterised as a 'one-stop-information-drop' whereby the aim is to register the child with a dental practice. Families typically receive one home visit, lasting approximately 20 minutes, and the information is tailored only to the child's age.

Concentrated support can be characterised as 'intensive' support whereby the aim is to promote long term behaviour change. Families typically receive several home visits, lasting up to one hour, and DHSWs have more time to engage in a two-way conversation with parents while delivering information:

> **Coordinator (East):** "…the focus of the DHSW isn't to get [families] registered…it's to maintain good oral health practice. The dentist is the final piece of the jigsaw."

The level of support that DHSWs provide to families could be a consequence of the DHSW's workload and capacity: both are influenced by whether referrals are universal or targeted, and whether DHSWs are delivering a single or dual role.

While there may be instances where diluted support is suitable for families the extent to which this is an effective model of support for families who are *not* engaging in POHPBs is debatable. It could be argued that sustainable behaviour

change requires multiple support sessions so that the messages can be repeated and reinforced:

> **DHSW (East Board 1):** "I've got one [family] on my books where I've been out three times now…she has five children…it's been a very big thing getting her to the dentist…because she is phobic and it's a bus journey to the dentist. So I've had to go, right start with the oldest, work to the youngest…I've been for a home visit, so then I go to meet them to get on the bus with them, take that one, and then they've got another follow up visit for treatment, we've to go again. Then we work on the next child and again and again until were down to the last child."

Despite many DHSWs agreeing that behaviour change is a fundamental component of their role, not all were carrying out multiple home visits or delivering concentrated support. Therefore the extent to which DHSWs can incite long term behaviour change, and whether DHSWs are dependent on a families' readiness to change for positive outcomes, must be questioned.

5.5.3.20   *DHSWs Approach to Supporting Families*

Most DHSWs appeared to adopt a 'flexible' approach when supporting families which enabled DHSWs to respond to the family and environment, and adapt their support accordingly:

> **DHSW (North Board 3):** "…you might notice they've got juice in a bottle and that's your focus…so it's just about omitting sugar and keeping it to mealtimes…"

In these instances, DHSWs conducted a quick mental assessment of various factors (e.g. parental engagement, home life, family dietary habits) before deciding what support and advice families required. For example, if parents appeared disinterested or the television was on at high volume the DHSWs would quickly surmise that a lengthy support session was not suitable and instead would deliver 'key oral health messages' (e.g. the most pertinent information). Alternatively, if parents were asking questions and appeared to be engaged with the information, DHSWs would spend longer with the family and provide more in-depth information.

Taking the time to gauge parents' current level of knowledge was a key feature of flexible delivery. While the information that DHSWs provide was aimed at the

child's oral health, the uptake of positive oral health behaviours was dependent on parents' understanding of the information:

> **Coordinator (North Board 4):** "…it's trying to gauge [parents'] knowledge level and what they already know. So if they already know about brushing and they've brushed siblings, there's a good chance they going to do it…so establishing what's there already and then building on that…"

Yet findings suggested that DHSWs were not engaging in this activity before delivering oral health advice. Findings from one NHS board indicated that DHSWs took a more 'scripted' approach to supporting families, and while information may be tailored to the child's age, the same generic information was provided to every family:

> **DHSW (West Board 1):** "I tell them the reason why Childsmile started…how we were the worst in Europe for oral health…how things have improved…Then I'll go onto dental registration…tooth brushing guidelines…your sugars, the importance of using the cup…"

This approach (which could be characterised as a 'one-stop information drop') in conjunction with universal referrals presents a concern with achievement of programme outcomes. However, a flexible approach is not without its concerns either. A flexible approach places a great deal of responsibility on DHSWs to think on their feet, assess the family's needs, and make a quick decision as to what support is required: all of which require experience in the role. Furthermore, this approach requires a degree of autonomy in the DHSW role to make these decisions. DHSWs must have flexibility with their diaries in order to spend time with families who require longer sessions, which is not often possible with a model of delivery that incorporates a dual role and targeted referrals.

5.5.3.21   Theme 4: Continuity of Care across Dental Practices

Theme four was: the level of care families receive at the dental practice and the continuity of care across dental practices.

The extent to which dental practices engage with Childsmile Practice varied between and within the NHS boards, which raised concerns regarding the continuity of care across dental services. The impact of this variation means that DHSWs have a limited number of dental practices with whom they can

confidently refer families to and trust in the level of care they will receive. Findings suggested that families were less likely to attend a dental practice if they do not receive an adequate level of care, and if there is poor continuity of care between DHSWs and dental practices.

5.5.3.22 Dental Practices' 'Fail to Attend' Policy

The FTA policy is outlined within the programme theory as a communication feedback loop between dental practices, DHSWs, and PHNs/HVs. A successful FTA policy requires engagement from dental practices, and communication between stakeholders. Yet despite best efforts from Coordinators and DHSWs across the NHS boards to improve engagement, not all dental practices communicate FTAs to DHSWs.

In the instances where FTAs are not being communicated, DHSWs are responsible for following up each family whom they referred to a dental practice to check whether or not they attended the appointment. This additional workload places a strain on a dual role DHSW and those receiving universal referrals.

The difficulties surrounding engagement with dental practices were primarily found across General Dental Services (GDS) practices, which could be attributed to staff not understanding the DHSW role and/or the extent to which they can support families, or low buy-in to the Childsmile programme:

> **Coordinator (North Board 1):** "I have to say the majority of dentists that are doing it have taken it on board, but there is just some out there that, I don't know, I don't know why, there's just that need to shove them in the right direction...it's probably just a huge culture change for them."

DHSWs were more likely to refer families to the Public Dental Services (PDS)[14] because they could depend on positive engagement from practice staff, and were more confident that families would receive adequate care.

The length of time that Childsmile had been operating within the NHS board was thought to contribute to dental practice engagement because the programme

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[14] Historically, the PDS was divided into the Salaried and Community Dental Services, respectively. As of January 2014, these services merged to form the Public Dental Services (Information Services Division Scotland, 2016a)

had time to respond to and improve any issues affecting engagement. This is explored in further detail in the following sub-theme 'engagement from dental practices':

> **DHSW (West Board 1):** "I'd say [dental practices are] much better with it now. I think at first they were a bit resistant...at one point [community dentists] was my only place that would take [families]... it was always to do with [GDS] didn't have a dental nurse trained then...there's a lot of paperwork to fill in...So they were like that 'Childsmile? Beat it!' [Laughs]"

At the time of writing, the changes to the Children and Young People (Scotland) Act (2014), which came into effect in August 2016, was expected to positively influence the extent to which dental practices engage with Childsmile. This act places a duty of care on practitioners who work with young children to inform the Named Person (The Scottish Government, 2016) if they are aware of any issues which constitute a concern over a child's wellbeing. In relation to dental practice staff this Act does not suggest that practitioners are obliged to report all FTAs: after all a FTA for one family may not raise concerns over the child's wellbeing, while another set of circumstances it may well do.

At the time of data collection it was anticipated that amendments to the Act would result in improved engagement from GDS practices and an overall increase in FTA referrals to DHSWs from across dental practices. Whether DHSWs, particularly those who have a dual role and/or are receiving universal referrals, are equipped to cope with this additional workload requires further exploration.

5.5.3.23   Dental Practices' Engagement with Childsmile

The findings suggest that dental practice staff were not aware of how beneficial the DHSW role could be. For example, DHSWs are often best placed to understanding the barriers that families face when attending the dentist, furthermore DHSWs may also bridge the gap between the dental practice and families. An example of a successful relationship between dental practices and DHSWs was provided by a DHSW when she explained how she facilitated a pregnant mother, who had a long term fear of the dentist, into a dental practice:

DHSW (East Board 1): "My first visit was just her gaining trust in me, just listening to her…go back and do another visit. Get a wee bit of dental in there, and from there 'right how are we feeling about the dentist?', [she's] a bit scared, what if I went with her? And luckily the dentist was amazing, he was really good. He put her at such ease, he was a comedian you know. He kept reinforcing that he's not gonna do anything that she doesn't want him to do [or] that's gonna hurt her. I was there by her side."

In this case, while the DHSWs primary aim was to ensure the child attended the dental practice this was not possible because the barrier to attendance lay with the *parent*. Therefore, in order to ensure the child could attend the dental practice the DHSW had to work intensively with the parent. Tackling this parent's fear of attending a dental practice relied on the DHSW and Dentist presenting a united and supportive front, and emphasises the importance of consistency of support between stakeholders delivering Childsmile and the impact it can have on outcomes. It may be that this case may not have had a successful outcome had there been a breakdown in communication between DHSW and the dental practice.

5.5.3.24   Theme 5: DHSW Preparedness to Deliver the Role

Theme 5 was: the extent to which DHSWs are prepared to deliver Childsmile Practice. This theme encompasses training, the DHSWs' backgrounds, and the length of time DHSWs have been delivering the role.

5.5.3.25   DHSW Training

Childsmile national and continued professional development training provides DHSWs with a base level of knowledge for the role, yet there is disagreement among Coordinators and DHSWs as to whether this is enough to deliver the role.

All but one Coordinator across the selected NHS boards agreed that DHSWs were prepared for the role *because* of the training. Yet Coordinators' confidence in DHSWs preparedness for the role may be dependent on how the Coordinators perceived the parameters of the role. It is worth nothing that the one Coordinator who suggested that the training did *not* prepare DHSWs for the role was based within a board where the role was (at the time) under development, and there was a strong emphasis on behaviour change. Therefore Childsmile

training may not fit with this Coordinator's perception of what was required of a DHSW within their locality:

> **Coordinator (East Board 1):** "I did a survey with [DHSWs] and asked them how long they spent at Childsmile Practice visits and how many visits... 90% only visited once and they didn't see behaviour change as their role at all, none of them, so they were purely information giving... that's why I think the training might be perhaps not suitable for the role."

Despite DHSWs agreeing that the training was not adequate for the role they all insisted they were equipped to deliver the role because they learned what they needed to know 'on the job'. Findings suggest the extent to which DHSWs feel prepared to deliver the role is mediated by the length of time in post and their background.

5.5.3.26   DHSWs' Time in Post

DHSWs agreed that 'learning on the job' was a more effective method of preparing for the role compared to the training. The length of time DHSWs had spent in post was seen to have equipped them with the knowledge and experience of how to handle a variety of different situations encountered in the role. By having the opportunity to experience these situations with adequate support (from experienced DHSWs, Coordinators, and PHNs/HVs), DHSWs reported they were confident delivering the role:

> **DHSW (North Board 4):** "I don't think [training] gave you the confidence in the role, I think you had to get out in the job...cause the first [home visits] you just probably 'blurgh' all the information. I think it took a few visits before you got it."

Interestingly, single role DHSWs who had been delivering the role for a *short* period of time appeared more confident in comparison to dual role DHSWs who had been delivering the role for a longer period of time. While several factors may influence this phenomenon, it is thought that the level of support DHSWs received, combined with their workload, can influence the extent which they feel confident and competent in the role. These 'confident single role' DHSWs all expressed enjoyment in their post and felt supported by their Coordinator, and they appeared to be under less pressure compared to their dual role counterparts.

These findings tentatively suggest that the length of time in post cannot predict confidence and preparedness in delivering the DHSW role, and instead other factors may hold sway. Findings also indicate that DHSWs with a single role are more likely to experience a greater level of autonomy. The extent to which autonomy is a key facilitator to delivery of the role is discussed later.

5.5.3.27   *DHSWs' Background*

Findings indicated that DHSWs' background can mediate the extent to which they feel prepared and confident delivering the role. Two frequent topics of discussion within this area centred on DHSWs as parents and DHSWs with a dental background.

DHSWs who were parents often used this personal information to break the ice with parents during home visits. It was suggested that sharing this information promoted the peer-ness of the role; while peer-ness of the role facilitated engagement with parents and gave DHSWs a level of authority because parents were more likely to listen to parenting advice from another parent:

> **DHSW (East Board 2):** "…when you're a mum yourself you realise that it's not easy and sometimes teeth takes a bit of a back step…I think being a mum you understand…not to go in all guns blazing, its more just speaking to them…trying to work around their family life."

DHSWs who had a background in dentistry (typically as Dental Nurses) agreed that they felt more prepared for the role because they could pick up on the clinical elements and terminology faster. However this was only expressed among DHSWs who delivered a dual role, therefore their confidence in their role was perhaps only related to the delivery of Nursery and School rather than Childsmile Practice.

5.5.3.28   Theme 6: DHSW's Personal Beliefs

Theme 6 was: DHSWs' personal beliefs surrounding the targeting component of Childsmile Practice, and how these beliefs may impact on delivery of the role.

5.5.3.29 Targeting Component of Childsmile Practice

The findings indicated that DHSWs, and some Coordinators, disagreed with the targeting component of Childsmile Practice because DHSW support should be available to all families regardless of need:

> **Coordinator (West Board 2):** "If it were my personal opinion every child should go to Childsmile. To my mind it's a universal approach…every child is born with a risk factor, even if that child is born into a relatively affluent family. Fine they might not be deprived in any way, but what you might find is they get far too much sugar and they'll suffer higher rates of decay…"

Many DHSWs rationalised this belief by suggesting that 'non-vulnerable' families were more likely to take on board the oral health advice and act upon it. Whereas 'vulnerable' families were likely to already have support from other services so would not require additional support from Childsmile.

The targeting component of Practice is a fundamental aspect of the programme because it has the potential to tackle inequalities in oral health and in access to dental services. If DHSWs disagree with the targeting component of Practice, then how this belief has arose ought to be explored. For example, is it a misunderstanding derived from training, or a salient personal belief?

If DHSWs' disagreement surrounding Practice targeting is a product of their training then a potential explanation could lie in the language that Childsmile uses to refer to families whom the programme is targeted towards. DHSWs consistently use the term 'vulnerable' (a term also used in the programme manual) to describe targeted families however there is no definition on what precisely constitutes vulnerable therefore vulnerability it is up for interpretation. This is exemplified in the following quote:

> **DHSW (North Board 3):** "I had an RAF wife and my Coordinator said that she wasn't vulnerable and I said 'well in *my* opinion she was vulnerable because her husband was in Afghanistan, she was left with two children, she had just moved to the area'. So in my opinion her vulnerability was maybe different to Joe Bloggs round the corner who was a drug dealer…"

For this DHSW, vulnerability was not related to deprivation or oral health needs but instead constituted an emotional or social vulnerability within the parent.

The DHSW delivered a home visit and telephone support to this family before facilitating them into a dental practice: arguably an intensive level of support.

This example highlights the influence that individual attitudes can have on delivery of the DHSW role. If families are not triaged according to their oral health needs then it is down to individual DHSWs to determine need, determine who requires support, and determine what level of support the family requires. This can result in poor continuity of care within an NHS board. Conversely, if the DHSWs' disagreement with targeting arose from a salient personal belief then the extent to which this could negatively influence delivery of the role ought to be explored.

5.5.4 Implications and Research Questions for Comparative Case Studies

The implications of the findings from the sensitising study and key research questions to be addressed within the comparative case studies are now discussed.

5.5.4.1 DHSWs' Engagement with PHNs/HVs

The sensitising study has outlined the critical role that PHNs/HVs play in delivery of the DHSW role. DHSWs rely on PHNs/HVs to triage and introduce families to Childsmile Practice in such a manner that facilitates engagement with the programme, and DHSWs are often dependent on PHNs/HVs' advice on how to support families. Yet findings indicate that provided DHSWs have autonomy in their role and a workload which offers flexibility with their diaries, they can maintain effective communication with PHNs/HVs regardless of where they are based.

The comparative case studies will aim to establish the components of an effective working relationship between PHNs/HVs and DHSWs. The extent to which effectiveness of the role is impacted by where DHSWs are based and how this impacts on communication with PHNs/HVs, is also considered. Additionally, the case studies aim to establish whether DHSWs can maintain communication, engagement, and support from PHNs/HVs if they are not in close proximity to one another.

5.5.4.2 Right Child for DHSW Support

Referrals via the PHN/HV six-eight week assessment and local referral form facilitates triaging of families. While the use of PHN/HV birth books and baby clinics threatens to undermine the targeting component of Practice because NHS boards are operating with universal referrals by default.

The comparative case studies will seek to determine who the right child is for DHSW support before establishing the optimum referral method. This phase of work will also explore the appropriate context whereby universal referral methods may be acceptable for achieving programme outcomes.

5.5.4.3 Nature of DHSW Support

A detailed breakdown of the messages and techniques DHSWs use to support families' has now been established, yet the extent to which DHSWs tailor messages to families' needs remains unknown. It is also noted that most techniques come from 'learning on the job' and while Childsmile training provides DHSWs with a base level of knowledge it does not appear to prepare them in *how* to deliver the role.

There is also uncertainty regarding the extent to which behaviour change should be a part of the DHSWs remit. Findings suggest that facilitating a child into a dental practice can require intensive support for some families and whether DHSWs are equipped to deliver this must be explored further.

Findings indicate that signposting may be a method of supporting families whose needs cannot be met by DHSWs however there are concerns surrounding DHSWs' signposting activities. DHSWs may be signposting and not recording this activity therefore there is no information on what support families are receiving. On the other hand DHSWs may not be engaging in signposting activities at all.

The comparative case studies seek to determine the parameters of an optimal DHSW role including the type and level of support which ought to be provided to families, and how support should be tailored. Furthermore, this phase of work will determine if and to what extent DHSWs are required to provide a behaviour

change intervention; and if so, what level of support is required to bring about a change in behaviour.

5.5.4.4 Continuity of Care across Dental Practices

While establishing the optimal model of delivery for the DHSW role is critical, continuity of care between DHSWs and dental practices also requires consideration. As critical as PHNs/HVs are to introducing families to the Childsmile pathway, dental practices are equally critical for ensuring families remain on this journey.

Lack of engagement from GDS practices has been identified as a key barrier to the DHSW role however findings suggest that overcoming this barrier is attributed to the length of time the programme has been delivered within the NHS board. Length of implementation of the programme within NHS boards may positively influence engagement from dental practices yet the mechanisms of these relationships are unknown.

The comparative case studies seek to determine the components of an effective working relationship between DHSWs and dental practices. While also examining why, in some areas, there is a lack of continuity of care between dental practices and DHSW; and between dental practices.

5.5.4.5 DHSWs' Preparedness to Deliver the Role

The extent to which Childsmile training is adequate for delivery of the DHSW role may depend on the parameters, or the stakeholders' perception of the parameters, of the role itself.

DHSWs agree that Childsmile training in itself did not prepare them in how to deliver the role, and instead their preparedness was achieved via learning on the job. The learning on the job element may explain why DHSWs who have been in post for a long period of time expressed increased confidence in their capabilities. Yet it is noteworthy that some DHSWs who have *not* been in post as long also expressed this level of confidence. This leads us to question what factors lead to confidence in delivering the role?

By seeking to determine the optimal DHSW role in the comparative case studies, the ideal parameters for the role will also be explored. Therefore suitable approaches required for training DHSWs for this optimal role can be established.

5.5.4.6 DHSWs' Personal Beliefs

Findings highlighted that DHSWs disagreed with the targeting component of Childsmile Practice which raises concerns as to whether the theory of targeting has been misunderstood or lost in translation during training. Furthermore, the extent to which individual DHSW characteristics influence delivery of the role is unclear.

The comparative case studies will consider how DHSWs' background or attitudes can impact on delivery of the role. If DHSWs do hold conflicting opinions to the underlying programme theory, it is equally important to establish how they mediate between the two.

5.6 Key Learning

This chapter described the sensitising study: a scoping exercise using qualitative methods and the first of three studies designed to address the overarching aims, and provided learning from within the Childsmile programme. The aims were to identify programme theory for the DHSW role in Childsmile Practice and the gaps within it; and identify how programme delivery differs from programme theory, and explicate variation in delivery of the DHSW between and within NHS boards.

Findings indicated there was widespread variation in delivery of the role within and between NHS boards, and from programme theory, in the following areas: (1) DHSWs personal beliefs regarding delivery; (2) DHSWs preparedness to deliver the role; (3) the type of child being referred for support; (4) the nature of DHSW support; (5) stakeholder engagement; and (6) continuity of care across dental practices. Findings were used to design qualitative, comparative case studies to further understand the impact of the DHSW role

5.7 Chapter Summary

This chapter presented the aims, methods, and findings of the sensitising study undertaken to inform further case study investigation. Chapter six presents the aims, methods, and findings for the second study designed to learn from the experience of those within, or involved with, the Childsmile programme: the comparative case studies.

Chapter 6 Phase 1: Comparative Case Studies

This chapter reports on the second of three studies to address the overarching aims of the thesis. The comparative case study design provides learning from within the Childsmile programme. The research consists of three case studies, 'bound' to individual Dental Health Support Workers, selected from three NHS boards, across three regions. This chapter describes the aims, methods, analytic approach, and findings which are reported first within, and then across case studies.

6.1 Overarching Aim

The overarching aim of this study was to gain a more in-depth understanding of the factors and variants (contextual and those associated with programme delivery) identified during the sensitising study which impact on the effectiveness of the DHSW role within Childsmile Practice.

6.2 Research Questions

The findings from the sensitising study identified key areas of variation and gaps in the knowledge surrounding delivery of the DHSW role. The research questions developed for the comparative case studies using these findings are presented in Table 6.1.

Table 6.1. Comparative case studies research questions

No.	Domain	Research Question(s)
1.	DHSW skills and training	1. What knowledge and skills do DHSWs require to effectively support families? a. How can these be met? (E.g. training?) 2. What should DHSW training include? (E.g. content and approach?)
2.	Characteristics of the DHSW	3. How do DHSWs personal characteristics (e.g. education, training, previous employment, and similarity to families in receipt of support) and beliefs impact on delivery of the role and programme outcomes? a. How do DHSWs mediate between personal beliefs and delivery of the role if the two are not congruent?
3.	Where DHSWs are based	4. Does where DHSWs are based and who they are line managed by influence delivery of the role and programme outcomes? a. If so, how? (E.g. does it impact on communication with PHNs/HVs, DHSW autonomy?)
4.	Components of Childsmile DHSWs deliver	5. Does having a single or dual DHSW role influence delivery or programme outcomes?

		a. If so, how? (E.g. does it impact on relationships with stakeholders, DHSWs workload?)
5.	DHSW Autonomy	6. Does the extent to which DHSWs are autonomous in their role impact on supporting families? a. If so, how? (E.g. does it impact on DHSWs capacity?) 7. What is the optimum level of autonomy for the DHSW role and what factors influence this?
6.	Targeting and referrals	8. Who is the right child for DHSW support? a. How can the right child be reached and referred to the DHSW? b. What role should PHNs/HVs play in reaching the right child? c. How does PHN/HV triaging influence referral of the right child? 9. Are universal referrals appropriate for reaching the right child? a. If so, in what context are they appropriate? 10. Are referrals generated via PHN/HV-led baby clinics or birth books appropriate for reaching the right child?

		a. If so, in what context are they appropriate?
		11. Does a delay in contacting children following a referral impact on delivery of the role and programme outcomes?
		a. If so, how?
7.	Nature of DHSW support	12. What are the parameters of DHSW support? (E.g. what type and level support are DHSWs capable of providing?)
		a. What should the parameters of DHSW support be?
		13. How should families be supported to achieve programme outcomes?
		14. Should the DHSW role be behaviour change focused, or signposting to appropriate services and facilitation into a dental practice?
		15. If DHSWs are required to deliver a behaviour change role what should this support involve?
		16. Does 'optimum' DHSW support depend on the characteristics of the family?
		a. If so, in what ways?

		17. How should DHSWs assess the level of support families require?
		18. How should DHSWs tailor their support to families?
		19. Does the setting (e.g. home, clinic) or method (e.g. telephone) of support impact on the level and content of support families receive?
		a. If so, how does this impact on delivery of the role and programme outcomes?
		20. What are the essential elements of DHSW support?
8.	DHSW relationship with stakeholders	21. What contributes to an effective working relationship between DHSW and stakeholders? (e.g. dental staff and PHNs/HVs)
		22. In relation to supporting families, how much guidance and input should PHNs/HVs provide to DHSWs?
		23. What influences continuity of care between DHSWs and dental practices?
		a. How does continuity of care between DHSWs and dental practices impact on delivery of the role and programme outcomes?
		24. How should families be supported following a FTA appointment?

9.	Wider context	24. How does the context influence delivery of the DHSW role and programme outcomes?
		a. When does resultant variation facilitate achievement of programme outcomes and when does it pose a risk?
		25. Does the duration of implementation of Childsmile within health boards/CHPs influence delivery of the role and programme outcomes?
		a. If so, how does it influence delivery? (E.g. does it impact on relationships with stakeholders?)

6.3 Design

A case study is a holistic research strategy designed to uncover the complexities of a phenomena while taking into account the context, causal mechanisms, and outcomes (Keen & Packwooda, 1995; Yin, 2009).Comparative case studies (Crowe et al., 2011) provide pluralistic understanding through an analytic approach that draws out evidence within and across cases; thus 'case-based knowledge'. This contrasts with the *variable* orientated knowledge of more reductive deigns (Ragin, C. C., & Schneider, G. A. in Williams & Vogt, 2011).

Case studies are often nested within wider designs to provide more evidence for specific elements, such as programme theories, or more detail on previously identified findings. Here they are used to explore further the findings from Chapter 5 regarding theory and delivery of the DHSW role.

A key strength of case study research lies in the use of triangulation, whereby multiple sources of evidence converge to address research questions. Exploring phenomena through various perspectives contributes to the reliability and generalisability of findings because each source of information is corroborated by another (Baxter & Jack, 2008; Yin, 2009). The issue of generalising from case studies (and qualitative research more widely) has received much attention (Gerring (2007) in Boix & Stokes, 2009; Steinmetz, 2004). Yin (2009) suggests such critics are confusing the aim of case studies with that of work aimed at sample-to-population inference. In the present set of comparative case studies, the goal is not traditional within-population generalisability *per se* but rather such issues as transferability and comparability. Case studies are strong in many important areas such as internal validity and contextual variance (Tsang, 2013). The analytic generalisations thus produced are useful, in particular, for informing programme theory and/or evaluating interventions in real world contexts (Yin, 2009).

An overview of the comparative case study design can be seen in Figure 6.1.
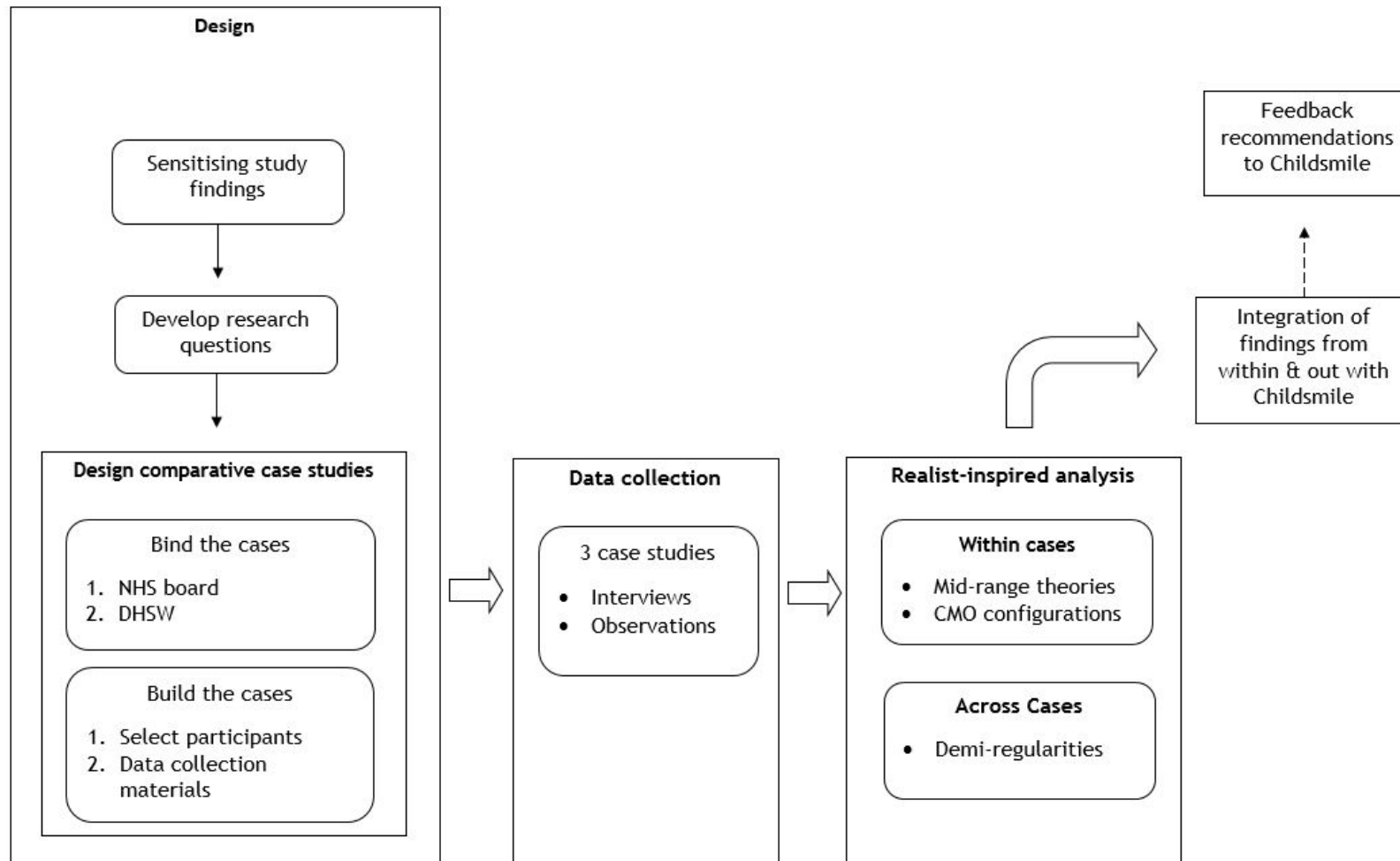
Figure 6:1. Comparative case study design

5.8 Methods

6.3.1 Binding the Case Studies

Case study research relies on determining the unit of analysis. The process of 'binding' the case enables the researcher to answer the research questions but avoid too broad a focus (Yin, 2009). Binding can be by dimensions such as time or organisation, and often includes location and/or activity (Stake, 1995). In multiple case studies where comparisons will be drawn it is important to bind cases so that there is some commonality of scope (Yin, 2003).

Here the aim was to select and bind cases using key characteristics which were known to influence delivery of the DHSW role in order to facilitate comparisons in delivery and contextual factors across the cases (Yin, 2009). With this in mind, case study units were bound to individual DHSWs within different geographical and organisational locations.

The process of binding the case studies began with selection of NHS boards, followed by selection of DHSWs within these boards. The selection of boards and DHSWs was purposive, that is, the aim was to derive cases suited to achieving the research objectives (Tuckett, 2004). This requires selecting participants with a knowledge base or experience related to the phenomena being investigated. Coyne recommends selecting participants whose knowledge base and experience contrasts in order to triangulate findings using a breadth of information from different sources (Coyne, 1997).

6.3.1.1 Selecting NHS Boards

Findings from the sensitising study identified key characteristics which influenced delivery of the DHSW role, and produced variation in key aspects of delivery (Appendix 18). The four characteristics identified were:

1. Geographical characteristics of the NHS board

2. Where the DSHW is based within the NHS board

3. Components of Childsmile DHSWs deliver

4. Referrals to the DHSW

As well as the organisational characteristics, findings from the sensitising study indicated that DHSWs who received universal and targeted referrals were likely to deliver diluted or concentrated support respectively. Thus characteristic four (referrals to the DHSW) was selected as a proxy measure of the intensity of DHSW support.

These four characteristics were used to create a selection matrix (Appendix 19). The selection matrix was reviewed with the research aims in mind and with the intention of selecting a group of NHS boards which varied on these four characteristics. Consequently, two NHS boards and one CHP across three regions (Table 6.2) were selected to build the cases.

Table 6.2: Selected NHS boards to build the case studies

Region	NHS board	Geographical Characteristics	Where DHSW is based	Components delivered	Referrals
West	NHS Lanarkshire	Urban	PHN/HV	Dual	Universal
East	NHS Forth Valley	Mixed	DH	Single	Targeted
North	NHS Highland, Mid Highland CHP	Rural	DH	Dual	Universal

Table 6.2 shows that NHS Lanarkshire within the west of Scotland region is a predominantly urban health board. DHSWs are based within PHN/HV teams and deliver a dual role of Childsmile Practice, and Nursery and School. All families are referred to the DHSW for support regardless of need

NHS Forth Valley in the East of Scotland consists of rural and urban localities. DHSWs are based within the dental health services department and deliver a

single role of Practice. Only families identified as being in need of support are referred to the DHSW.

Mid Highland CHP within NHS Highland in the north of Scotland is a large rural locality. DHSWs deliver a dual role of Practice, and Nursery and School, and are based within the dental health services department. They receive referrals for all families regardless of need.

6.3.1.2 Selecting DHSWs

A single DHSW from each selected NHS board, representative of the aforementioned characteristics influencing delivery of the role, was selected as the case study focal point. This selection process was designed to account for variation across the selected NHS boards.

It was originally intended that two DHSWs from the selected NHS boards could be selected using two proxy measures of performance:

1. Engagement: how DHSWs engage with families following a referral and whether referrals resulted in a home visit.

2. Support: whether home visits resulted in families attending a dental practice (a key programme outcome).

However, at the time of selection NHS Lanarkshire had more than one DHSW delivering the role. Two comparable cases could have been selected from NHS Lanarkshire alone, and one case from NHS Forth Valley and NHS Highland, respectively. However, it was decided that a single DHSW from each board was a more elegant design, and had the advantage of allowing greater in-depth exploration of the DHSW role within the three case studies, whilst still allowing cross case comparison between NHS boards and at a regional level.

Case study selection always involves pragmatic decisions around scope and depth and it was felt the balance here would allow for rich evidence to be gathered within and across while being manageable in the timescale (Yin, 2009). The original selection process and performance calculations for DHSWs can be seen in Appendix 20.

6.3.1.3 Building the Cases

Childsmile Practice is a complex, multi-disciplinary intervention involving several stakeholder groups, all with a different but equally valid interpretation of the programme and DHSW role (Keen & Packwooda, 1995). Therefore it was essential to design the case studies in a way that captured this range of experience and knowledge. The cases were built purposively using findings from the sensitising study. Cases comprised a DHSW, stakeholders involved in delivery of the DHSW role, and families in receipt of DHSW support. After initial selection, a snowballing technique (Atkinson & Flint, 2001; Biernacki & Waldorf, 1981) was then used to identify additional stakeholders involved in delivery of the role at a local level (Figure 6.2). This selection process facilitated development of three bound case studies which had characteristics in common and unique to each board (see findings).
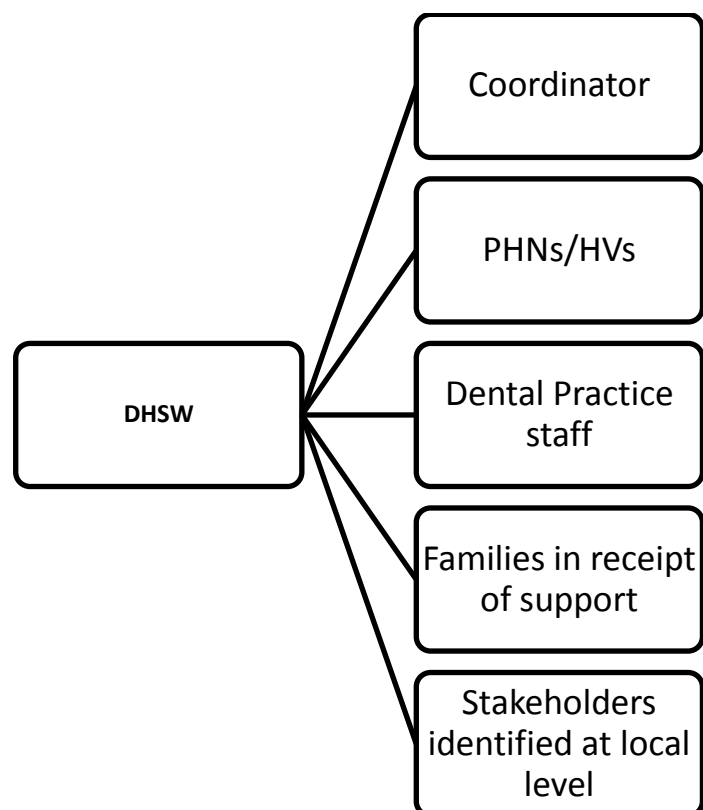
Figure 6:2. DHSWs and stakeholders included within the comparative case studies

The stakeholders identified at a local level were:

- PHN/HV Team Leader

- Family Nurse from the Family Nurse Partnership[15]

- Childsmile Development Officer

6.3.2 Data Collection Methods

Case study research is not limited to a single data collection method, rather multiple sources may be used, each providing evidence whereby the research questions can be answered through triangulation (Yin, 2009). Triangulation provides a holistic understanding of the phenomena and if conducted in a systematic way, the validity and reliability of findings are strengthened (Baxter & Jack, 2008). Semi-structured interviews and observations were carried out in this study with their convergent findings used for understanding (Maxwell, 2012).

6.3.2.1 Semi-structured Interviews

Semi-structured interviews provided an opportunity to capture rich and detailed information on the DHSW role from multiple perspectives. For further information regarding semi-structured interviews see Chapter 5 (Section 5.4.2.1). Semi-structured interviews were conducted with DHSWs, stakeholders, and parents in receipt of DHSW support.

A fixed number of interviews (and observations) to carry out were not established. With qualitative inquiry, there is often not a clear cut-off point as to when to stop collecting data. Instead, researchers continue to collect data until there is enough evidence to answer key research aims and offer countenance to rival theories or hypothesis (Yin, 2009): a process named saturation. Saturation is achieved when no new information is revealed from data collection. Based on this guidance, data collection continued until saturation of each case was achieved.

The procedure for development of the data collection tools is shown in Appendix 21. Four interview schedules were created for DHSWs: three were designed with the initial research questions in mind and one to discuss additional topics

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[15] The Family Nurse Partnership is a home visiting programme for young first time mothers aged 19 years or under, delivered by a trained Family Nurse from the early stages of pregnancy until the child is 2 years old. The aims is to encourage a healthy pregnancy, improve child health and development and help parent plan their futures (Family Nurse Partnership, 2015)

unearthed during data collection. One interview schedule was developed for all remaining stakeholders and parents in receipt of support. All interview schedules were tailored to each NHS board.

The interview schedules were reviewed by the west of Scotland regional researcher, the supervisory team, and a Childsmile Programme Director to ensure relevance to the study and relevance to the national Childsmile evaluation. An example interview schedule can be seen in Appendix 22.

6.3.2.2 Observations

The aim of observational research is to develop a holistic understanding of the phenomena being investigated (Kawulich, 2005). Observational methods are a useful tool which enables researchers to immerse themselves within the world they wish to study, gather descriptive information about phenomena, and draw inferences. Data collected via observations can add a new dimension to understanding elements of the phenomena such as context, processes, and stakeholders views (Yin, 2009).

Direct observations also provide a unique detailed perspective of phenomena because researchers can monitor non-verbal expression of feelings, and how individuals interact and engage with one another (Yin, 2009). Furthermore, observations provide an opportunity to observe events which participants may be unwilling to share or where their depiction of the event is often biased. Therefore, observations in addition to other methods of data collection can increase the validity of the data (Kawulich, 2005).

Conducting observations requires "active looking, memory, informal interviewing, detailed field notes and perhaps most importantly, patience" (Kawulich, 2005). Yin (2009) also recommends, where appropriate, photographing elements which may have important characteristics.

Observations of DHSW-delivered home visits to families referred for support, were carried out with the aim of capturing how DHSWs support families (e.g. what messages are delivered, what strategies are used in interactions between DHSWs and families) and how the setting influenced delivery and effectiveness.

A home visit observation guide (Appendix 23) was developed and was used to complete an observation report (Appendix 24) following visits.

6.3.3 Procedure

6.3.3.1 Recruitment

Coordinators were advised during the sensitising study of the comparative case study aims and three Coordinators subsequently agreed to participate based on informed consent (Appendix 25). Coordinators recommended DHSWs who were representative of characteristics known to influence delivery of the role and informed consent from DHSWs was secured.

DHSWs each recommended one PHN/HV from whom they received referrals and one dental practice to whom they typically facilitated families with. These recommendations were based on the stakeholders' historical positive engagement with Childsmile Practice. DHSWs recommended additional stakeholders involved in delivery of the role at a local level. While attempts were made to include stakeholders who were not considered to be 'fully engaged' with Childsmile they either declined to participate or did not respond to the invitation (see Chapter 8, limitations).

Three PHNs/HVs, one PHN/HV Team Leader, one Family Nurse, three Dental Practitioners, one Dental Nurse, and one Childsmile Practice Development Officer participated with informed consent.

DHSWs were supplied with an information sheet (Appendix 25) and invited parents from their caseload to participate in an observation and interview with the principal researcher. DHSWs aimed to include parents with a range of oral health needs (e.g. anxiety, children who had recently received extractions due to dental caries, and first time parents).

Ten parents participated with informed consent. Seven of the ten home visits were opportunistic visits and parents did not have the opportunity to provide prior written consent to the recorded observations. In these instances, verbal consent was obtained from parents.

6.3.3.2 Data Collection

Data collection was carried out from June 2014 to February 2016.

All data collection tools were piloted within case study 1 after which minimal amendments was made to the wording and structure for case studies 2 and 3. Question order was flexible and wording was often formulated in situ however all listed questions were posed to participants.

DHSWs interviews lasted, on average, 60 minutes and were conducted in private within their office base. DHSWs were interviewed before interviews were held with stakeholders and home visit observations. This was to ensure a rich and accurate description of delivery of the key role could be achieved to aid the researcher during observational sessions or in interviews with stakeholders who might have peripheral understanding of some aspects themselves. Furthermore, interviews with DHSWs were used to identify key stakeholders involved in delivery of the role at a local level.

DHSWs were interviewed three times each in all three cases, and two DHSWs participated in a further closing interview. Due to unforeseen personal circumstances the DHSW from case study 3 was not available for a closing interview and only one home visit was conducted (see Chapter 8, limitations).

All stakeholders were interviewed once, in private, within their office base. One stakeholder did not consent to an audio recording and in this instance the principal researcher took detailed notes during the interview and later used these transcribed notes alongside recordings. Stakeholder interviews ranged from 20 to 60 minutes.

One observation was conducted with each of the ten participating families. Observations ranged from 10 to 30 minutes Field notes were not taken during observations and instead the principal researcher completed an observation report immediately after each visit. Where written consent was given sessions were audio recorded. Six out of the ten parents consented and participated in interview. DHSWs were not present for parent interviews and debriefing involved an informal unrecorded discussion.

6.3.4 Analysis

Data were analysed using a 'Realist-inspired' approach derived from (Pawson et al., 2004). While such an analytic approach has been primarily adopted for realist evaluation and realist review/synthesis (both terms are interchangeable), this approach, to the researcher's knowledge, has yet to be adopted as a standalone qualitative analytic method. However, after reviewing the publication standards and training materials for Realist research (Wong, Greenhalgh, et al., 2013; Wong, Westhorp, et al., 2013), and conducting informal discussions with leading authors within the field it was decided that a Realist-inspired analysis was valid.

The qualitative data here are thus synthesised explicitly using Pawson et al's (2004) conceptualisation of mechanisms and CMO configuring. This Realist-inspired approach allowed for exploration of the causal relationships between context, delivery, and outcomes surrounding the DHSW role; between and within case studies.

6.3.4.1 Analytic Theory

Realist research is a theory-based approach to synthesising data. *Programme theories* are the unit of analysis and the aim is to describe and analyse programme theory known as 'mid-range theory' (MRT) (Wong, Westhorp, et al., 2013). MRTs are underlying assumptions as to why a programme does or not does work. They are abstract to the extent that they can be applied across various settings yet close enough to the data to derive testable hypothesis (Jagosh et al., 2013; Wong, Westhorp, et al., 2013).

A distinguishing feature of Realist research is the application of a heuristic named 'Context, Mechanism and Outcome (CMO) Configuring' (Jagosh et al., 2013). CMO configurations are strands of MRTs, also known as 'chains of causation', which outline the relationship between context (C), mechanism (M), and outcome (O) for specific aspects of the programme. Definitions of what constitutes context, mechanisms, and outcomes can be seen in Table 6.3.

Table 6.3: Definition of CMO configurations (Jagosh et al., 2013; Pawson & Tilley, 1997)

CMO Configuration: Definitions	
Context	Background or setting of a programme which triggers the mechanism(s). E.g. geographical location, cultural and social norms and existing public policy
Mechanism	The hidden force, rather than a tangible component, of a programme which leads to an outcome of any kind. E.g. cognitive and emotional processes
Outcome	Any effect from a programme, whether it be intended, unintended, proximal, intermediate or final. E.g. improved physical health

The process of CMO configuring enables researchers to identify the causal relationships embedded within a programme and assess multiple outcomes: whether they are successful or otherwise.

As programme outcomes are often context-specific there is a reluctance to describe global 'results'. Thus Realist research identifies what are known as 'demi-regularities' which are semi predicable patterns. Demi-regularities are replicated across MRTs and CMOs to the extent that they form patterns but are still negotiable in that a change to context might render them differently (Wong, Westhorp, et al., 2013).

6.3.4.2 Analytic Approach

Case study data were analysed individually using Realist-inspired synthesis to identify MRTs and CMOs, before cross-case analysis was conducted to identify demi-regularities. This approach provided rich and detailed information on what aspects of the DHSW role do and do not work, for whom does the DHSW role work, and in what context does the role work.

The approach employed by Jagosh et al (2012) was used to develop a five-step protocol for analysing the data. A summary of this approach can be seen in Figure 6.3.
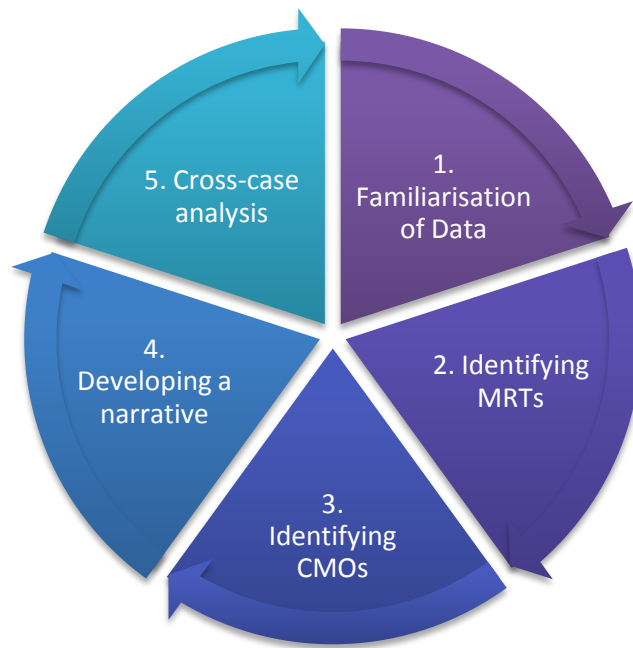
Figure 6:3: Comparative case studies Realist-inspired analytic process

Figure 6-3 illustrates that the analytic approach for the comparative case studies was an iterative process. Steps one to four were carried out for each case study, before cross-case analysis was conducted. The analysis was partly deductive in being guided by the domains (topic areas) and specific research questions as outlined in Table 6.1. However the CMOs and MRTs themselves emerged from detailed analysis which allowed for unknown issues, concepts, and theories to arise. A detailed description of the steps involved in the analytic process is provided

1. **Familiarisation of data**

Transcripts were actively read several times to gain an overall idea of content. Notes and summaries were made alongside passages or interest, or where there were descriptions of processes, outcomes, or potential MRTs and CMOs. Throughout data collection and analysis a reflective diary was used to record thoughts, points of interest, and concepts from the wider literature. The use of a reflective diary is considered a useful tool for transparency because it can pinpoint early analytic decisions (Ortlipp, 2008).

2. Identifying MRTs

MRTs were identified to inform each of the research question domains as outlined in Table 6.1. Establishing MRTs involved considering the logic of the programme as described, and assessing the processes and outcomes involved (Jagosh et al., 2013; Wong, Westhorp, et al., 2013). MRTs provide contended explanations about why aspects of the DHSW role in Childsmile Practice does or does not work in each of the areas of interest.

3. Identifying CMO configurations

Data pertaining to MRTs were used to develop CMO configurations. CMOs are often fluid and overlapping, and the outcome of one CMO may provide context of another. In these instances, CMOs were reported as CMO1, CMO1a, and CMO1b etc. to represent the chain of causation (Jagosh et al., 2011). Where there was more than one mechanism or outcome within a single CMO configuration the mechanism and outcome were reported as M1 and M2, or O1 and O2, respectively. While categorisation of each component of the CMO is necessary, ultimately it is the chain of causation rather than independent components which is critical (Jagosh et al., 2011).

Distinguishing between context, mechanism, and outcome can prove challenging even for experienced researchers (Astbury & Leeuw, 2010) and mechanisms can often be contentious. To overcome this barrier an alternative conceptualisation of the CMO configuration was proposed (Dalkin, Greenhalgh, Jones, Cunningham, & Lhussier, 2015) based on the concepts of resources and reasoning: resources (i.e. strategies) of the programme alter participants reasoning, which influence behaviours thus leading to outcomes.

While it is not essential to present CMO configurations with the additional elements of reasoning and resources, theorising and developing CMOs with these elements in mind enables the researcher to distinguish between context, mechanism and outcome, and avoid confusion between programme strategies (often contextual) and reasoned strategies employed (often mechanisms).

4. Developing a narrative

A narrative was developed for each of the nine research question domains, based on the MRTs and CMOs which show detailed relationships in the data. Narratives were illustrated with quotes from interviews or notes from observations.

5. Cross-case analysis

Finally, cross-case analysis involved grouping MRTs and CMOs from across the cases to develop demi-regularities. These demi-regularities are in effect hypotheses in that they might still be testable in different contexts, but appear regular enough across the different case study contexts here to provide a sound basis for informing programme theory as Childsmile goes forward.

6.4 Findings

The findings for comparative case studies are presented as follows:

- Overview and findings for each case study under the research question domains.

- Cross-case analysis.

6.4.1 Case Study 1: Overview

This section provides an overview of case study 1. This section identifies the participants included within the case, where they are based, and summarises local delivery of the role.

Figure 6.4 provides an overview of the participants and where they are situated within case study one.
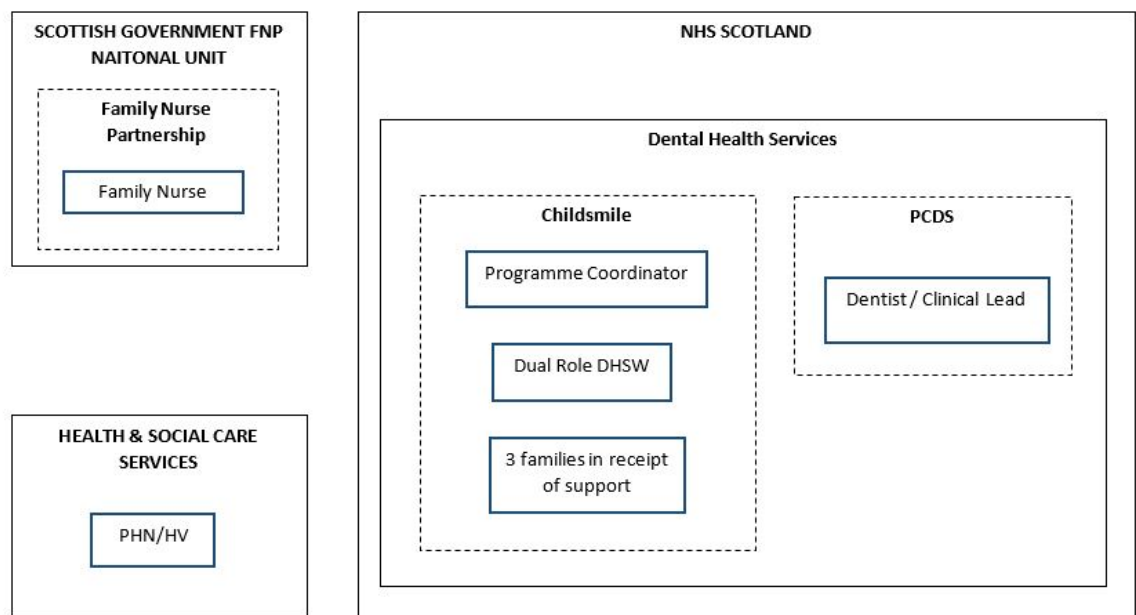
Figure 6:4: Case study 1

Characteristics influencing delivery of the role within case study 1 are:

- **Geographical characteristics of the NHS board**: The NHS board is a geographically large and rural locality within the north of Scotland.

- **Where DHSWs are based within the NHS board**: DHSWs are based within dental health services and share an office with the Coordinator, who line manages DHSWs.

- **Components of Childsmile DHSWs deliver**: The DHSW has been in post since 2009 and delivers a dual role of Practice, and Nursery and School.

- **Referrals to the DHSW**: DHSWs receive targeted referrals primarily from PHNs/HVs and Family Nurses.

A summary of delivery of the DHSW role within case study 1 is provided.

6.4.1.1 Delivery of the DHSW role

Childsmile Practice has been delivered within this NHS board since 2009. PHNs/HVs carry out universal assessment of a child's oral health needs during the routine six-eight week old health assessment, using the criteria outlined in the Early Years Pathway. PHNs/HVs also apply these criteria to families who have recently moved to the area and to older siblings. Family Nurses refer all first time young mothers to the DHSW for oral health support. All referrals are made to the DHSW using a local referral form.

On receipt of referral, DHSWs contact families to offer and arrange a home visit. DHSWs will deliver one home visit lasting approximately 20 minutes when the child is aged approximately three months old. DHSWs deliver diet and tooth brushing advice; will advise parents on what to expect at dental practice; provide free resources; and will register the child with a dentist.

DHSWs are notified if a family FTAs a dental appointment by being copied into the FTA letter sent from the dental practice to the family. DHSWs are notified of FTAs for all children aged up to 18 years. DHSWs collect FTA letters from the dental practice on a weekly basis and contact families to offer a new appointment.

6.4.2 Case Study 1: Findings

This section presents the MRTs, accompanying CMOs, and key learning across the nine research domains for case study 1.

6.4.2.1 Domain 1. DHSWs' Skills and Training

MRT 1: Childsmile training does not prepare DHSWs in how to deliver the role.

CMO1. (C): DHSWs undertake six days Childsmile training delivered by NHS Education for Scotland. Training is designed for EDDNs and DHSWs to deliver all components of Childsmile and includes six modules and completion of a portfolio of short essays. DHSWs receive local, mandatory, continued professional development training at the discretion of the NHS board. A summary of the

topics covered in training can be seen in Appendix 15. Childsmile training is primarily theoretical and informative. DHSWs do not receive practical-based training for the Practice role. **(M)**: When they come into post, DHSWs experience uncertainty and low confidence regarding how to deliver the role. **(O)**: DHSWs do not know how, and do not feel prepared, to deliver the role.

MRT 2: DHSWs learn practical techniques for delivering home visits by 'learning on the job'.

CMO1. (C): NHS Education for Scotland recommends that DHSWs carry out a period of workplace shadowing of other DHSWs before attending Childsmile training. Shadowing is provided at the discretion of the NHS board depending on availability of DHSWs. DHSWs who were first in post within the board did not have the opportunity to shadow anyone. DHSWs learned how to deliver the role by learning on the job over time. **(M)**: DHSWs feel abandoned and left to figure out how to deliver the role on their own. **(O1)**: Can take a long time before DHSWs feel confident delivering the role. **(O2)** Can take a long time before DHSWs learn strategies to support families.

> **DHSW**: "…it was basically being thrown in at the deep end…we had no one to shadow. We had gone to Inverness a couple times to watch but you got to know it once you started doing it for yourself […] I think you do need to shadow. It's nice to do two or three houses with somebody just to see the difference […] I think it's definitely helpful just to see different things and how different people come across."

MRT 3: The Transtheoretical Model enables DHSWs to identify parents' motivational readiness to engage with 'positive oral health parenting behaviours' (POHPBs).

CMO1. (C): Childsmile training provides DHSWs with information on one theory of behaviour change: The Transtheoretical Model (Prochaska & DiClemente 1984 in Ogden, 2007) which can be seen in Appendix 26. This model outlines the five stages of motivational readiness to engaging in health behaviours. DHSWs do not receive information on the practical application of the model **(M)**: DHSWs understand the underlying cognitive process to engaging in health behaviours. **(O)**: DHSWs are equipped to identify what stage of motivational readiness parents are at with engaging in POHPBs.

> **Domain 1. Key learning**
>
> Childsmile training is primarily theoretical and does not prepare DHSWs on the practical aspects of the role therefore DHSWs are left unsure how to deliver home visits and rely on shadowing or learning on the job. DHSWs are provided with instruction on a theory of behaviour change therefore they can identify parents' motivational readiness to engage with POHPBs.

6.4.2.2 Domain 2. Characteristics of the DHSW

MRT 4: The right person for the DHSW role is someone who has shared experience with parents in receipt of support.

CMO1. (C): The DHSW has five daughters. She uses her experiences of being a mother, and refers to these experiences, when supporting families. **(M1)**: DHSW and parents have a commonality: they are both parents. **(M2)**: Parents perceive DHSW to be knowledgeable about POHPBs. **(O1)** Shared experience promotes the peer-ness of the DHSW role. **(O2)**: Parents are engage with the DHSW.

> **Coordinator**: "I also feel their own life experiences, for example being a parent, can enhance their understanding to effectively support families [...] if, for example, the DHW is a parent and has had experience of breastfeeding...if they've had a baby that didn't sleep, they could commiserate with the mum and young baby...the sort of foods and drinks they may suggest might come from formal training but own knowledge, beliefs would maybe influence suggestions."

CMO2. (C): The DHSW draws on her experiences of being a mother to five children and her personal experience of engaging with POHPBs, when supporting families. **(M)**: DHSW identifies with parents. **(O)**: DHSW delivers practical and person-centred support.

> **DHSW**: "I don't go in and try to be authoritative. I go in and try to identify with the parent *as* a parent as well as doing the job. I think that's probably the most important thing of all."

MRT 5: Communication and interpersonal skills are indicators of the right person for the DHSW role.

CMO1: (C): The DHSW is described by stakeholders as warm, friendly, engaging, and approachable. **(M):** Parents feel relaxed in the DHSWs Company. **(M2):** Parents perceive the DHSW to a peer and not a health professional. **(O):** Parents engage with the DHSW and are receptive to oral health messages.

> **Dentist**: "The number one factor is personality. [DHSW] is perfect for the job and is very approachable. With the wrong person, fewer would come and it would do more damage than good. So it's important to have the right person in the role.

Domain 2. Key learning

Shared experiences enables DHSWs to relate to families, and parents perceive DHSWs to be knowledgeable regarding oral health parenting behaviours if they are drawing from personal experience. Interpersonal and communication skills facilitate engagement with families.

6.4.2.3 Domain 3. Where DHSWs are based

MRT 6: Situating DHSWs together alongside the Coordinator supports DHSWs in all aspects of their role and ensures the role is delivered as intended.

CMO 1: (C): DHSWs are line managed by, and share an office with, the Coordinator. Communication between DHSWs and Coordinator is primarily face to face and informal, and on a daily basis. **(M1):** The Coordinator understands the programme theory and delivery of DHSW role. **(M2):** DHSWs feel supported in all aspects of their role. **(O):** The DHSW role is delivered as intended.

> **DHSW**: "I think there are probably more benefits [to being based with the Coordinator] because you can feed back things straight away and you can discuss any problems you have on a day to day basis. So it's easier."

> **Domain 3. Key learning**
>
> Situating DHSWs alongside the Coordinator influences the extent to which DHSWs deliver the role according to programme theory.

MRT 7: NHS HEAT targets restrict dual role DHSWs capacity to deliver Childsmile Practice.

CMO1. (C): The DHSW delivers a dual role of Practice, and Nursery and School. The workload involved for each component is substantial and the NHS board is currently understaffed. Until March 2014, Nursery and School was working towards achieving the NHS HEAT target of providing FVAs twice per year to 60% of all children aged three to four years old in each SIMD quintile. At times during this period DHSWs were required to prioritise Nursery and School duties over Practice. **(M):** Practice is not perceived to be the DHSWs priority. **(O):** DHSWs capacity to deliver lengthy, multiple home visits to families is reduced.

> **DHSW**: "The [fluoride] varnish sessions involve so much paperwork and when we're doing two establishments a week, like two big primary schools, over 100 children a day. You have to do all the paperwork for those children and updating everything. Sometimes you feel you are neglecting things [in Practice] a little because there is so much to do."

MRT 8: The dual DHSW role is a cost effective method of delivery for rural NHS boards.

CMO1. (C): The NHS board is extremely rural and encompasses a large geographical area; however the population is relatively small in comparison. DHSWs deliver a dual role of Practice, and Nursery and School. **(M):** DHSWs have fewer Practice referrals, and Nursery and School establishments. **(O):** Cost effective model of delivery.

> **Coordinator**: "Due to the vast geographical area it would now be very difficult to change the setup of hours, because we could not expect an [DHSW] based in [large town] to deliver services in [smaller, rural town] due to distances…the DHSW based in [small rural town] working 7.5 hours per week…Clearly her role will vary to that of a DHSW based in [large town], working 35 hours per week, covering a much smaller geographical area…"

MRT 9: The dual DHSW role promotes continuity of care which positively influences delivery of the role.

CMO1. (C): DHSWs deliver a dual role within a small rural community. They deliver home visits to parents of new-born children and FVAs to children in nurseries and schools, often delivering both components to the same family. **(M)**: Families experience continuity of care from one DHSW. **(O1)**: Parents and children (during home visits and FVAs) are comfortable and engage with the DHSW. **(O2)**: DHSWs receive a sense of achievement seeing families progress with oral health behaviours.

> **DHSW**: "It's nice to stick to your areas because parents are familiar with you, children are familiar with you and when you see them from the baby stage and moving in to nursery eventually, it's satisfying. It's nice being able to check their dental history and see they've attended."

Domain 4. Key learning

NHS HEAT targets for Childsmile Nursery and School restrict dual role DHSWs capacity to deliver Practice. However, the dual role is a cost effective method of delivery within rural NHS boards and promotes continuity of care.

6.4.2.5 Domain 5. DHSWs' Autonomy

MRT 10: Autonomy counterbalances the demands of a dual DHSW role and the impact of local contextual factors.

CMO1. (C): DHSWs deliver a dual role of Nursery and School, and Practice. The NHS board is understaffed and DHSWs predominantly receive universal referrals (i.e. for all families, regardless of need). DHSWs are autonomous in the following areas of the Practice role: (1) Managing their diaries for home visits; (2) Maintaining contact with stakeholders; (3) Assessing family's needs; (4) Determining appropriate method of support required; (5) Determining appropriate level of support required; and (6) Determining the number of home visits required. **(M1)**: DHSWs use their judgement to concentrate effort where it

is needed most. **(M2)**: DHSWs take into account individual needs. **(O1)**: DHSWs successfully manage the workload of the dual role. **(O2)**: DHSWs deliver person-centred care.

> **DHSW**: "...it helps that I can organise my own workload [...] I do think there's a lot of children that don't need our input...unless they were staying somewhere out in a little bothy somewhere, that they maybe have no communication with anybody...I would gauge from the phone call...you're just using common sense, isn't it?"

MRT 11: Autonomy enables DHSWs to provide person-centred care.

CMO1. (C): DHSWs have autonomy to assess families' needs and determine the level of support required. **(M)**: DHSWs take into account individual needs. **(O)**: DHSWs provide person-centred care

> **Coordinator**: "No two families are the same and some will change from one day to the next. The DHSW has to gauge, on the spot, how much information to give to a family depending on the circumstances at that moment."

Domain 5. Key learning

Autonomy offsets the workload produced from a dual role and contextual barriers, such as understaffing and referrals. Autonomy enables DHSWs to deliver person-centred care.

6.4.2.6 Domain 6. Targeting and Referrals

MRT 12: Interpretive triaging criteria for referrals, results in referrals of families who do not need oral health support.

CMO1. (C): PHNs/HVs triage all families with new-born babies using the following criteria outlined in the programme theory: (1) The family is not registered with a dental practice; (2) The family do not attend a dental practice for ongoing preventative care; (3) The parent and child's siblings have a history of symptomatic dental care and attendance to a dental practice has been prompted by dental problems or pain; and (4) Professional judgement leads

PHN/HV to believe oral health support would be beneficial. DHSWs report they often receive universal referrals (e.g. for all families, regardless of need) from some PHNs/HVs. **(M)**: Referral criteria four is interpretive. **(O)**: PHNs/HV refers low-risk families whom DHSWs perceive to be not in need of oral health support.

CMO1a. (C): DHSWs receive referrals for low-risk families. Delivering Practice within a rural locality requires travelling long distances for home visits. DHSW attempts to limit home visits to families in need of oral health support by telephoning the referred parents and asking whether they *need* a home visit. **(M)**: Parental motivation **(O1)**: Parents who are motivated to engage with POHPBs will accept the home visit. **(O2)**: DHSW can travel long distances to deliver home visits to families who are already engaging in POHPBs and who do not necessarily need support.

> **DHSW**: "Got one for [rural town] today [...] it's probably about 60miles [...] It's the police house...Now that kind of tells me that it's a policeman's wife and am I really needed to go all the way up there? So what I'll do is phone her first and I'll say to her 'would you like me to come up?' And if she says 'yes', obviously I will go. But if she says 'well no but you can give me some advice over the phone?' it's far more cost-effective and a better use of my time not to go all the way up there."

MRT 13: Attending PHN/HV-led baby clinics provides DHSWs with the opportunity to register all new-born babies with a dental practice.

CMO1. (C): From eight weeks old, children can receive free health vaccinations, via the NHS, which are administered at PHN/HV-led immunisation clinics (often called 'baby clinics'). DHSWs attend baby clinics with the aim of registering all new-born babies with a dental practice. **(M)**: DHSWs have access to majority (if not all) of new-born babies in the locality. **(O)**: DHSWs have an opportunity to register all children with a dental practice.

> **DHSW**: "...the baby clinic is where you would pick up most of your mums, so you have an opportunity to catch everybody there [...] they're all going to come to the same clinic...You'll get the 'yummy mummies' you'll get the very young vulnerable coming in as well."

> **Domain 6. Key learning**
>
> PHN/HV triaging criteria, outlined in programme theory, is interpretive and results in referrals for low-risk families. Ineffective triaging within a rural NHS boards results in DHSWs travelling long distances to deliver home visits to families who do not need oral health support. Attending PHN/HV-led baby clinics provides DHSWs with access to all new-born babies in the locality to facilitate them into a dental practice.

MRT 14. DHSW support consists of information provision and facilitation into a dental practice. The depth of information covered is dependent on parental motivation.

CMO1. (C): DHSW delivers home visits to families, all with a range of needs. Home visits consist of information provision and registration at a dental practice. The extent to which parents interact with the DHSW determines the depth of information the DHSW covers. **(M):** Parental motivation. **(O):** DHSW provides lengthy home visits with detailed information to motivated parents.

MRT 15. Explaining the reasoning behind the recommended POHPBs improves parental retention and recall of information.

CMO1. (C). When delivering tooth brushing and dietary advice, the DHSW explains the reasoning behind these recommended POHPBs. **(M1):** Parents do not feel lectured to, or berated. **(M2):** Parents understand the logic behind the behaviour. **(O):** Parental retention and later recall of oral health advice is improved.

> **Home visit 1. Observation notes**: The DHSW advised the parents that only water and milk is recommended for young children to avoid tooth decay, and advised parents to use a drinking cup or a cup with a straw rather than a bottle. The DHSW explained that when the child drinks from a bottle the sugars in the drink are just 'washing over their teeth', whereas with a cup or straw the sugars in the drink 'just go straight down their throat'.

MRT 16. Complex information is easier to digest when presented visually.

CMO1. (C): DHSW uses visual aids to communicate oral health messages. Two of the most commonly used visual aids within case study one were the 'baby bottle tooth decay' model (Figure 6.5) and 'sugar bags' (Figure 6.6). The baby bottle tooth decay model is a model of four child-sized models of teeth and jaws which demonstrate the four stages of tooth decay. This model is used to discourage parents from prolonging exposure of children's teeth to sugars, for example by giving a child a bottle of milk at bedtime. The sugar bags are empty containers of drinks and snacks, typically consumed by children, accompanied by a clear bag of sugar. The sugar in the bag equates to the same amount of sugar within the product and highlights sugar content in each product. **(M1)**: Complex information is easier to digest when presented as a visual. **(M2)**: Products are recognisable or image produces disgust or fear. **(O1)**: Visual aids grab parent's attention. **(O2)**: Improves retention and recall of oral health advice.

> **Parent**: "To see the sugar content of the food was good. The organic baby food was crazy and you think, that's a lot of baby's first foods. So that stuck in my head."
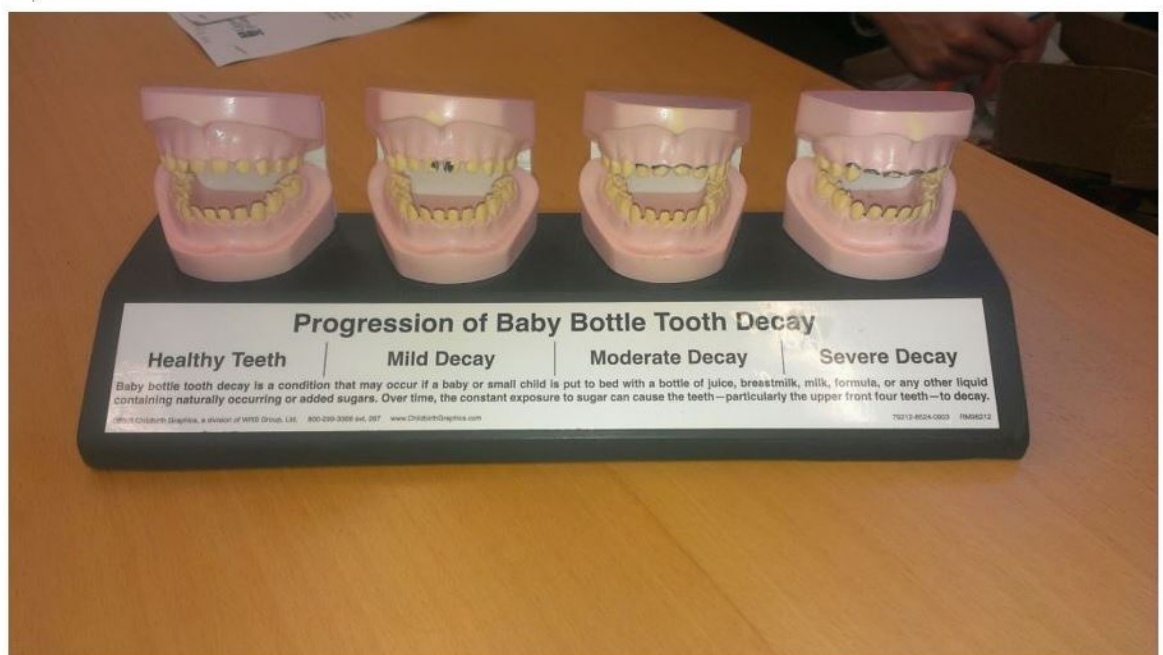
Figure 6:5: The 'baby bottle tooth decay' model depicting the progression of dental caries in infants and young children

Figure 6:6: 'Sugar bags' depicting levels of sugar in drinks and snacks familiar to parents

MRT 17. Parents are not receptive to oral health messages if they believe the DHSW is judging them or their oral health parenting behaviours.

CMO3. (C): Where possible, PHNs/HVs will provide DHSWs with background information about families' oral health behaviours. For example, if parents are giving the baby juice in a bottle. While the DHSW does not mention to parents that she knows this information, she will focus the oral health messages on this behaviour. **(M)**: Parents assume oral health messages are generic and do not feel criticised. **(O1)**: Parents engage with the DHSW. **(O2)**: Parents are receptive to oral health messages.

> **DHSW**: "…I can't go in and say 'the health visitor told me that you've got juice' because then you're on the back foot immediately, their defence goes up because it's almost like you're criticising what they're doing. So even if you have that information…[don't say it] you're going to draw that out eventually."

MRT 18. Practical solutions improve parental self-efficacy to engage with POHPBs.

CMO1. (C): DHSW provides practical solutions to the external and internal barriers parents face when engaging with POHPBs. **(M)**: Develops parents' perceived locus of control. **(O)**: Parents engage with POHPBs.

> **DHSW**: "I've had five girls and its trial and error when you're bringing up children. So when parents ask you about tooth brushing, I can remember the pitfalls of children trying to learn. I would make suggestions that I used to do. Brush their teeth in the bath when they're distracted or when they get older I'd suggest tooth brushing apps which will keep them amused."

MRT 19. Encouraging parents to make small changes is perceived to be achievable and leads to positive outcomes.

CMO1. (C): DHSWs attempt to change oral health parenting behaviours by using 'baby steps' and focusing on small achievable goals. **(M1)**: Parents do not feel overwhelmed. **(M2)**: Improves parents' perceived locus of control. **(O)**: Parents improve oral health parenting behaviours over time.

> **DHSW**: "Again, with the fizzy drinks and the sweets, there's no point in going in and saying 'don't give them any sweets', you know that's not going to happen [...] it's too overwhelming for [parents] to change their whole lifestyle…you can't change everything. One change can make a difference."

MRT 20. Open dialogue and off-topic, general chat facilitates shared experience and person-centred support.

CMO1. (C): The DHSW will regularly engage in off-topic general chat with parents on subjects that are not related to oral health e.g. upcoming holidays or events. **(M1)**: Breaks the ice. **(M2)**: Presents the DHSW as a peer. **(O1)**: Introduces open dialogue between parent and DHSW. **(O2)**: Parents feel comfortable with the DHSW.

> **Home visit 2. Observation notes**: The instances of off-topic general chat between the DHSW and parent increased as the home visit went on, and it appeared to make the parent more at ease because initially she seemed very wary of us being there. For example, the DHSW

commented on the Halloween decorations around the home and they had a brief chat about Halloween parties. Then later the DHSW mentioned she had five children of her own to which the mother opened up about her child's premature birth and her current lack of sleep.

MRT 21. Praise and encouragement reinforces POHPBs.

CMO1. (C): DHSW will praise and encourage POHPBs. **(M)**: Mobilises parental internal resources (e.g. motivation, reassurance). **(O)**: Parents maintain the positive behaviours.

> **Home visit 1. Observation notes:** The DHSW asked the parent what the child was drinking and what he was drinking from, to which the parent confirmed he was breastfeed and now has cups of milk or water. The DHSW praised and encouraged the mother to maintain this behaviour and to avoid introducing any juice if she can.

Domain 7. Key learning

DHSW home visits consist of information provision and facilitating families into a dental practice. DHSWs deliver home visits to families with a range of needs. The extent to which parents are motivated to engage with POHPBS and interact with the DHSW determines the depth of information provided. Strategies of support, such explaining the reasoning behind recommended oral health message and disseminating information via visual aid, serve to improve parental understanding, retention, and recall of information. Practical solutions and focusing on small achievable goals can improve parental self-efficacy and locus of control to engage with POHPBs, while praise and encouragement encourages parents to maintain these behaviours. Engaging in open-dialogue and off-topic general chat facilitates person-centred support, and engagement with parents.

6.4.2.8 Domain 8. DHSWs' Relationship with Stakeholders

MRT 22: Attendance at PHN/HV-led baby clinics facilitates regular face to face communication between DHSW and PHNs/HVs.

CMO1. (C): Until recently, the DHSW regularly attended PHN/HV-led baby clinics. Since the Health and Social Care Integration Act[16], PHNs/HVs have moved office and no longer have the facilities to run baby clinics. Consequently, communication between DHSWs and PHNs/HVs is now primarily via email or telephone rather than face to face. **(M)**: Ease and informality of communication between stakeholders. **(O)**: DHSWs and PHNs/HVs shared richer information about families and their needs.

> **DHSW**: "…I think sometimes if you're emailing back and forwards, you're just kind of giving the facts…it's easier to discuss, and sometimes other little bits of information come out as well, when you're talking about it, that you might miss if it's just emails bouncing back and forward.

MRT 23: Dental practice staff perceives the costs of engaging with Childsmile to outweigh the benefits.

CMO1. (C): A minority of PDS practices and majority of GDS practices are not communicating FTAs to DHSWs or delivering Childsmile treatments (e.g. oral health advice, FVAs). The administrative aspects of dental practices delivering Childsmile treatments are perceived to be extensive. In the case of GDS practices, Childsmile clinics and treatments are not cost effective. **(M)**: The costs of engaging with Childsmile are perceived to outweigh the benefits. **(O1)**: Stakeholder buy-in to the programme is reduced. **(O2)**: There is variation in how Childsmile is delivered within dental practices within the NHS board.

> **PR**: "How has Childsmile impacted on your role?"
>
> **Dentist**: "Negatively. It's time consuming…and there is a lot to be claimed for [on the statement of dental remuneration]. We also have no Childsmile facilities so we haven't been able to use the Childsmile nurse since January 2015."

CMO1a. (C): The variation in delivery of Childsmile Practice between PDS and GDS practices is attributed, in part, to stakeholder buy-in. PDS practices are typically more engaged with Childsmile compared to GDS and there is variation in continuity of care across the NHS board. Parents are reported to receive

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[16] Health and Social Care Integration Act (2014) came into force in April 2016 and brought NHS and local council care services into a single partnership for the first time (The Scottish Government, 2016)

mixed oral health messages between DHSW and dental practice. **(M):** Parents perceive the dentist and dental staff to be authority on oral health. **(O1):** parents take on board dental staff advice, even if it conflicts with Childsmile advice (e.g. the number of FVAs children are entitled to). **(O2):** Undermines parent's perception of Childsmile and DHSW efforts.

> **DHSW:** "Some [dentists] advice [parents] not to have [FVA] done. That's happened several times. I did a toddler group and a female doctor came to speak to me and she told me that her [GDP] dentist advised her not to varnish her children's teeth, I don't know why...there have been a few instances of that across the board. That makes us feel that all the good work you're doing is being undone."

MRT 24: A universal FTA policy reduces DHSWs capacity to support families.

CMO1. (C): Programme theory for FTAs outlines that DHSWs will provide support only to Childsmile families (families whom have been referred to the DHSW for support) who FTA appointments, while local programme theory within this NHS board stipulates that DHSWs support all children aged up to 18 years who FTA a dental appointment. **(M1):** DHSW does not have a relationship with non-Childsmile families. **(M2):** Parents are confused with Childsmile contact. **(O1):** Increases DHSW workload. **(O2):** DHSWs don't know how to support older children.

> **DHSW:** "...you phone [parents] and say 'this is Childsmile' they wonder why you're phoning...some of the children have left school by that age but we're chasing them up for appointments...we don't really have a connection with them...it's just so time consuming."

MRT 25: Face to face communication with dental practice staff facilitates stakeholder-buy in.

CMO1. (C): Communication between DHSW and dental practice staff is via telephone (when booking appointments for families), and face to face with EDDNS when delivering Nursery and School. The DHSW visits PDS practices weekly for FTA updates which also provide opportunities for contact with dentists, practice managers, and dental nurses. **(M1):** The DHSW is a visible presence to dental practice staff and a reminder of the Childsmile programme. **(M2):** Stakeholders have easy access to the DHSW. **(O1):** Stakeholder

understanding of the programme and DHSW role is improved. **(O2)**: Dental staff use the DHSW as a resource.

> **Dentist**: "Face to face communication would be important since email can be misinterpreted."

> **PHN/HV**: "you get more information when you're just generally chatting about a family…and you might think, 'Oh gosh, I didn't say that, I didn't say this.' Whereas when you're with [DHSW] for an hour and a half clinic, there was always that time…I just think face to face contact with other professionals, not just for Childsmile, it's so important."

Domain 8. Key learning

Regular face to face communication with PHNs/HVs and dental practice staff, facilitates richer information-sharing about families and their needs, and improves stakeholder buy-in. Poor engagement from dental practice staff can be attributed to the perception that the costs of engaging with Childsmile outweigh the benefits. The resulting variation in continuity of care between dental practices and Childsmile undermines Childsmile messages.

A universal FTA policy is a local adaptation of programme theory and reduces DHSWs capacity to support families.

6.4.2.9 Domain 9. Wider Context

MRT 26: Embedding of Childsmile within the Early Years Pathway and GIRFEC policy positively influences stakeholder buy-in.

CMO1. (C): Childsmile is embedded within the Early Years Pathway and GIRFEC policy. **(M)**: Dental practice staff have a duty of care to work collaboratively to improve children's' health and wellbeing. **(O)**: Stakeholders buy-in to the programme, and work in partnership with Childsmile.

MRT 27: A lack of progression in the DHSW role contributes to high staff turnover and the type of person applying for the role.

CMO1. (C): At present, there are no opportunities for progression in the DHSW role. **(M)**: DHSWs feel undervalued and frustrated. **(O)**: Staff turnover rates are high.

> **DHSW**: "With the support worker role there really isn't anywhere you can go with it, or develop, and that's maybe the only frustrating part because you can't move anywhere else with it. I think that's why, quite often, people don't stay in the job very long…"

MRT 28: Understaffing within Childsmile, and a dual role impacts on the extent to which DHSWs can support families.

CMO1. (C): At present, Childsmile is delivered by three dual role DHSWs: one works four and a half days per week; one works three and a half days per week (term time only); and one works one day per week. Since a full time DHSW left post over a year ago, the programme has been understaffed and workload for four DHSWs is delivered by three. DHSWs now cover more localities and receive a higher number of referrals for Practice. **(M)**: DHSWs are overstretched in their workload. **(O1)**: Practice is not a priority. **(O2)**: The extent to which DHSWs can support families is reduced.

> **DHSW**: "…because [DHSW] left I've been covering her area which is a bit daunting…hers is a big area and she was full time. I'm four and half days so I have got a lot more visits…it's difficult to fit it all in when we're out [fluoride] varnishing maybe two schools a week, with the paperwork, it is a lot of work."

MRT 29: Health damaging environments reduce parents' locus of control to engage with POHPBs.

CMO1. (C): The NHS board is geographically large and very rural. Supermarkets are often situated out of town; public transport is infrequent, unavailable, or unreliable; and many do not have access to a car. Consequently, families often rely on small community shops for food. DHSWs encourage parents to provide healthy and low-sugar/sugar-free options, and to cook fresh food however these are not widely available in small local shops. **(M)**: Health damaging environment does not support oral health messages. **(O)**: Parent's locus of control to engage with POHBs is reduced

> **PHN/HV**: "…there's very few healthy choices so I think it's a much bigger problem…there's a Spar shop in [town]…ceiling to floor sugary fizzy drinks is the first thing you see, and then you get the crisps, and then you get the sweets, and then you get the ready meals. You've got a tiny basket of fruit and veg just past the date, and you can imagine in a Spar shop, nobody would go in there to buy a carrot or an apple."

Domain 9. Key learning

Embedding Childsmile within the Early Years Pathway and GIRFEC policy facilitates collaborative working between Childsmile and health practitioners. Few opportunities for progression in the role impacts on staff turnover while understaffing impacts on DHSWs workload and capacity to support families. Health damaging environments do not support oral health messages and reduce parents' locus of control to engage with POHPBs.

6.4.3 Case Study 2: Overview

This section provides the overview of case study 2. This section identifies the participants included within the case and where they are based, and summarises local delivery of the role.

Figure 6.7 provides an overview of the participants and where they are situated within case study 2.
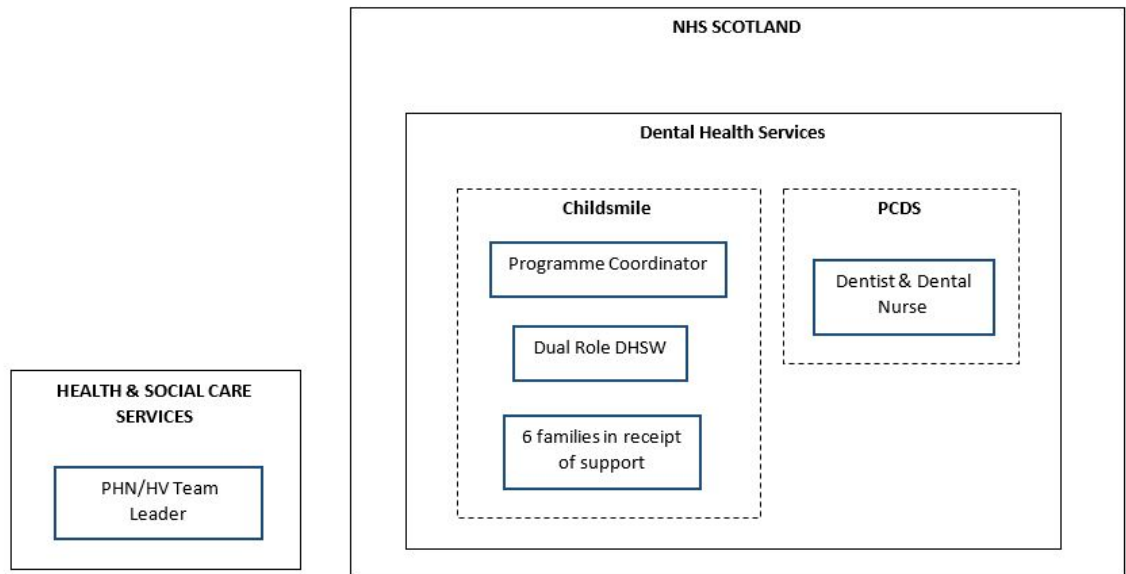
Figure 6:7: Case study 2

Characteristics influencing delivery of the role within case study 2 are:

- **Geographical characteristics of the NHS board**: The NHS board is an urban locality with a relatively large population within the west of Scotland.

- **Where DHSWs are based within the NHS board**: DHSWs are employed by dental health services but based within the community PHN/HV teams and line managed by the PHN/HV Team Leader.

- **Components of Childsmile DHSWs deliver**: DHSW has been in post since 2009 and delivers a dual role of Practice, and Nursery and School.

- **Referrals to the DHSW**: DHSWs receive universal referrals via the PHN/HV birth book.

A summary of delivery of the DHSW role within case study 2 is provided.

6.4.3.1 Delivery of the DHSW Role

Childsmile Practice has been delivered within this NHS board since the piloting phase in 2006. PHN/HVs are not involved in the referral process. Instead DHSWs access the PHN/HV birth book which holds a record of all children born into the local area. DHSWs contact all families with new-born children to offer home support.

Local programme theory outlines that DHSWs should be assessing family's needs via the telephone and delivering home visits only to those in need of oral health support. DHSWs deliver one home visit lasting approximately 15 minutes when the child is aged three months old. DHSWs deliver diet and tooth brushing advice, will advise parents on to expect at the dental practice and from Nursery and School, provide free resources, register the child with a dentist, and book a dental appointment.

DHSWs rely on dental practices communicating whether families' FTA dental appointments however DHSWs will follow up on 'vulnerable' families if necessary. Following notification of FTAs, DHSWs contact families to offer a new appointment.

6.4.4 Case Study 2: Findings

This section presents the MRTs, accompanying CMOs, and key learning across the nine domains for case study 2.

6.4.4.1 Domain 1. DHSWs' Skills and Training

MRT 1. **Childsmile training does not prepare DHSWs in how to deliver the role.**

CMO1. As seen in case study 1 (Section 6.4.2.1).

CMO2. (C): NHS Education for Scotland recommends that DHSWs carry out a period of work-based shadowing of other DHSWs before attending Childsmile training. Shadowing is provided at the discretion of the NHS board depending on availability of DHSWs. **(M)**: DHSW preparedness to deliver the role. **(O1)**: DHSWs

pick up practical strategies for delivering home visits. **(O2)**: DHSWs feel confident to deliver the role following training.

> **Principal Researcher**: What did you gain from shadowing?
>
> **DHSW**: "Some confidence in what to say. It's sometimes difficult to condense all the maternal and information that you have...it gave me the experience of actually going into people's homes and being in their environment whilst remaining respectful and assessing the situation. It's all the things you can't really learn in training."

MRT2. The Transtheoretical Model enables DHSWs to identify parents' motivational readiness to engage with POHPBs.

CMO1. As seen in case study 1 (Section 6.4.2.1).

Domain 1. Key learning

Childsmile training is primarily theoretical and does not prepare DHSWs on the practical aspects of the role. Therefore DHSWs are left unsure how to deliver home visits and rely on shadowing or 'learning on the job'. DHSWs are provided with instruction on a theory of behaviour change therefore they can identify parents' motivational readiness to engage with POHPBs.

6.4.4.2 Domain 2. Characteristics of the DHSW

MRT 3. Interpersonal skills and personality traits are indicators of the right person for the DHSW role.

CMO1. (C): The DHSW has a relaxed and open demeanour, and can easily express empathy: skills and traits which are evident when delivering challenging home visits. **(M)**: Peer-ness of the DHSW role. **(O1)**: Parents are relaxed and receptive to the DHSW. **(O2)**: Parents see the DHSW as one of them, rather than a health professional.

> **Coordinator**: "...communication and personal skills and attributes are almost more important than any training qualifications, cause we can always train people as long as they've got willingness to learn..."

> **Domain 2. Key learning**
>
> Interpersonal skills and personality traits facilities engagement with families and promotes the peer-ness of the DHSW role.

6.4.4.3 Domain 3. Where DHSWs are based

MRT 4: Situating DHSWs within the PHN/HV teams seamlessly integrates the DHSW role into PHN/HV services and improves stakeholder buy-in.

CMO1. (C): Since the piloting phase of Childsmile Practice, DHSWs have been based within PHN/HV teams. DHSWs and PHNs/HVs engage in regular, face to face, informal communication. **(M1)**: Ease of communication between stakeholders. **(M2)**: PHNs/HVs are used to having the DHSWs based in their department. **(O1)**: Practice and the DHSW role become embedded into PHN/HV services. **(O2)**: PHNs/HVs buy-in to the programme. **(O3)**: PHNs/HVs understand the DHSW role and their capabilities.

> **Coordinator**: "Because the Health Visitors know the Dental Health Support Workers well, know the range of abilities; they've got more confidence in referring people that..."

MRT 5. Situating DHSWs alongside one another facilitates peer support.

CMO1. (C): Two DHSWs are based alongside one another within the PHN/HV team. **(M)**: Peer support and shared experience. **(O1)**: DHSWs do not feel isolated from the programme. **(O2)**: DHSWs confidence delivering Practice increases.

> **PHN/HV Team Leader**: "The good thing is I've got two DHSWs here and they work well together...[they] get a lot of support from each other."

MRT 6. A poor feedback loop between PHN/HV services and Childsmile influences whether the DHSW role is delivered as intended.

CMO1. (C): DHSWs based within PHN/HV services are line managed by the PHN/HV Team Leader. The PHN/HV Team Leader does not receive feedback

from Childsmile regarding Practice targets or DHSW performance, and instead uses DHSW feedback and how busy they appear to be as a proxy indicator of their performance. **(M)**: The PHN/HV Team Leader does not know programme theory. **(O1)**: Delivery of the role is not monitored. **(O2)**: Deviation in delivery from programme theory goes unchecked.

> **Principal Researcher**: "In terms of feedback from the programme, what do you receive?"
>
> **PHN/HV Team Leader**: "To be honest not an awful lot. The [DHSWs] used to give me a Performa they filled out monthly… it didn't really mean a lot to me. It was just about numbers, about how many they visited and how many they didn't. So to be honest I don't have a great handle on that."

Domain 3. Key learning

Situating DHSWs within PHN/HV teams has seamlessly integrated Childsmile into PHN/HV services and improved stakeholder buy-in. DHSWs have opportunities for peer support by being based alongside one another, which improves confidence in delivery of the role. The poor feedback loop between Childsmile and DHSWs line manager (PHN/HV Team Leader), regarding DHSW performance, means deviation in delivery from programme theory can go unchecked

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6.4.4.4 Domain 4. Components of Childsmile that DHSWs deliver

MRT 7. NHS HEAT targets restrict dual role DHSWs capacity to deliver Practice.

CMO1. (C): As seen in case study 1 (Section 6.4.2.3). **(M)**: Childsmile Practice is not prioritised in a dual role. **(O1)**: Creates a backlog of Practice referrals. **(O2)**: DHSWs capacity to support families is reduced.

> **DHSW**: "Since the HEAT target finished in March we were put back into Practice…We generally try to book in six [home] appointments on the day…if you are sent out on a Nursery and School team we all lose all 6 referrals for that day […] I had a visit booked in on a Friday morning…I went on the Thursday night and I just said to the family,

> 'look I'm sorry, I'm not going to make it tomorrow as I've been asked to go out to one of the schools'…I could have lost that family and I don't know what sort of background they come from or whether they need information…"

MRT 8. A dual DHSW role promotes continuity of care and facilitates person-centred care.

CMO1. (C): DHSWs have been delivering a dual role since Nursery and School was rolled out within the NHS board in 2009. DHSWs often deliver Practice home visits, and Nursery and School FVAs to the same family. **(M1)**: Continuity of care. **(M2)**: DHSWs develop a therapeutic relationship with families. **(O1)**: Parents and children are accustomed to Childsmile and engage with the DHSW. **(O2)**: DHSWs receive satisfaction in their role by observing families progress. **(O3)**: DHSWs provide person-centred care.

> **DHSW**: "Some of those families you visit, you then see at nursery or school, so you see their development. It makes your heart a wee bit lighter to see that the child is moving on, and recognise that the parents maybe have turned a corner. The dual role is really good that way."

Domain 4. Key learning

NHS HEAT targets for Childsmile Nursery and School restrict the dual role DHSWs capacity to deliver Practice. However, the dual role promotes continuity of care and facilities person-centred care.

6.4.2.3 Domain 5. DHSW Autonomy

MRT 9. Autonomy enables DHSWs to provide person-centred care.

CMO1. As seen in case study 1 (Section 6.4.2.4).

> **DHSW**: "We do have free reign and I think that's the only way to deliver the information […] The minute you see somebody, you assess the environment and try to work out how long you can spend there and how much information you can impart…"

> **Domain 5. Key learning**
>
> Autonomy enables DHSWs to deliver person-centred care to families.

6.4.4.5 Domain 6. Targeting and Referrals

MRT10. Referrals via the PHN/HV birth book results in a universal method of delivery of the DHSW role.

CMO1. (C): In the early days of delivery, PHN/HV teams were understaffed and Practice referrals were low. An alternative referral method was introduced whereby DHSWs would use the PHN/HV birth books to contact all families with a new-born baby. Currently, this is the sole method of referral within the NHS board. **(M):** The PHN/HV triaging element is lost. **(O):** All families can receive DHSW support regardless of need.

> **Coordinator**: "It probably was highly influenced by the fact many of the Public Health Nursing teams were really quite depleted…we maybe weren't getting referrals […] the health visitors trusted the Dental Health Support Workers to go through the birth book and make telephone contact with every new parent […] if it was a second time child and actually [parents] knew all about Childsmile 'that's absolutely super, I'll maybe give you a little courtesy call in a couple of months' and that was the end of the chat. Maybe you'd get first time mum, a bit unsure about what to do about dental services, [we'd] maybe offer a home visit in that instance. And then we'd have the ones where…there was serious concerns about the oral health…we would prioritise visiting those families."

CMO1a. (C): Local programme theory outlines that while DHSWs operate with universal referrals via the PHN/HV birth book they should assess families oral health needs via a telephone consultation with parents, and deliver home visits only to families in need of support. However, DHSWs are not triaging and offer home visits to all families regardless of need. **(M):** DHSW believes she is delivering the role according to programme theory. **(O1):** Concept of proportionate universalism is lost. **(O2):** DHSW support element of Practice is operating as a universal programme.

> **Home visit 2. Observation notes**: The parent appeared to be
> enthusiastic and confirmed she knew most of the oral health advice
> provided. When the DHSW offered to register the child with a dentist
> and book an appointment, the parent confirmed she had already done
> this and the appointment was booked for the following day. I was
> surprised the DHSW did not know this information in advance and had
> decided to deliver a home visit to a family who did not appear to need
> oral health support. This suggested the DHSW had *not* assessed the
> family's needs via the telephone beforehand.

MRT 11. Generating referrals via the PHN/HV Birth Book ensures DHSWs are not reliant on PHN/HV buy-in to the programme for referrals.

CMO1. (C): DHSWs are based within PHN/HV teams and thus have access to the PHN/HV birth book, which has a record of all children born into the local area. DHSWs use the birth book as a proxy method for referrals and PHNs/HVs are not directly involved in the referral or triaging process. **(M)**: DHSWs are not reliant on PHNs/HVs for referrals. **(O)**: Referral rates are stable and not influenced by PHN/HV buy-in to the programme or workload.

> **Coordinator**: "...I do think health visitors have capacity to refer
> people to Childsmile but if a team does become a bit depleted it
> becomes one of the things that doesn't happen."

MRT 12: Universal referrals facilitate registration of all new-born children with a dental practice.

CMO1. (C): DHSWs use the PHN/HV birth book to contact all families with new-born children to offer them a Practice home visit. Home visits consist of oral health information and facilitating the family into a dental practice. **(M)**: Access to new-born children. **(O)**: Facilitates early registration of all children with a dental practice.

> **Principal Researcher**: "So because its universal, it's not the case that
> the Health Visitors have a criteria of the people you should be seeing,
> it's just everybody across the NHS board has a change of getting a
> home visit?"
>
> **DHSW**: "Yes. Unless we are asked to prioritise certain families, but
> generally that wouldn't happen [...] with it being universal, all
> children should be seen eventually at some point in time, and most
> children who are not seen is because we have a back-log."

> **Domain 6. Key learning**
>
> PHNs/HVs are not directly involved in referring families and instead DHSWs access the PHN/HV birth book to contact all families with new-borns. Consequently the concept of Proportionate Universalism and the targeting element of the programme is lost. However, DHSWs are not reliant on PHN/HV buy-in for referrals, and this method facilitates registration of all new-born children into a dental practice.

6.4.2.4 Domain 7. Nature of DHSW Support

MRT 13. DHSW support consists of information provision and facilitation into a dental practice. The depth of information covered is dependent on parental motivation.

CMO1. As seen in case study 1 (Section 6.4.2.6).

> **DHSW**: "When the added support is offered and they take it up, then that's great. If they don't, then you have to walk away. You're only hoping that they've taken on board some things [...] if they're not ready at that time, they maybe will start at a later date."

MRT 14. DHSWs do not have capacity to support families who FTA dental appointments.

CMO 1. (C): The DHSW delivers a dual role and delivers home visits to all families with a new-born baby. The DHSW aims to register all families with a dental practice and book a dental appointment during the first home visit. However, the DHSW does not have capacity to follow up all Childsmile families to ensure they attended the dental appointment. Instead, the DHSW relies on dental practices communicating FTAs to her. **(M):** Stakeholder buy-in. **(O):** Only practices who have bought-in to the programme will communicate FTAs.

> **DHSW**: "I wouldn't have time to call up all the fail-to-attends…nine times out of ten, [dental practices] keep in touch regarding vulnerable families…If they stipulated that was a part of your everyday role then you wouldn't get much else done…"

MRT 15. DHSWs perception of what constitutes success in the role influences the number of home visits delivered to families.

CMO1. (C): DHSW has capacity to deliver multiple home visits to families yet typically delivers one visit to each family. **(M1)**: DHSWs perception of failure and success in the role. **(M2)**: DHSW is concerned she will not gain access to the home again. **(O)**: DHSW delivers all oral health advice, and registers the family with a dentist within one home visit.

> **Coordinator** : "...they've always been told they've got that within their remit, not to do everything in the first visit...I've always reassured Dental Health Support Workers that I do think you go out and have it in your head that ultimately you're going to get the along to the dentist, but if you don't, it's not a sign of failure."

CMO1a. (C): The DHSW delivers all oral health advice and registers the family with a dentist during the first and only home visit. Oral health advice includes tooth brushing, diet and weaning advice, and what to expect from Nursery and School and the dental practice. Visits typically last 15 minutes and are delivered when the child is approximately three months old. **(M1)**: Parents feel overwhelmed with information. **(M2)**: Parents do not perceive the information to be relevant to child's age. **(O1)**: DHSWs cannot establish individual need, address attitudes or barriers to oral health, or deliver person-centred care. **(O2)**: Parents will not retain information.

> **Home visit 2. Observation notes:** The home visit lasted approximately 10-15 minutes and felt rushed. There was a lot of information covered and a lot of it was spent explaining how Childsmile started. A lot of jargon was used and some unnecessary information (e.g. caries in under-5s, Childsmile is funded by Scottish Executive). The DHSW also delivered advice which was not relevant to the child's age. For example, the child was three months old and the DHSW was delivering information about Nursery and School FVAs and healthy snack ideas. I got the impression the parent was glazing over during the session.

MRT 16. The duration of the home visit is dependent on the extent to which parents interact with the DHSW.

CMO1. (C): DHSWs deliver home visits to all families with new-born babies. Home visits typically last 15-20mins. The extent to which parents interact with

the DHSW determines the level of information the DHSW provides and the length of the home visit. **(M1)**: Parents motivation to engage with POHPBs. **(M2)**: Parents confidence in requesting information and support. **(O1)**: Motivated parents ask more questions and are more engaged with the DHSW. **(O2)**: DHSWs will spend more time delivering support to motivated parents.

> **Home visit 2. Observation notes**: There were no occasions where the DHSW invited the parent to ask questions. I think it would take a motivated or very confident individual to raise questions without any encouragement.

MRT 17. Contacting parents within the child's first year facilitates uptake of POHPBs.

CMO1. (C): Programme theory stipulates DHSWs should be contacting families by the time the child is three to six months old to deliver oral health advice, ideally before children's first teeth and before the recommended six-month date for weaning. During this time, mothers are typically on maternity leave thus often available during the day for a home visit. **(M1)**: Information is relevant to the age of the child. **(M2)**: Oral health parenting behaviours have not yet been established. **(O1)**: Information is easier to retain and recall at a later date. **(O2)**: DHSWs can encourage early adoption of POHPBs.

> **DHSW**: "It's difficult, because it's trying to get access to people when they're working…that backlog is from last year and we are still getting referrals coming in. [parents] go back to work or they're relying on other people watching the wee ones…If they come [home from work] and get a message from us, they just don't have the time to return my call."

MRT 18. Generic oral health information is a suitable strategy for motivated parents only.

CMO1. (C): The DHSW delivers generic oral health information regarding: tooth brushing, diet, Nursery and School, and attending the dental practice. The DHSW introduces Childsmile, why it started, and what children will receive from the programme; then explains the content of Childsmile leaflets before registering the child with a dental practice. **(M1)**: The DHSW is not aware of her delivery. **(M2)**: Parents feel they are being lectured to. **(M3)**: The DHSW is not developing

a relationship with the parent. **(O1)**: Does not address barriers to engaging with POHPBs. **(O2)**: Support is not person-centred. **(O3)**: Only motivated parents will engage with the DHSW.

> **Home visit 3. Observation notes.** The DHSW delivered a home visit to a young family of 2 children: one was aged four years (whom the mother had previously received a Childsmile Practice home visit for) and one aged three months. DHSWs delivery was didactic and scripted. Even when the parent tried to engage in dialogue the DHSW continued with the scripted delivery. For example:
>
> **DHSW [to parent]:** "Basically the Childsmile programme started up in 2005-2006 and it started because of the level of tooth decay in pre 5 children. I don't know if you were shown this information or not, but that's why they did the big dental inspection and that's what they found when they did that inspection, the Scottish Executive basically told them that they had to combat the problems and put something in place that will advise and help people. [Refers to the youngest child], she will see the dental nurse. She'll give you advice on sugar snacks and when best to have them. She'll give you advice on tooth brushing techniques also."
>
> **Parent:** "[refers to the youngest child] There is some redness in [her] mouth, I think she'll be having teeth in soon."
>
> **DHSW:** "Once she reaches the age of two it will be the dentist that she sees. By then she'll have a full set of twenty teeth. The programme was designed to make them aware of the environment that they're going into so that they'll not be scared of the dentist and won't have any apprehension."

MRT 19. Tooth brushing demonstrations delivered to children improves uptake of oral health behaviours.

CMO1. (C): The DHSW has received continued professional development training to provide tooth brushing instruction directly to children. This training was primarily for use within the Nursery and School role however the DHSW uses these skills within Practice home visits. The DHSW can offer parents of older children a further home visit where she will provide tooth brushing demonstration directly with the child. **(M)**: Builds children's self-efficacy surrounding tooth brushing. **(O1)**: Children are not reliant on parents for uptake of the behaviour. **(O2)**: Encourages DHSW to deliver multiple home visits.

> **Home visit 6. Observation notes**: The DHSW is delivering a repeat visit to a mother of two (older) children, one of whom had previously received a general anaesthetic for teeth extraction due to dental caries.

> **DHSW [to parent]**: "Do you think it would be ok if I did [tooth bushing] with [child]? I would get her to do it herself but I would show her the technique. I could make arrangements to come on a weekly basis until we think she's quite confident brushing her teeth […] it might help if she has the consistency of someone coming in?"

> **Parent**: "Yes, if she thinks someone is going to check on her she will do it."

MRT 20. Acclimatising children to the clinical dental environment from a young age normalises preventative oral health care.

CMO1. (C): The DHSW encourages parents to take their children to a dental practice before their first teeth come through. **(M)**: Children become acclimatised to the clinical environment (e.g. sights, sounds, and smells). **(O1)**: Children can receive preventative care from an early age. **(O2)**: Children are less likely to be frightened or intimidated by the clinical environment or dental procedures. **(O3)**: Attending a dental practice becomes a normal behaviour.

> **Principal Researcher**: "In general, has Practice impacted positively or negatively on your role?"

> **Dentist**: "It's definitely helped a lot of the kids get used to the environment…fluoride varnish as well has helped. I mean I wouldn't say I've seen a massive reduction [in dental caries] in the area…but it's definitely helped the acclimatisation.

> **Dental Nurse**: "And definitely the confidence of the kids. We take it easy. It's about getting the kids back as many times as it takes, just book them in next week, build the confidence, get to know the parents, and keep things very casual, take away the clinical side of things."

MRT 21. The home is the best place to deliver oral health support to parents.

CMO1. (C): The DHSW delivers oral health support to parents within their home, at a time suitable to the parents. **(M1)**: Parents feel relaxed and in control. **(M2)**: Sense of privacy. **(O1)**: Parents are more receptive to oral health advice. **(O2)**: Parents are comfortable talking to the DHSW.

> **DHSW**: "...people are more willing to engage with the oral health messages that you're putting over when they are in their own environment...if the child is sleeping then they have more time to engage with you or even if the child is in the house they can put the

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Domain 7. Key learning

The DHSW delivers one, 15 minute home visit to families to provide oral health advice and facilitating families into a dental practice. While the DHSW has the capacity to deliver multiple visits, the DHSW perceive success in the role to be around registering the family with a dentist on the first visit. Oral health information is not person-centred, and the amount of information provided on one short visit can be overwhelming to parents and impact retention and recall. The extent to which parents are motivated to engage with POHPBS and interact with the DHSW, will determine the depth of information provided.

The DHSW has received additional training to deliver tooth bushing instruction to older children which can improve children's self-efficacy engaging with oral health behaviours. Due to universal referrals and a dual role, the DHSW does not have the capacity to support families who FTA dental appointments. Early intervention is necessary to acclimatising the child to the dental practice environment, and the home is the best place for oral health support.

6.4.2.5 Domain 8. DHSWs Relationship with Stakeholders

MRT 22. Regular face to face communication, between DHSWs and PHNs/HVs, encourages PHN/HV buy-in to the programme and facilitates person-centred care.

CMO1. **(C)**: DHSWs are based within the PHNs/HVs team and have regular face to face, informal communication with PHNs/HVs. **(M1)**: The DHSW is a visible presence and a reminder of the programme. **(M2)**: PHNs/HVs have easy access to the DHSW. **(O1)**: PHN/HV understanding of the programme and the DHSW role is

improved. **(O2)**: PHNs/HVs feel connected to Childsmile and use the DHSW as a resource.

> **Principal Researcher**: "People have said that when you're based in the same office you get more informal communication?"
>
> **PHN/HV Team Leader**: "Absolutely. Absolutely. You know the kind of soft information? Absolutely. And quite readily, if someone new comes into the area who hasn't had access to Childsmile, an older child with dental problems, [HVs] they'll say 'Oh, I know that wee ones a bit older, but could you go out and see them' and the [DHSWs] pick that up. I really value them in the team.

CMO2. (C): DHSWs are based within PHN/HV services and have regular face to face, informal communication with PHNs/HVs. **(M1)**: Informality and ease of communication between stakeholders. **(M2)**: Richness of information shared. **(O1)**: DHSWs can provide person-centred care using this information.

> **PHN/HV Team Leader**: "you usually find that the [DHSWs] are very good at feeding back. 'Oh I saw that wee one of yours, that wee baby's doing well, that mum's talking about starting weaning now.' So there's a lot of conversation goes on, that's one of the great benefits of them being in the team."

MRT 23. Dental practices perceive the costs of engaging with Childsmile to outweigh the benefits.

CMO1. As seen in case study 1 (Section 6.4.2.7).

> **DHSW**: "...sometimes [parents] will tell me the [dental] practice told them they didn't need to put the fluoride varnish on...you feel like a fool then and undermined when what the practice says differs from what you say."

MRT 24. Variation in delivery between dental practices places a strain on PDS practices.

CMO1. (C): Many GDS practices are not engaging with Childsmile, and there is variation in continuity of care between Childsmile and dental practices. **(M)**: DHSWs are confident in PDS care. **(O)**: DHSWs are more inclined to refer families to PDS practices.

> DHSW: "These children, the majority of them, come from a vulnerable family who are having issues with Social Work…the [PDS practices], they know all the issues that we can come up against and they see more of it, than a GDP…some GDPs are quite interested…and there's some of them take it quite lightly and just say 'well och, if they don't come, they don't come'."

MRT 25. Poor communication with dental practice staff reduces stakeholder buy-in

CMO1. (C): The DHSW is line managed by the PHN/HV Team Leader and there is reportedly little communication between PHN/HV services and dental practices. The Coordinator has recently left post. Dental practice staff report no communication from Childsmile (including the DHSW) for a prolonged period of time, and despite the high levels of poor oral health and deprivation within the area, referral rates to the dental practice are low. The DHSW had been on extended leave and this has presumably not been communicated to the dental practice. (M): Dental practice staff feel cut off from the programme. (O1): Dental practice staff's confidence in the DHSW and programme is reduced. (O2): Family attended at the Childsmile clinic is low.

> Dental Nurse: "It is a deprived area, there's definitely a need…I don't know if there's anything wrong at this side, I'd be pleased to hear but there's no feedback […] I'd just like to see where these children have went. I would like to see 'there's been 3000 children. 2800 have been seen by a dentist before the age of six months'…to see if that Dental Health Support Worker has been doing her job…"

CMO2. (C): The DHSW would typically communicate with dental practice staff via email, telephone, and occasionally by visiting the practice. PDS staff prefer face to face communication with the DHSW. (M): Informality and richness of communication (O1): Dental practice staff can provide person-centred care. (O2): Dental practical staff feel connected to Childsmile.

> Dental Nurse: "…you get a bond and a wee bit of friendship and it's a bit more personal…you can discuss things more generally about a family. [DHSWs] can give you wee insights […] that's what Childsmile's about, letting us know the brother's going to nursery…we ask Mum 'how did he get on?' and its building that kind of friendship rather than being clinical."

> **Domain 8. Key learning**
>
> Regular face to face communication with PHNs/HVs and dental practice staff, facilitates person-centred care and improves stakeholder buy-in to Childsmile. Poor engagement from dental practices can be attributed to the perception that the cost of engaging with Childsmile outweighs the benefits. Resultant variation in delivery of CS between dental practices places a strain on PDS practices because DHSWs are inclined to refer families here. Poor communication between Childsmile and dental practices impacts on stakeholder confidence in the programme and practices ability to deliver person-centred care.

6.4.4.6 Domain 9. Wider Context

MRT 26: Delivery of Childsmile Practice over a prolonged period of time period facilitates stakeholder buy-in.

CMO1. (C): Childsmile Practice was piloted in the west of Scotland NHS boards in 2006, and Practice has been delivered within this NHS board for ten years. **(M)**: Stakeholders perceive the programme to be working. **(O1)**: Childsmile is embedded into PHN/HV and dental services. **(O2)**: Stakeholders buy-in to the programme.

> **Coordinator** : "…we were at quite a mature stage…a sort of maintenance phase…quite a few of the problems dissipated the longer the [dental] practices had been involved…"

MRT 27: Delivery of Childsmile Practice over prolonged period of time has hindered evolution of the DHSW role.

CMO1. (C): Childsmile Practice has been delivered for ten years in this NHS board. Childsmile Practice has a relatively stable model of delivery with predominantly positive stakeholder buy-in. **(M)**: An attitude of 'why fix something that isn't broken' prevails among stakeholders. **(O)**: Evolution of the DHSW role is hindered.

> **Coordinator:** "...[we] have had quite a stable model for quite some time. I'm sort of hearing that other boards have changed sometimes...we were maybe starting to reap the benefits of being quite stable...maybe some of the downsides as well, that staff become complacent..."

MRT 28. Scotland's cultural norms present a barrier to DHSWs encouraging uptake of POHPBs.

CMO1. (C): Scotland has an embedded 'sweetie culture'. **(M):** Consumption of sugared snacks and drinks are a social norm. **(O):** DHSWs have difficulty encouraging uptake of POHPBS.

> **PHN/HV Team Leader:** "We work in a very vulnerable area here...we've got the real hard-core group that won't engage...they don't take a lot of our health messages on, and oral health is not a priority for them."

Domain 9. Key learning

Delivery of Childsmile over a prolonged period of time facilities stakeholder buy-in and has embedded the programme into existing healthcare services. Consequently the DHSW role has not evolved because the programme is perceived to be working. Scotland's cultural norms are a barrier to DHSWs encouraging uptake of POHPBs.

6.4.3 Case Study 3: Overview

This section provides an overview of case study 3. This section identifies the participants included within the case and where they are based, and summarises local delivery of the role.

Figure 6.8 provides an overview of the participants and where they are situated within case study 3.
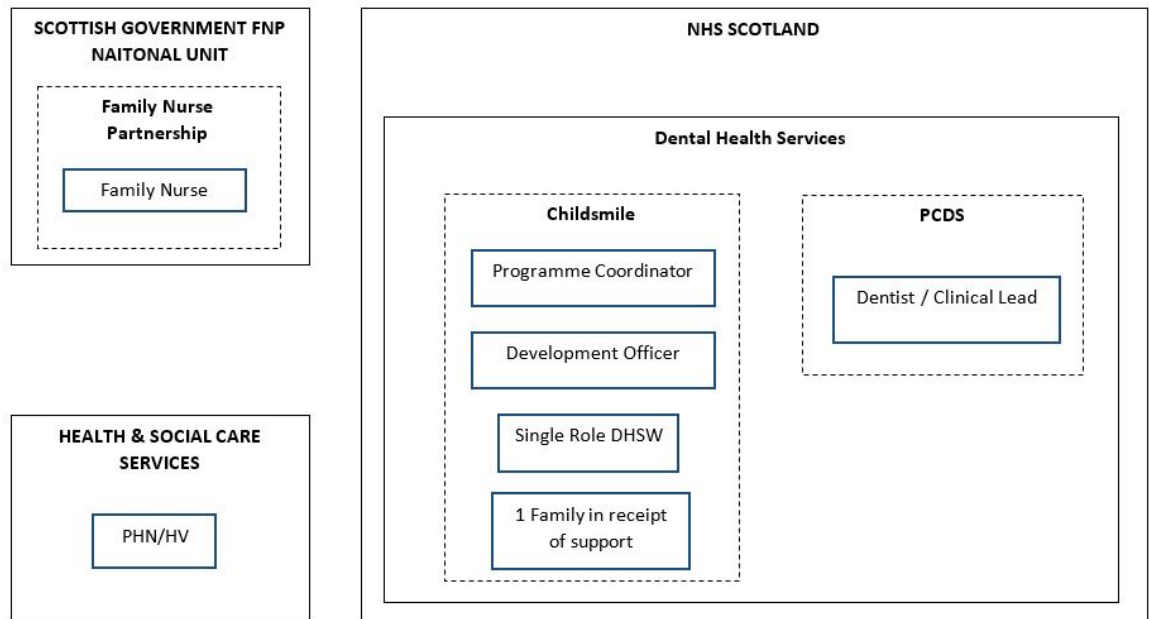
Figure 6:8: Case study 3

Characteristics influencing delivery of the role within case study 3 are:

- **Geographical characteristics of the NHS board**: The NHS board consists of rural and urban localities within the east of Scotland.

- **Where DHSWs are based within the NHS board**: DHSWs are based within dental health services and share an office with the Coordinator, who line manages DHSWs.

- **Components of Childsmile DHSWs deliver**: DHSW has been in post since 2012 and delivers a single role of Practice.

- **Referrals to the DHSW**: DHSWs receive targeted referrals from PHNs/HVs.

A summary of delivery of the DHSW role within case study 3 is provided.

6.4.4.7 Delivery of the DHSW Role

Childsmile Practice has been delivered within the NHS board since 2009 however the home visiting element of Practice commenced in 2012. PHNs/HVs carry out

universal assessment of a child's oral health needs during the six-eight week health assessment and the criteria outlined in the Childsmile programme manual. PHNs/HVs will also apply these criteria to families who have recently moved to the area and to older siblings. School nurses and DHSWs delivering Nursery and School can also refer families to the DHSW for support. All referrals are made to the DHSW using a local referral form.

On receipt of referral, DHSWs will deliberately delay contact until the child is approximately four-six months old. Families are sent a letter confirming the date and time of the home visit. DHSWs deliver one home visit, lasting approximately 20 minutes, where they deliver diet and tooth brushing advice, provide free resources, and register the child with a dentist. An acclimatisation clinic is also offered to parents who suffer from anxiety attending a dental practice.

If a referred Childsmile family FTAs a dental appointment on two occasions, the dental practice will refer the family to the DHSW for support. DHSWs contact families to establish why they failed the appointment, and they will offer support if required and offer a new appointment.

6.4.5 Case Study 3: Findings

This section presents the MRTs, accompanying CMOs, and key learning across the nine domains for case study 3.

6.4.5.1 Domain 1. DHSWs' Skills and Training

MRT 1. **Childsmile training does not prepare DHSWs in how to deliver the role.**

CMO1. As seen in case study 1 (Section 6.4.2.1).

> DHSW: "I do sometimes think that [training] seems generic…it is a bit like information overload and then you go out to your home visits and it's like 'oh ok, right what am I saying here?' It's taken me three years probably for the confidence to know that what I'm saying is right. Yeah I think more practical [training] would help."

MRT 2: **The Transtheoretical Model enables DHSWs to identify parents' motivational readiness to engage with POHPBs.**

CMO1. As seen in case study 1 (Section 6.4.2.1).

Domain 1. Key learning

Childsmile training is primarily theoretical and does not prepare DHSWs on the practical aspects of the role therefore DHSWs are left unsure how to deliver home visits and rely on shadowing or learning on the job. DHSWs are provided with instruction on a theory of behaviour change therefore they can identify parents' motivational readiness to engage with POHPBs.

6.4.5.2 Domain 2. Characteristics of the DHSW

MRT 3. Personality traits and interpersonal skills are indicators of the right person for the DHSW role.

CMO1. (C): DHSWs can be taught how to deliver the role via training however they need to possess a diverse range of personality traits and interpersonal skills including: being approachable, naturally gregarious and empathic, being able to read people, and demonstrate empathy. **(M)**: DHSWs socio-emotional skills. **(O)**: Parents engage with the DHSW and are receptive to oral health messages.

> **Coordinator**: "…they have to have excellent communication skills…emotional intelligence. If you can't read someone's body language sitting in front of you then you could be talking to the wall…they have to be able to read the situation and say 'OK, this isn't working, we need to change it up and see what else we can do' […] there's no point going in po-faced, stern, not interacting: that's not helpful. Because parents are already thinking 'oh my god why are you even here?' And if you're not relaxed enough and confident enough to be like 'how are you? This wee one's a wee cutie' and have those skill sets, then you're not the right person."

Domain 2. Key learning

Interpersonal skills and personality traits facilities engagement with families and promotes the peer element of the DHSW role

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6.4.5.3 Domain 3. Where DHSWs are based

MRT 4: Situating DHSWs alongside one another facilitates peer support.

CMO1. (C): All DHSWs and Coordinators are employed by dental health services and based within one shared office. **(M)**: The DHSW feels supported in all aspects of the role. **(O1)**: DHSWs gain peer support from one another. **(O2)**: Management support is easily accessible.

> **Coordinator**: "…it would be better if [DHSWs] came back to base at night and the four of them could talk to each other and support each other, rather than be isolated […] I've overheard the Dental Health Support Workers saying it's good to come back, and just talk about their cases that day and maybe how somebody else dealt with it…"

MRT 5. Situating DHSWs within the community develops stakeholder buy-in to the Childsmile programme.

CMO1. (C): At the time of data collection, one DHSW [the case study unit of enquiry] has been moved from the shared office to a community health centre, although still continues to be line managed by the Coordinator. The community health centre has a GP clinic and a dental practice, and is the work base for PHNs/HVs and Family Nurses. The DHSW covers two large rural localities and has moved to this base to reduce her time spent travelling between the office and home visits. **(M)**: Ease of access to the DHSW. **(O1)**: DHSW relationship with stakeholders improves. **(O2)**: Referral rates increase and quality of referrals improve.

> **DHSW**: "…when I've been over there and I've seen [stakeholders] in the staff room at lunch time they're like 'Oh, can I ask you about this?'…so already its building up a better working relationship […] You become more of a colleague […] also at [the health centre] is the Family Nurse Team and they deal with teenage mums, so I think we'll be able to link in more with them, building a bridge there as well."

Domain 3. Key learning

DHSWs have opportunities for peer support by being based alongside one another which improves confidence in delivery of the role. Situating DHSWs within the community also develops stakeholder buy-in and improves quality of referrals.

6.4.3.1 Domain 4. Components of Childsmile that DHSWs deliver

MRT 6. A single DHSW role facilitates development of the role.

CMO1. (C): DHSWs deliver a single role of Practice. **(M)**: Practice is DHSWs only priority. **(O1)**: DHSWs have time to develop the role. For example, piloting an acclimatisation clinic, and outreach work within young offender institutes and ante-natal classes.

> **Coordinator**: "So we're starting to redefine the role...going into the prisons to family open days...a lot of them have young families...We are now working with the antenatal classes ...the lead for Women and Children for midwifery, she's asked if we would do some talks, so we're just trying different avenues rather than purely Practice team going into the home."

MRT 7. A single role increases DHSWs capacity to provide social and emotional support to parents.

CMO1. (C). DHSWs deliver a single role of Practice. **(M)**: Practice is DHSWs only priority. **(O)**: DHSWs have more time to spend delivering home visits and providing socio-emotional support in addition to oral health advice.

CMO1a. (C): Single role DHSWs deliver oral health advice and have capacity to provide social and emotional support to parents. **(M)**: DHSWs address parents' internal and external barriers with engagement with POHPBs. **(O)**: Improve uptake of oral health messages and engagement with families.

> **Coordinator**: "...it's about breaking down the barriers of their fears, it's about ensuring that they turn up [at the dental practice]. Finding out what the difficulties are and what they can put in place to support [...] it's more of the emotional support that the families need...the oral health messages, that's just a very small part of it...because they can do that in one visit. It's all the emotional support...that's where I think it's more of a social work role rather than a dental health role."

Domain 4. Key learning

For single role DHSWs, Practice is their priority. This facilitates the community outreach element of the role and improves capacity to social and emotional support to parents.

6.4.3.2 Domain 5. DHSWs' Autonomy

MRT 8. Autonomy enables DHSWs to provide person-centred care.

CMO1. As seen in case study 1 (Section 6.4.2.4).

> **PHN/HV**: "...nobody likes to be told what to do, do they? ...just asking them what they really want...cause it's about empowering people isn't it? Not just saying 'this is what you're gonna do, and this is how you're gonna do it."

CMO1a: (C): DHSW provides person-centred care to families. This involves asking open questions and allowing parents to guide the home visit. **(M)**: Mobilising parents internal resources (e.g. self-efficacy, confidence, motivation). **(O)**: Parents are receptive to oral health messages and uptake of POHPBs is improved.

> **Coordinator**: "...we say 'well why don't you ask the mum what they want? So then you are tailoring it to what the mum wants, not what you want'. Cause the mum might know about tooth decay and you're wasting your opportunity at the home visit...She might say 'Oh I really want to know more about teething' [...] I think if the mums ask you then it is something that they might be willing to undertake."

MRT 9. Counterbalancing autonomy in the DHSW role with support facilitates development of the role.

CMO1. (C): DHSWs are relatively autonomous yet receive support in all aspects of their role from the Coordinator, other DHSWs within the team, and PHNs/HVs. **(M)**: DHSWs feel supported to take responsibility for the role. **(O1)**: DHSWs are confident they are delivering the role correctly. **(O2)**: DHSWs have opportunity to develop their role (e.g. running pilot initiatives, requesting additional training).

> **Coordinator**: "I feel it's important to empower staff to make their own decisions and although I'll be there as a support...I encourage them if they feel they can't answer a question with a family, or anything like that, to come and let us know and we'll find out for them. But I do feel that it's better not to mother staff and let them learn for themselves."

MRT 10. Ongoing monitoring of the DHSW role improves delivery and highlights training gaps.

CMO1. (C): DHSW home visits are shadowed by a senior member of staff twice per year to monitor delivery of the role. (M): DHSWs are aware of how they deliver the role. (O1): Training gaps and areas where delivery needs improvement can be identified. (O2): Management are aware of how DHSWs are delivering their role.

> Coordinator: "We've got competencies in place so [senior staff member] goes out and she will observe, and afterwards go through the competencies with them and say 'right OK you did really well in this area, however with this area you maybe want to think about this'. So that's done twice a year. That was put in place maybe about 6 months ago."

Domain 5. Key learning

Autonomy enables DHSWs to deliver person centred care which encourages parents to take on board oral health advice. DHSWs need to feel supported in their autonomous role in order to feel confident delivering the role.

6.4.5.4 Domain 6. Targeting and Referrals

MRT 11: Applying referral criteria rigidly results in low-risk children being referred to DHSW for support.

CMO1. (C): PHNs/HVs have four criteria they ought to be using to assess oral health needs before referring families to the DHSW (as seen in case study 1, Section 6.4.2.5). Triaging using these criteria should theoretically results in referrals for children who are most at risk of dental caries. (M): PHNs/HVs interpretation of referral criteria. (O): DHSWs receive referrals for families who are already engaging in POHPBs and whose children are at a low-risk of dental caries, but who may still technically meet the referral criteria.

> **DHSW**: "...[PHNs/HVs] they'll say to the parents 'oh is baby registered with the dentist? No, not yet?' but what they really should be saying is 'are *you* registered with a dentist?' because then they say 'I'm registered with a dentist, I've just not registered the wee one yet' [...] [PHNs/HVs] don't realise that yeah, maybe the wee one's not registered but if Mum and Dad is registered...they're going to take them..."

MRT 12. Universal referrals enable DHSWs to reach families whose children at a higher risk of dental caries.

CMO1. (C): Local programme theory outlines that DHSWs should be receiving referrals for families who are 'most at risk' of dental caries. However, PHNs/HVs reported that when families were offered a DHSW home visit it was often refused, particularly by high-risk families. PHNs/HVs therefore decided to carry out universal referrals (refer all families) to ensure the high-risk families were seen by the DHSW. **(M)**: Opt-out service. **(O1)**: Referral rates increase. **(O2)**: DHSWs have access to high-risk families. **(O3)**: DHSWs are responsible for triaging and delivering home visits to those most in need of support.

> **PHN/HV**: "We work with a lot of vulnerable families and we were finding that they wouldn't give us a yes or no, or they would say 'oh we'll get back to you' and they never did. So through time the DHSWS were saying that they weren't getting the referrals they hoped...we just routinely referred everybody into the programme [...] we use it almost like a universal service...it's just another thing that happens and people accept it that way...nobody ever questions it..."

MRT13: Electronic referrals (via MIDIS[17]) improve the number and quality of referrals.

CMO1. (C): The Coordinator is in the process of changing how referrals are sent to the DHSW. The plan is that all PHNs/HVs will refer families to the DHSW electronically, via the MIDIS system which contains PHN/HV notes on the family. **(M1)**: DHSWs have access to the same level of knowledge that PHNs/HVs have. **(M2)**: Convenience and speed of referral. **(O1)**: DHSWs will have more information about families and their needs. **(O2)**: The number of referrals will increase.

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[17] As seen in case study 1 (Section 6.4.2.5).

> **Coordinator**: "...referrals are very vague and that's down to the fact that [PHNs/HVs] don't have the time to write long pieces [...] the [DHSWs] would get the referral in and there would be very little information on it, and then [they] would spend the time trying to chase up the health visitors to get more information. Whereas now we will have access to full notes on MIDIS...it's going to give them a greater knowledge of actually what's going on...that should make a huge difference."

Domain 6. Key learning

PHNs/HVs interpretation of the referral criteria often results in referrals for low-risk families who do not need oral health support. PHNs/HVs who operate with universal referrals do so to ensure DHSWs have access to high-risk families. Referrals will soon be made via the MIDIS system which will provide DHSWs with more information about families.

6.4.5.5 Domain 7. Nature of DHSW Support

MRT 14. DHSWs do not have capacity or the skills to provide long-term behaviour change support to unmotivated parents.

CMO1. **(C)**: Local programme theory outlines that DHSWs do have the capacity to support behaviour change, but this is only with motivated families who want to adopt POHPBs. **(M)**: DHSW skillset. **(O)**: DHSWs do not have capacity to provide long-term behaviour change support to parents who are not motivated to adopt POHPBs.

> **Coordinator**: "...we're working very hard to focus on [behaviour change] and doing the prep work [...] but if you're needing more than say, 3 visits, then [DHSWs] might not be the person that's the most appropriate [...] they don't do cognitive behavioural therapy or anything like that..."

MRT 15. Early intervention improves parental engagement with POHPBs.

CMO1. **(C)**: DHSWs aim to visit families when the child is aged between three and five months. **(M)**: Information is relevant. **(O1)**: Parents are prepared for

oral health parenting behaviours. **(O2)**: Parents are reassured (useful for first time or young parents) in adopting and engaging with POHPBs.

> **DHSW**: "Sometimes I kind of buy time…if they're only like 2 months, I wait. I wait till they're maybe about 3, coming up for 4 [months], before I go out because I think [parents] take the messages in better when the babies are ready for that change. So if you go in too early they're not thinking about that, they're just thinking 'I've just had my baby and I'm trying to feed her never mind think about her teeth'…"

CMO1a. (C): Parents are prepared for oral health parenting behaviours before they need to be adopted. **(M)**: Enhances parent's perceived locus of control and self-efficacy. **(O1)**: Tooth brushing routines are established. **(O2)**: Compliance with oral health behaviours is improved.

> **Principal Researcher**: "Can you talk me through the resources you bring and how you use them?"

> **DHSW**: "…tooth brushing pack…just say to Mum 'as soon as the teeth come through, start brushing right away'. Cause a lot of them think 'oh well once all their teeth come through we'll start brushing' but that can take up to age two, and then as you start brushing at age two the kids are like 'I'm no having any of this'.

MRT 16. Multiple home visits reinforce oral health messages and encourage uptake of POHPBs.

CMO1: (C): DHSWs have capacity, and are encouraged, to deliver multiple visits to each family. **(M1)**: Repetition of oral health messages. **(M2)**: Flexibility in the DHSW role. **(O1)**: Supports early uptake of POHPBs. **(O2)**: Facilitates person-centred care and relationship-building with parents.

> **DHSW**: "I'd say the majority of them is one visit, some of them will [get] two and three, it just again it depends on the family and if they'll allow you to […] I do think sometimes more than one home visit to each family would be better for them."

CMO2. (C): DHSWs deliver multiple home visits to families who are motivated to change and if there is an identified oral health need. For example, parents want to learn correct tooth brushing technique. **(M)**: Guided by parent's motivation to change. **(O1)**: DHSW delivers multiple visits to motivated families only. **(O2)**: DHSW does not deliver multiple visits to unmotivated families.

> **DHSW**: "I think, again, it depends on how the family are...if they are engaging [...] there is families who are more vulnerable who really need the help. I've got a family just now that I've been out to three times and I've supported them at the dental practice...we're trying to target the kids and the parents to get them brushing as soon as the teeth come through. So you need to spend time with them.

MRT 17. Person-centred care encourages uptake of POHPBs.

CMO1. (C): The DHSW tailors the oral health messages to each family. These are normally tailored to the age of the child and their current habits. **(M1)** The DHSW addresses families' individual needs. **(M2)**: Oral health messages are perceived to be relevant. **(M3)**: Oral health messages are perceived to be manageable and realistic. **(O)**: Parents are receptive to the oral health messages.

CMO1a. (C): Oral health messages are tailored to each family to ensure they are manageable and realistic for their needs. **(M)**: Oral health messages are perceived by parents as easy to adopt. **(O)**: Parents locus of control to engage with POHPBs is improved.

> **DHSW**: "...in an ideal world you'd like to say 'no its water and milk only' but you can't preach to them, so saying 'if they *are* getting diluting [juice], tiny wee bit and once they're in to that, the straw'... You have to be realistic and tailor it to them and if they are taking two drinks out of their family's day and having it at meal times, then you've made a change..."

MRT 18. Free Childsmile resources facilitate parental engagement with the DHSW, and engagement with POHPBs.

CMO1. (C): DHSWs have a variety of Childsmile resources which are provided to families during home visits depending on the age of the child and their development. For example a 'Tommee Tippee' drinking cup (Figure 6.9) is provided to infants to wean them off the bottle. **(M1)**: Grabs parent's attention. **(M2)**: Facilitates parental engagement with DSHW. **(O1)**: Guides the conversation onto oral health advice. **(O1)**: Facilitates parents' engagement with POHPBs.

> **DHSW:** "...giving them freebies and they love it, It's like 'oh that's fab!' and the fact that they're getting a Tommee Tippee cup. That's letting you bring into the conversation 'right milk and water is best, the longer you leave off introducing juice' things like that. So they're quite good conversation starters...it kind of breaks the ice..."

Figure 6:9: Childsmile 'Tommee Tippee drinking cup'

MRT 19. DHSW-led acclimatisation clinics address the psychological barriers to children attending the dental practice.

CMO1. (C): The DHSW had the idea to develop an acclimatisation clinic for families with psychological barriers (e.g. fear, anxiety) to attending the dental practice, and she has received support from stakeholders to pilot this programme within her locality. This clinic is offered to families with the aim of familiarising them with the dental clinic, and preparing them for what to expect at an appointment. **(M1)**: Removes fear of the unknown. **(M2)**: Parents feel supported and in control. **(O1)**: Parents know what to expect from dental appointments. **(O2)**: Parents are more at ease in the dental clinic environment. **(O3)**: Parents are likely to attend the dental practice.

> **Coordinator**: "...it's the parents that are really so nervous and they're actually passing this fear on to the kids...the mum in particular, had never been in a practice in 20 years because she's so frightened [...] the [DHSW] had spoken to the GDP first of all to say, this is the history, this is the background, this is the work we've done so far to get her here, so no sudden noise...the GDP could not believe that we'd got this woman in the door."

Domain 7. Key learning

DHSWs do not have the capacity or the skills to provide long term behaviour change support to parents who are not motivated to adopt POHPBs. Early intervention ensures information is relevant and parents are prepared for oral health parenting behaviours. DHSWs have capacity to deliver multiple visits however these are only delivered to low-moderate risk parents. Person-centred care encourages uptake of POHPBS and improves parental locus of control. Provision of free oral health resources is a useful for encouraging engagement with CS and POHPBS. Addressing psychological barriers to attendance at the dental practice can be achieved by acclimatising families to the clinic setting.

6.4.5.6 Domain 8. DHSWs' Relationship with Stakeholders

MRT 20. Face to face communication between DHSWs and stakeholders encourages stakeholder buy-in to the programme.

CMO1. (C): DHSWs are encouraged to engage in face to face communication with dental practice staff and PHNs/HVs. The DHSW achieves this by visiting dental practices to drop off resources on a twice-yearly basis, and by regularly visiting PHN/HV offices to collect referrals. Since one DHSW moved to a health centre, she can engage in daily face to face communication with PHNs/HVs, GPs, dental practice staff, and Family Nurses. **(M1)**: DHSW is a visible presence. **(M2)**: Ease of access. **(O1)**: Stakeholders feel connected to Childsmile. **(O2)**: Quality of communication between stakeholders is improved.

> **Dentist**: "...face to face contact is a good thing, just getting to know somebody, put a face to the name or a face to the voice at the end of the phone call."

MRT 21. Poor engagement from dental practice staff with regards to delivering Childsmile treatments is attributed to ingrained habits.

CMO1. (C): Childsmile treatments include FVA, tooth brushing instruction, and dietary advice. Childsmile treatments are included within the SDR[18] however not all dental practices are delivering these treatments. **(M)**: Delivery of dental treatment is habitual. **(O1)**: Dentists find it difficult to change how they treat patients. **(O2)**: Poor continuity of care across the health board.

> **Dentist**: "...any change, even small change, is often difficult to do just simply because you're so used to doing a process in a particular way...at the start it would have been an effort because, you know 'oh I've not remembered to do the [fluoride varnish], oh right yeah sit back down in the chair'...but the same could be said for anything, if I had to change the way I was doing a filling because somebody came along and said 'right well you can't do this you have to do it a different way' I would struggle initially because I'm so used to doing it for such a long period...it's kind of ingrained..."

Domain 8. Key learning

Regular face to face communication with PHNs/HVs and dental practice staff, can facilitate person-centred care and improve the quality of communication. Poor engagement from dental practices may be attributed to ingrained habits and can impact on continuity of care.

6.4.5.7 Domain 9. Wider Context

MRT 22: Term-time contracts limit capacity in the DHSW role.

CMO1. (C): DHSWs are on term-time contracts therefore they do not work during the school holidays. While this is suitable for the Nursery and School role (because it is delivered within schools and nurseries) it is not necessarily required for the Practice role. However, all new DHSWs coming into post will be put onto a full contract. **(M)**: Delivery of Practice ceases during school holidays.

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[18] Statement of Dental Remuneration (SDR) lists all items of service that NHS dental practices can administer to patients. Dentists will refer to the SDR when treating patients, enter their details on a claim form, to receive payment for the treatment (ISD 2016)

(O1): Referrals build up during the school holidays. **(O2)**: DHSWs have a back-log of referrals after the school holidays.

> Coordinator: "The referrals will be coming in from health visitors during the summer…when the girls came back, they were absolutely swamped…it was like 'oh my god we've got so much to do'…"

MRT 23: Ongoing evaluation and monitoring at a local level improves delivery of the DHSW role.

CMO1. (C): Since the new Coordinator came into post, there has been continued evaluation of the programme and the DHSW role at the local level. This has involved reviewing delivery and outcomes, and adapting programme theory. **(M)**: Finding out what works and why for their health board. **(O1)**: Programme is delivered according to need and to achieve outcomes. **(O2)**: Variation in delivery of the DHSW role from the programme theory.

> Coordinator: "So coming into this team, I'm looking at quality improvement and looking at processes […] I think it's very difficult if you've set up a programme and you're not keeping an eye on how you can develop it and change…it had been set up way back in 2009 and actually the roles have never been reviewed…it's coming in with fresh eyes and a different skill set to look at things and say, 'actually we could do this differently?'"

MRT 24. Changes to the Children and Young People (Scotland) Act (2014) improve dental practice staff buy-in to Childsmile.

CMO1. (C): Amendments to the Children and Young People (Scotland) Act (2014) means practitioners who work with young children, now have to inform the Named Person if they are aware of concerns to the child's health and wellbeing. This act came into effect in August 2016 and directly affects dental practice staff. For example, if dental staff have concerns regarding children who repeatedly FTA treatment appointments, they now have a duty of care to inform the Named Person. **(M)**: Dental staff duty of care is formalised in policy. **(O)**: Dental staff engage with Childsmile and use the DHSW as a resource.

> **Dentist**: "...how the process will work is to be decided [...] at the moment they're trying to work out at the health board how we pass that back, and some kind of main person, probably the Support Worker for Childsmile, will be the first port of call to say 'can you do something because we've tried and we're not getting anywhere, they're not engaging with the process'..."

Domain 9. Key learning

DHSWs term-time contracts results in delivery of Practice ceasing during the school holidays and a backlog of referrals. Ongoing evaluation and monitoring of the DHSW role ensures the programme is responding to need and achieving outcomes, however this does result in adaptation of the role from programme theory at a local level. Recent changes to the Children and Young People (Scotland) Act has formalised dental practice staff duty of care and encouraged their engagement with Childsmile.

6.4.6 Cross-case Analysis

This section presents the key findings, organised by demi-regularities, identified from across the cases.

Key findings from across the cases are categorised into nine demi-regularities. Demi-regularities are important higher level theories that derive from comparison of MRTs and their associated CMOs. Demi-regularities constitute semi-definitive patterns clearly evident in the data from this qualitative study within the Childsmile programme, but which may be open to qualification and/or debate in other contexts (see Chapter 8). The nine demi-regularities identified from across the cases within the Childsmile programme are discussed.

The MRTs identified from each of the cases can be seen in Appendix 27, while Appendix 28 highlights the MRTs from across the case categorised into their respective demi-regularities.

6.4.3.3 DHSW Training

The first demi-regularity is that: *Theory-based Childsmile training programme does not equip DHSWs with the practical strategies to parents to engage with POHPBs.*

Across the cases, findings indicated that the theoretical emphasis of Childsmile training for the DHSW role ensured DHSWs had a sound understanding of the background to the programme and the wider public health concern of dental caries. However, Childsmile training does not equip DHSWs with practical strategies for delivering support to parents. Therefore DHSWs rely on work-based shadowing and peer learning to develop strategies to use within their role.

Shadowing and peer learning appears to increase DHSWs confidence and mentally prepares them for the realities of the role. Yet shadowing is not a formalised training strategy, nor does it appear to be monitored by NHS Education for Scotland or the Coordinator, thus there are concerns as to whether the learning derived is suitable for addressing programme aims. DHSWs may be adopting strategies which are not aligned with programme theory or which inhibit effectiveness of the role.

6.4.3.4 Where DHSWs are based within the NHS Board

The second demi-regularity is that: Where the DHSW is based within the NHS board and whom they are line managed by can influence the extent to which the role is delivered as intended.

Findings indicated that where DHSWs are based in the organisation can impact on the extent to which the role is delivered as intended: this was a key point of variation uncovered across the cases. DHSWs from case study 2 are based within PHN/HV offices and they are line managed by the PHN/HV Team Leader: a setup which has been in place since Practice was piloted within the NHS board 10 years ago. Case study 2 findings demonstrated that, over time, Childsmile and the DHSW role has seamlessly integrated into PHN/HV services: PHNs/HVs understand the role and use DHSWs as a resource, and communication between stakeholders is positive and informal. Furthermore, DHSWs feel supported by the PHNs/HVs and perceive delivery of their role to be relatively simple because of

PHN/HV buy-in. However, a key concern is the extent to which delivery of the role can be monitored if DHSWs are not based with the Coordinator; and as seen in case study 2, whether the feedback loop between Childsmile, PHN/HV services, and dental practice staff can remain intact.

Case study 3 demonstrates that ongoing monitoring of delivery and performance facilitates evolution of the DHSW role. Findings demonstrate that such evolution can shift the DHSW role away from one which is focused solely on information provision to one which incorporates socio-emotional support, and community outreach and engagement. Expanding the scope of the role in this manner within the NHS board has facilitated embedding of the programme and the DHSW role into the community across a wider range of disciplines, despite the fact that the role is relatively new to this NHS board. Furthermore, such lateral evolution of the role may overcome barriers with progression in the role and improve DHSWs capacity to address cognitions (both factors which have been highlighted as barrier to delivery across the cases).

Case study findings suggested that without regular monitoring of delivery and performance deviation from the intended model may go unchecked and ultimately impact negatively on programme outcomes. This is evident from case study 2 whereby the DHSW perceives the intended model delivery to be universal referrals and universal home visits: which contradicts the Coordinator's description. Yet, DHSWs delivery of the role in this manner has continued unchecked. While stakeholders within this NHS board praise their stable model of delivery, there appears to be an embedded mentality of 'why fix something that isn't broken' which hinders evolution of the DHSW role. Simply put: the DHSW role has not evolved since the programme was rolled out within the NHS board 10 years prior.

The findings, from across the cases, highlighted that situating DHSWs alongside one another provides opportunities for shared experiences and peer support. Given the concerns raised regarding training failing to prepare DHSWs for the practical aspects of the role, peer support increases DHSWs confidence in delivery.

6.4.6.1 Organisational Context of Childsmile

The third demi-regularity is that: *The DHSW role can function successfully in a single or dual capacity but is dependent on local delivery and organisational factors.*

For DHSWs who deliver a single role, Childsmile Practice is their sole priority and with this increased capacity there is scope for the role to be developed over and above what is outlined in programme theory. This is evidenced within case study 3 where due to the increased capacity from the single role the DHSW can provide socio-emotional support to parents and is supported to pilot initiatives to improve engagement with POHPBs. Evolution of the DHSW role in such a manner facilitates a model of delivery which is tailored to the needs and context of the NHS board, and may contribute towards achieving intended programme outcomes.

However, a dual role *can* function successfully. Case study 1 demonstrated that a dual role is considered to be a cost-effective method of delivery within rural and island NHS boards which encompass large geographical areas but have a relatively small population. While DHSWs in these localities will cover large distances to deliver the dual role they will have relatively fewer Practice referrals, and Nursery and School establishments. Equally, as seen in case studies 1 and 2, the dual role appears to promote continuity of care across the integrated Childsmile programme; the dual role serves to present the DHSW as a community figure because DHSWs often deliver Practice home visits, and Nursery and School FVAs to the same children. Furthermore, DHSWs from case studies 1 and 2 report a sense of satisfaction in the role in witnessing families' development and oral health improvement.

The primary concern with a dual role is capacity, which is influenced by two factors: the FVA HEAT targets, and universal referrals and delivery.

In order to achieve FVA HEAT targets dual role DHSWs have been required to prioritise Nursery and School duties. The resulting backlog of Practice referrals, as seen in case study 2, often means DHSWs do not deliver Practice home visits for a prolonged period of time. Consequently, rather than visiting families when

the child is three-five months old, home visits in case study 2 were occurring as late as one year old. This notion of Nursery and School taking priority over Practice is a finding which was reported in the early process evaluation (CERT and CS RRTs, 2011) and appears to be consistent barrier to delivery of role across the two dual role cases.

Universal referrals and delivery, as also evidenced in case study 2 (and to a lesser extent in case study 1) reduces the dual role DHSWs' capacity to deliver multiple visits to families, and impacts on the length of home visits. Case study 2 findings highlighted that even with families who are engaging and interested in adopting POHPBS and who would be categorised as being most in need of support, home visits were lasting as little as 10-15 minutes.

The barriers to delivery of the role on account of the dual role can be mediated by autonomy and a targeted method of delivery. Autonomy provides DHSWs with flexibility to deliver the role according to need and concentrate effort to where it needed most. Yet when comparing autonomy across cases, it is apparent that autonomy and flexibility in the role is difficult to achieve within a dual role. Nevertheless, autonomy must be counterbalanced by adequate training in order to prepare DHSWs for the role, and ongoing support and monitoring to ensure the role is being delivered as intended.

6.4.6.2 The Right Child for DHSW Support

The fourth demi-regularity is that: *The triage and referral process does not always target the right children for DHSW support.*

6.4.3.5 *Right Child for Programme Aims versus DHSWs' Capacity*

In order to determine the optimal method of referring, and consequently the optimal method of supporting families, a distinction must be made regarding who the right child for DHSW support is in terms of DHSW capacity and achieving programme aims. Due to the variation in delivery and definitions and perceptions across cases as to who precisely the right child for DHSW support is, a distinction is not easily made. For example, terminology across the cases included: 'families in need of support', 'vulnerable families', and 'needy' or

'core' families. As stakeholders do not easily explain these definitions it is difficult to interpret precisely what these terms mean.

As identified in Chapter 1, poor oral health and low engagement with POHPBs is disproportionately higher among SIMD 1 and 2 families. With this in mind and in terms of addressing programme aims, directing DHSW support towards SIMD 1 and 2 families could contribute towards reducing inequalities in oral health and in dental practice attendance.

Findings indicate that DHSWs do not have capacity to support parents who are not motivated to engage with POHPBs and these are typically families whose children are at a heightened risk of dental caries. Indeed, DHSWs across the cases report difficulty in even gaining *access* to these families. Instead, DHSWs are equipped to support motivated families only. These findings raise questions as to whether supporting low-risk families who are already engaging in POHPBs, is an effective use of the DHSW role and their time.

6.4.3.6 Referrals

There is variation across the cases in relation to the referral methods adopted for Childsmile Practice. Case studies 1 and 3 both use the six-eight week health assessment in addition to a bespoke local form; while case study 2 solely relies on the PHN/HV birth book to generate referrals.

Case study 2 demonstrated that referrals generated via the birth book eliminate the triaging and targeting element because PHNs/HVs are eliminated from the referral process. While there is scope for targeted home visits, by assessing oral health needs via a telephone consultation (which according to the Coordinator is the intended model of delivery), this is not currently being carried out. Instead, DHSWs are delivering oral health support via home visits to *all* families with a new-born child. Such deviation from the local programme theory could be attributed to DHSWs differential understanding of programme aims. It was demonstrated that the DHSW from case study 2 believed that universal home visiting *was* the programme theory, and the fact that delivery of the role has not been questioned has reinforced this assumption. Furthermore, due to a poor feedback loop between the PHN/HV Team Leader and Childsmile (potentially

attributed to the Coordinator leaving post and the post remaining unfilled for a period of time), delivery of the role in this manner is left unchecked.

6.4.3.7 Triaging

Case studies 1 and 3 confirmed that PHNs/HVs assess families' needs using the following four criteria, outlined in the Childsmile programme manual:

1. The family is not registered with a dental practice.

2. The family do not attend a dental practice for ongoing preventative care.

3. The parents and/or child's siblings have a history of symptomatic dental care and attendance to a dental practice has been promoted by dental problems or pain.

4. Professional judgement leads PHNs/HVs to believe oral health support would be beneficial.

These four criteria should theoretically result in referrals for families who are not engaging, or who require assistance to engage, with POHPBs. Yet in cases 1 and 3 DHSWs continue to receive referrals for families who are already engaging in POHPBs. This phenomenon could be attributed to subjective nature of the referral criteria and/or PHNs/HVs applying criteria incorrectly due to poor understanding regarding who the right child is.

DHSWs within case studies 1 and 3 suggested that some PHNs/HVs were referring first-time parents at the six-eight week health assessment who had not yet registered their child with a dental practice even when there was nothing to indicate that the family was in need of oral health support. DHSWs thus argued that while parents may not have registered the infant with a dental practice there is often evidence to suggest they will do in due course (e.g. the parents are registered with and regularly attend a dental practice). DHSWs suggest a 'common-sense' approach should be adopted when applying referral criteria in order to reduce the number of referrals being received for families who are engaging with POHPBs and who arguably do not need DHSW support.

In instances where referrals are received for families who are engaging with POHPBs, the dual role DHSW from case study 2 attempted to triage the family to determine whether or not they do require support. Yet as case study 1 illustrates, DHSW triaging is not always effective because of the minimal information DHSWs hold on family's needs. Triaging is often achieved by simply asking parents whether they want the support or not, and uptake is likely to be among low-risk motivated families. The forthcoming move to electronic referrals via MIDIS may provide DHSWs with access to the same level of information about families that PHNs/HVs hold. Therefore DHSWs would have capacity to determine family's needs and deliver home visits only to the right child.

Delivering home visits to appropriate families is a concern for DHSWs capacity to support the right child. This was highlighted in case study 1 whereby travelling long distances within rural localities can take up a significant portion of DHSWs available time.

While universal home visits may enable the DHSW to facilitate all families into a dental practice it is not a necessary strategy for achieving this outcome. Cases 1 and 3 demonstrate that attendance at PHN/HV-led baby clinics is a useful method for achieving this outcome. While attending baby clinics is deviating from programme theory, DHSWs capacity to support the right child is improved because they have a low-input strategy for supporting those low-risk families, who are engaging with POHPBs, who are being referred. Furthermore, it was evidenced across the cases that delivering home visits to low-risk families is an enjoyable experience for DHSWs because parents are receptive to oral health advice.

6.4.3.8 'Freebies' and Visual Aids

The fifth demi-regularity is that*: The use of visual aids to deliver oral health advice and the provision of free oral health resources facilitates parental engagement with the DHSW and POHPBs.*

Childsmile oral health resources and visual aids are key strategies for delivery of oral health advice. 'Freebies', such as tooth brushing packs, were used across all cases to encourage parents to engage with the DHSW and POHPBs.

Visual aids were used predominantly within case study 1, and served to grab parents attention and enable DHSWs to deliver (often complicated) oral health advice in a relatively easy to understand manner. Visual information (such as the sugar bags) aids retention and later recall because parents have a relatable image in their mind. Across the cases, free resources were used to naturally guide the conversation towards oral health advice, and this particularly evident within case studies and 1 and 3 whereby DHSWs actively engaged in general, off-topic, small talk with parents.

6.4.3.9 Person-centred Support

The sixth demi-regularity is that: *Person-centred support, tailored to the needs and circumstances of parents and which address cognitions, improves uptake of POHPBs.*

Across the cases, DHSWs tailored oral health advice according to the age of the child and based on current oral health behaviours they were either advised of in advance or had witnessed first-hand. Yet there is poor continuity across the cases regarding tailoring oral health advice over and above this information, and in most cases oral health advice was generic.

It was evident that unless parents engaged in a two-way conversation with the DHSW, DHSWs delivered generic oral health advice rather than ask open questions to establish current behaviours or routines. This may be attributed to the length of time spent within the home or DHSWs are not mindful of how they are delivering the visits. Yet it appears to be strongly linked to parental motivation and DHSWs capacity to support families who are not motivated to engage with POHPBs or DHSW support.

The strategies that DHSWs employed to support parents was shown to vary across the cases. Such variation could be attributed to DHSWs learning the practical application of the role via shadowing and peer support within their NHS boards as opposed to national Childsmile training. However, cases 1 and 3 highlighted the following strategies were useful for mobilising parents' internal resources, in that they addressed parental cognitions surrounding the behaviour:

- Encouraging small changes.

- Providing praise and encouragement for existing behaviours.

- Explaining the reasoning behind recommended oral health advice.

Findings indicate that such strategies encourage parents to continue engaging with POHPBs, even in light of barriers. Additionally, parental self-efficacy and perceived locus of control is improved. Yet, these outcomes were typically only seen among motivated parents. In contrast, the DHSW from case study 2 adopted a more didactic, and information and advice approach.

6.4.3.10   Early Intervention and Multiple Visits

The seventh demi-regularity is that: *delivering an early intervention and multiple visits to families addresses and pre-empts the barriers to engagement with POHPBs.*

DHSWs within cases 1 and 2 delivered home visits when the child was approximately three months old, as specified in programme theory. Yet in case study 3, the DHSW deliberately delayed home visits until the child was five months in order to ensure the information was perceived by the parents as relevant. This DHSW believed that delivering tooth brushing or dietary advice to parents of children as young as three months could hinder uptake of POHPBs because the advice is not deemed perceived by parents to be relevant to their child (at that point), and there are concerns surrounding retention and later recall of information.

Across the cases, multiple home visits to each family were not conducted. While DHSWs capacity is indeed restricted by a dual role, fundamentally dual role DHSWs *do* have capacity to deliver multiple home visits, yet it rarely occurs. This could be explained by DHSWs capacity being further restricted by referrals for families who do not necessarily require support, and by delivering universal home visits: as evidenced across the cases.

Equally, DHSWs perception of what constitutes success in the role, and the extent to which delivery is monitored, ought to be considered in relation to

impact on multiple visits delivered. Case study 2 demonstrated that the single visit was influenced by the DHSWs' belief she must facilitate families into a dental practice on the first visit and there was an underlying concern that she will not gain access to the home again: therefore all oral health advice was delivered in one visit. Indeed, only motivated parents were likely to accept or request a repeat visit when offered. However one would expect multiple visits of a longer duration to be characteristic of home support.

6.4.6.3 Peer-ness of the DHSW Role

The eighth demi-regularity is: *The DHSW role is positively affected by peer-ness-shared characteristics with parents.*

Across the cases the findings indicated that a shared commonality with parents positively influences the extent to which parents engage with the DHSW. All DHSWs from the three cases were parents and in one case, a grandparent. DHSWs would frequently draw on and refer to their experiences of being a parent in relation to POHPBs when delivering oral health advice. Such a strategy enabled DHSWs to deliver advice in a non-didactic manner. Furthermore, this served to present the DHSW as a peer rather than a professional which improved parental engagement. Across the cases, stakeholders agreed that successful delivery of the role was dependent on hiring the 'right person' and personality traits appeared to be key indicators of who was best suited for the role.

6.4.6.4 The Wider Context

The final demi-regularity is that: *Wider social and environmental factors and stakeholder buy-in can influence delivery of the role*.

6.4.3.11   Social and Environmental Factors

Across the cases, various social and environmental factors were reported to impact on the extent to which parents can engage with POHPBs. Case study 1 reported a key barrier for parents living within many rural highland and island localities is access to shops. Poor transport links and inaccessibility of out of town shops means parents' perceived locus of control to engage with some

POHPBS is reduced because there is limited availability of fresh food or low sugar/sugar free food within their local shops.

6.4.3.12   *Embedding of Childsmile within the NHS Board*

Across the cases, it is evident that delivery over a prolonged period of time has served to embed the programme within the NHS board. This is thought to be attributed to the embedding of Childsmile into the Early Years Pathway and GIRFEC policy, and the recent changes to the Children and Young Person Act (Scotland) Act (2014): each of which formalise stakeholders' duty of care and encourage them to engage with Childsmile.

Nevertheless, there exists variation across the cases as to the extent to which stakeholders appear to be bought-in to the programme and consequently, the extent to which stakeholders engage with Childsmile and the DHSW. This variation is found predominantly across dental practices, and on an ad-hoc basis within the cases, among PHNs/HVs.

Across the cases, in comparison to GDS practices, PDS practices are more engaged with delivering Childsmile treatments and communicating with the DHSW. Consequently, there is variation in how Childsmile is delivered between dental practices and across the cases, and mixed messages are often delivered to families. For example, there are reports across the cases that not all dental practices are advising parent's that children can receive two additional FVAs per year, in addition to those they may receive via Nursery and School. Furthermore, it is reported that many practices are misinforming parents about FVA because it is allegedly not a cost effective treatment for them to carry out.

Findings across the cases indicated poor uptake from GDS practices could be attributed to dental staff perceiving the costs of engaging with Childsmile to outweigh the benefits. While case study 3 highlighted that variation in delivery was attributed to dental staff fighting against habits developing from years of training and practice.

In comparison to communication with PHNs/HVs, face to face communication between DHSWs and dental practice staff was relatively weak across the cases.

In the instance of case study 2 this could be attributed to a breakdown in communication between PHN/HV Team Leader regarding the DSHWs extended leave of absence. However across cases, it may be attributed to the fact that the outreach element of the DHSW role has not been developed in the same capacity with dental practice staff, as it has with PHNs/HVs.

6.4.4 Key Learning

The overarching guiding question for a realist inquiry is "what works, for whom, and in what context?" (Pawson & Tilley, 1997). The identification of multiple generative, explanatory mechanisms in this Chapter has intended to shed light on this compound higher level question while providing detailed evidence in many specific areas of delivery to inform the programme in future.

There are several potential answers to these questions at different levels: The MRTs cover specific strategies tailored to particular families, covering a range of 'what works' at the communicative, motivational, and practical level. Yet we also see higher level MRTs which stress the organisational context: the 'what works' discussion has provided evidence on training contexts, dual and single role DHSWs etc. Finally the embedding of Childsmile in wider issues such as the Early Years Pathway can lead to Realist understanding at that level.

It is difficult to answer the compound Realist question across multiple case study contexts and research domains, driven by the wide ranging sensitising study, in a few short summary statements. However the demi-regularities have suggested that:

- DHSW training is effective to an extent however it lacks a practical element for most DHSWs.

- Triaging and referrals are complex, varied, and do not always target the children that the programme aims to support.

- There is a lack of clarity surrounding who the right child is for DHSW support.

- DHSWs tailor to family need and the intervention is notably person-centred. However, ability to tailor can be limited by resource constraints.

- The peer-ness of DHSWs contributes to positive parental engagement with the programme.

- The programme success is not immune to, or independent from, wider contextual policy issues.

The wider literature on such interventions will now be examined employing a Realist methodology to examine whether: the findings (demi-regularities) are reflected across different programme contexts; and whether there is evidence for effectiveness in other contexts that might also provide learning for future programme theory and development.

6.5 Chapter Summary

This chapter presented the aims, methods, and findings of the comparative case studies undertaken to gain a more in-depth understanding of the factors and variants (contextual and those associated with programme delivery) identified during the sensitising study which impact on the effectiveness of the DHSW role within Childsmile Practice. Chapter 7 presents the aims, methods, and findings for the third study designed to derive learning from out with Childsmile via a realist review of child health interventions, delivered by LHWs, to parents.

Chapter 7 Phase 2: Realist Review

This realist review is the third of three studies to address the overarching aims of the thesis. This chapter presents the aims, research questions, methods, and findings of a Realist systematic literature review of child health interventions delivered by lay health workers to parents aimed at influencing child health parenting behaviours. This research provides learning from out with the Childsmile programme.

7.1 Overarching Aims

The overarching aim of this review was to identify which components of lay health worker (LHW) child health interventions, delivered to parents, influence child health parenting behaviours. This phase of research aimed to provide learning from out with the Childsmile programme to complement the findings of the previous two chapters.

7.2 Research Questions

The research questions for the review were:

1. Which specific components[19] of child health interventions, delivered by LHWs to parents, cause the intervention to succeed or fail?

2. For whom are child health interventions, delivered by LHWs to parents, successful and/or unsuccessful?

3. Which contexts facilitate success for child health interventions delivered by LHWs to parents?

Child health parenting behaviours in this study include those which might indirectly impact on a child's health, for example attending a dental practice, while parents were defined as the primary care-givers (e.g. biological, foster, adoptive parents, guardians).

7.3 Design

This study was designed as a conventional realist review using the protocol developed by Jagosh et al (2011), and guided by publication standards for realist synthesis (Wong, Greenhalgh, et al., 2013) and realist synthesis training materials (Wong, Westhorp, et al., 2013).

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[19] Components can include, but are not limited to: the design of the intervention, the characteristics of the LHW, and strategies of support.

7.3.1 Overview of Realist Reviews

A realist review is a theory-based approach to synthesising data whereby programme theories are the unit of analysis, and the aim is to test and produce a refined programme theory (Wong, Westhorp, et al., 2013).

Programme theories are the underlying assumptions as to why a programme or intervention does or does not work. Within Realist research, programme theories are named 'mid-range theory' (MRT) to reflect that the programme theory is abstract to the extent that it can be applied across various settings, yet close enough to the data to derive testable hypothesis (Jagosh et al., 2011; Wong, Westhorp, et al., 2013).

7.3.2 Comparison to Traditional Systematic Reviews

In contrast to the traditional systematic literature review it could be argued that the realist review provides a greater depth of information regarding why an intervention does or does work. This is achieved by deconstructing programmes down to their individual components and focusing on the mechanisms embedded within the programme, rather than solely the outcomes (Pawson et al., 2004). Consequently, such an approach enables the researcher to determine: how and why the programme succeeds or fails, for whom the programme works, and in what context the programme will be successful.

While a traditional systematic review is effective in establishing a definitive answer as to whether an intervention is successful or not, a realist review does not attempt to produce a final say on the matter (Nilsson, Baxter, Butler, & McAlpine, 2015). This is primarily because context is considered to be infinite, and human behaviour and reasoning are not entirely predictable. Therefore, an intervention may be successful within one context and for one group of individuals yet equally it may fail within another. It is for this reason that traditional systematic reviews are arguably more suited to clinical interventions and treatments whereby processes and outcomes typically arise in a linear fashion. While Realist approaches are considered best suited for evaluating complex health and social interventions whereby outcomes arise in a non-linear

fashion, and where multiple human interactions and decisions occur across multiple settings (Jagosh et al., 2013; Pawson et al., 2004).

7.3.3 Rationale for Realist Review

For the purposes of this research it was imperative to adopt an evaluation strategy which would provide learning from *out with* the Childsmile programme, and ensure the learning derived could provide a resource for those developing the DHSW role in Childsmile Practice in the future. The realist review facilitated exploration of various interventions which share some similar characteristics to the DHSW intervention within Childsmile Practice. Consequently, causal relationships between context, delivery, and outcomes could be identified that might be compared with learning from within the programme and used to derive areas for future development (see Chapter 8).

7.4 Methods

This section outlines the methods involved in developing the literature search strategy for the realist review.

A realist review does not accept methodological hierarchy and instead acknowledges the merit in triangulating evidence from multiple sources (e.g. qualitative, quantitative, grey literature, randomised controlled trials) (Pawson et al., 2004). With this in mind, and following an informal scoping of the literature, it was anticipated that the literature surrounding LHW delivered interventions would be diverse and fragmented. Thus a dual search strategy of a librarian-guided literature search and hand-searching of literature was employed to maximise the quality and quantity of data collected.

The development of the search strategy is now described.

7.4.1.1 Developing the Search Strategy

The search strategy was developed by the principal researcher with guidance from a research librarian, and three members of the PhD supervisory team: henceforth collectively referred to as the review team.

Developing the search strategy began with identifying key concepts from within the research domains, then identifying key words to reflect these concepts. These concepts and key words are illustrated in Table 7.1. Initially the concept of LHWs was not included within the search strategy.

Table 7.1: Key words and concepts for developing the search strategy

Concepts	Key Words
Health	Health, Health outcomes, Health care, Physical health, Health knowledge, Illness, Health behaviour, Health attitudes, Sickness, Morbidity, Mortality, Public Health, Health Inequalities, Health disparities, Wellness, Wellbeing
Intervention	Therapy, Planning, Behaviour change, Program, Intervention, Strategy, Training, Support, Group based, Community health, Health promotion, Evaluation, Trial, RCT, Education, Prevention, Improvement, Home visits, Policy, Guidance, Communication, Health visit, Phone support, Counselling, Home training, Tailored, Personalised, Individualised
Parent	Parents, step-parents, mother, father, caregiver
Children	Baby, Babies, Post-partum, New-born, Child, Childhood, Children, Pre-School, Infancy, Infant, Toddler, Teenager, Teen, Adolescent

By working closely with the research librarian over a prolonged period of time and using an frequentative approach, the key words outlined Table 7.1 were used to develop search terms which would achieve optimal coverage across the databases. The search terms were tested across five databases (Medline, Embase, PychINFO, CINAHL, and Cochrane) selected to capture literature within medical, psychological and social science disciplines. Where possible, searches were limited to children aged birth to 18 years.

The first test search produced 28,494 sources.

7.4.1.2 Incorporating LHWs into the search Strategy

Due to the volume and range of sources produced in the test search the concept of LHWs was introduced to the search terms (Appendix 30). The search terms were tested across the five databases and where possible, limited to children aged birth to 18 years.

The search, now including the concept of LHWs, produced 256 sources.

7.4.1.3 Incorporating non-health interventions into the search strategy

Following review of the output from the previous test search, the question was raised as to whether non-health interventions may also answer the research question. As realist reviews focus on programme theories as opposed to interventions it was reasonable to suppose that social and educational interventions, aimed at children but also delivered to parents, may be as equally relevant to the research questions as health interventions. Therefore the concept of non-health related interventions (i.e. social or educational interventions) were incorporated into the search strategy.

Two additional databases (ERIC and Web of Science) were incorporated to capture the research question across educational and social science disciplines. The search terms can be seen in Appendix 31. Where possible, searches were limited to children aged birth to 18 years. The search produced 2,335 sources.

Ten papers from this output were selected at random and reviewed by the principal researcher and the review team. Upon review, it was concluded that by expanding the search strategy to incorporate social and educational interventions, the context of home visits and LHWs (important concepts for the review) were lost.

It was agreed among the review team that in order to integrate findings from the comparative case studies and the realist review to form applicable programme theory to feedback to the programme, interventions included within the review ought to mirror the DHSW role within Childsmile Practice as closely as possible.

The research question and search strategy was amended to focus solely on child health interventions, delivered to parents by a LHW, which were designed to improve or change children's physical health. Refinement of the research question during the search strategy is a typical component of a realist review (Pawson et al., 2004).

7.4.1.4 Literature Searching

The literature searching, screening, and appraisal process as outlined in Figure 7.1 is now described.
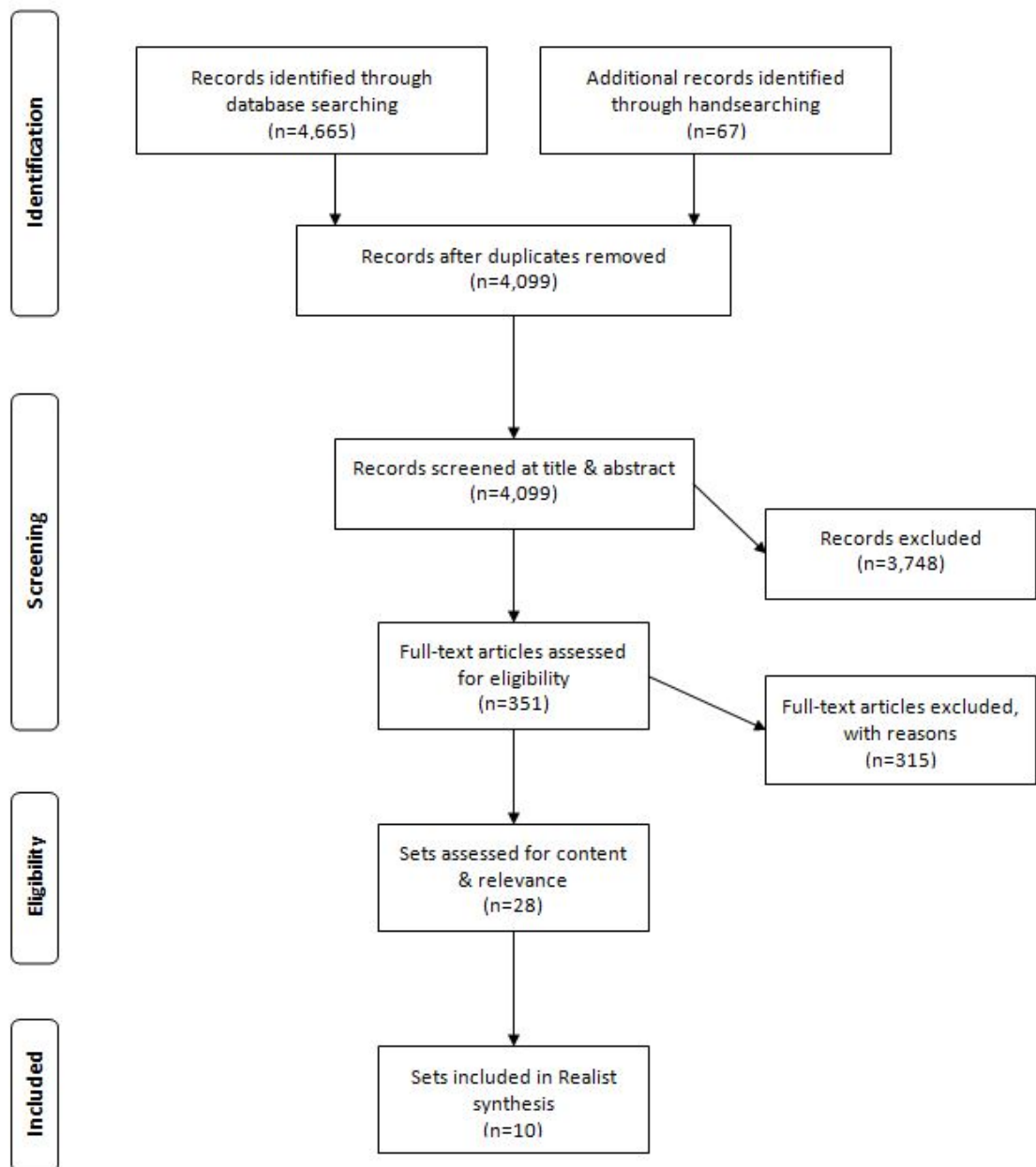
Figure 7:1: Literature Search and Screening Process

7.4.1.5 Librarian-guided literature search

The librarian-guided literature search was carried out in September 2015.

The search strategy was designed to capture literature from across medical, social science, and psychology disciplines. Search terms, reflecting central concepts to the research question were developed using an iterative approach to achieve optimal coverage across six electronic databases: Medline, Embase, PsychINFO, CINAHL, Cochrane, and Web of Science (Appendix 32).

Free text[20] and 'embedded thesaurus'[21] searches were carried out across the six databases. Where possible, searches were restricted to English language and age parameters of birth to eighteen years[22] were applied. In an effort to incorporate a wide range of interventions, no date restrictions were applied to the searches.

As outlined in Figure 7.1 the librarian guides literature search produced 4,665 sources. 566 duplicates were removed resulting in 4,099 sources for title and abstract screening. The search terms and output for each database can be seen in Appendix 33.

7.4.1.6 Hand-searching literature

Hand-searching literature typically involves manual page-by-page examination of journals to identify all eligible literature in articles, abstracts, columns, editorials, letters, or other text. Such a method can be a useful addition to systematic database searching and can yield additional sources for review (Higgins & Green, 2008).

For the purposes of this study, hand-searching was incorporated into the search strategy with the aim of incorporating (potentially) relevant sources known to the principal researcher, the review team, and the wider multi-disciplinary Community Oral Health team (in which the principal researcher and review team are situated) but which were not retrieved via database searches.

As outlined in Figure 7.1, 67 sources were identified using hand searching; which in addition to those sources identified via the librarian-guided literature search, provided 4,166 sources for screening.

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[20] Free text searches enable the researcher to search for any text, anywhere in the citation

[21] Most electronic databases have embedded controlled vocabulary thesaurus, used for indexing articles. These headings are a set of terms naming descriptors in a hierarchical structure which enable the researcher to search at various levels of specificity

[22] The review aimed to include interventions delivered to children aged 13 years and younger however the age parameters of the databases did not facilitate this restriction. Therefore papers would be screened at title, abstract, and full text phase to exclude those delivered to children out with this age range.

7.4.2 Literature Screening

To assess the eligibility of sources two screening stages were implemented: (1) Abstract and title screening and (2) Full paper screening. Inclusion and exclusion criteria for both screening stages were developed with the intention of selecting interventions with characteristics matching that of the DHSW role within Childsmile Practice (e.g. home visiting, delivery to parents of young children, physical health outcomes).

The inclusion and exclusion criteria for abstract and title, and full paper screening can be seen in Table 7.2. In-keeping with the theoretical underpinning of Realist methodology, no restrictions were placed on the type of study eligible for inclusion (Pawson et al 2004).

Table 7.2: Inclusion and Exclusion Criteria for abstract, title, and full text screening

Inclusion Criteria
1. Interventions designed to change parenting behaviours with respect to children's physical health, safety or injury prevention
2. Immunisation interventions may be included provided it is designed to change parenting behaviours surrounding child immunisation
3. Interventions focused on children aged up to 13 years
4. Interventions whereby an outcome (intended or unintended) is the physical health or physical safety of a child (e.g. bicycle helmet use). The intervention may have additional outcomes (e.g. maternal health, child development)
5. Interventions delivered within the UK
6. Interventions delivered by a LHW directly to parent(s) via a home visit
7. Interventions whereby the LHW is the key individual delivering the intervention
8. All or some components of the intervention must be delivered to parent(s)

post-partum
9. Literature reviews if individual papers meet criteria 1 – 8

Exclusion Criteria

1. delivered out with the UK

2. Interventions which focus on management of a medically diagnosed chronic condition or palliative care (e.g. asthma, diabetes, HIV/AIDS)

3. Interventions which are focused solely on maternal or paternal health and behaviours, not parenting behaviours (e.g. smoking)

4. Interventions focused on child psychological wellbeing, behaviour, development or neglect

5. Intervention is delivered solely by a health professional (e.g. Doctor, Midwife, Nurse, Social Worker, Dental Hygienist or Health Visitor) or those in training for a professional qualification (e.g. medical student)

6. Interventions whereby the LHW has a purely administrative role and dot not deliver the intervention

7. Interventions whereby the LHW is delivering the intervention to their own family only

8. Interventions delivered within an education al setting (e.g. school) and within the home

9. Interventions delivered only during pregnancy

10. Interventions whereby there is no interaction or communication between LHW and parent(s) (e.g. text messages, leaflets)

11. Interventions delivered directly to children only

7.4.2.1 Title and Abstract Screening

The aim of title and abstract screening was to discard sources based on information from the title and/or abstract alone which did not meet the inclusion criteria. Sources which met the exclusion criteria were excluded from the review.

4,166 titles and abstracts were screened by the principal researcher. Three members of the review team each screened one third of the sources (n=1,388). Sources were screened by all with an 'if in doubt, leave it in' mind-set. From this process, 2,820 and 301 sources were agreed excluded and included, respectively. The remaining 1,045 disagreed sources were discussed as a group until a consensus was reached. Only 5% of the disagreed sources were deemed worthy of inclusion. It was agreed that the high rate of disagreed studies was attributed to the principal researcher being more inclusive and 'erring on the side of caution' compared to the other members of the review team.

As seen in Figure 7.1, title and abstract screening produced 351 sources for full source screening.

7.4.2.2 Full source screening

The aim of full source screening was to rule out ambiguity and discard sources based on information from the full text which did not meet the inclusion criteria. Sources which met the exclusion criteria were excluded from the review. In the instances whereby the source was a literature review, all included studies within the review were obtained and screened using the inclusion and exclusion criteria.

351 full sources were screened by the principal researcher. 9% (n=31) of the sources were double-screened by two members of the review team.

As seen in Figure 7.1, full source screening produced 36 sources for inclusion. These 36 sources created 28 'sets' of papers whereby some sources were companion papers for the one study or intervention.

7.4.3 Companion Sources

In order to fairly appraise the interventions it was necessary to retrieve companion papers for the sources in each set for evidential completeness (Jagosh et al., 2011). This was achieved by:

- Reviewing the reference lists for each source.

- Searching an electronic database for papers citing the source and the first author.

- Contacting the authors of each source to confirm if there were additional companion papers (grey or published).

Of the 28 sets of sources, 23 authors were contactable and of those who were contactable, 17 responded to confirm that the principal researcher had the full set or advised of additional sources. In the instances where authors were unable to provide companion papers, these were sought from University of Glasgow library. This process identified 42 additional companion sources for the 28 sets. Despite best effort, only 27 of these sources were retrievable. Although, unlike Jagosh (2011), despite sets not being complete, they were still included for review because it was deemed that incomplete sets could produce relevant information for data synthesis.

As seen in Figure 7.1 the literature search produced 63 individual sources which created 28 sets of papers (Appendix 34).

7.4.4 Content and Relevance Screening

The aim of content and relevance screening was to appraise the sets in terms of their relevance and rigour, and glean whether there was adequate information from each set to conduct a synthesis. The appraisal tool used to screen sources was adapted from Jagosh et al (2011) and consisted of three questions:

1. How much information is provided regarding the setting or context of the intervention?

2. How much information is provided regarding the content and strategies of the intervention (including individuals delivering the intervention and the training they receive)?

3. How much information is provided regarding the outcomes of the intervention?

28 sets were appraised by the principal researcher while 29% (n=8) were double-checked by the review using the appraisal tool (Appendix 35). Sets were scored high, moderate, minimal, or low for each of the three appraisal questions. Only those sets which scored high or moderate on all questions were retained for synthesis. As seen in Figure 7.1, using this process, 10 sets were retained for synthesis (Appendix 36).

7.4.5 Data Synthesis

Detailed information regarding the theoretical underpinnings of Realist research is outlined in Chapter 3. Detailed information regarding Realist analytic theory and definitions of key concepts are outlined in Chapter 6. A summary of the definitions of key concepts of the realist review are outlined in Table 7.3.

Table 7.3: Realist review key concepts (Pawson et al., 2004; Wong, Westhorp, et al., 2013)

Mid-range theory (MRT)	Underlying assumption as to why a programme does or does not work, also known as programme theory. Abstract to the extent it can be applied across settings.
Demi-regularity	Themes which are semi-predictable and to reflect the semi-predictable nature of human behaviour.
CMO configuration (CMO)	Strand of programme theory, known as chain of causation, which outlines the relationship between context, mechanism, and outcome within a programme.
Context (C)	Background or setting of a programme which triggers the mechanism(s). E.g. geographical location, cultural

	and social norms and existing public policy.
Mechanism (M)	The hidden force, rather than a tangible component, of a programme which leads to an outcome of any kind. E.g. cognitive and emotional processes.
Outcome (O)	Any effect from a programme, whether it be intended, unintended, proximal, intermediate or final. E.g. improved physical health.

7.4.5.1 Analytic Strategy

Jagosh et al (2011) and Wong et al (2013) were used to develop a five-step analytic protocol for synthesising the data. A summary of this approach can be seen in Figure 7.2.
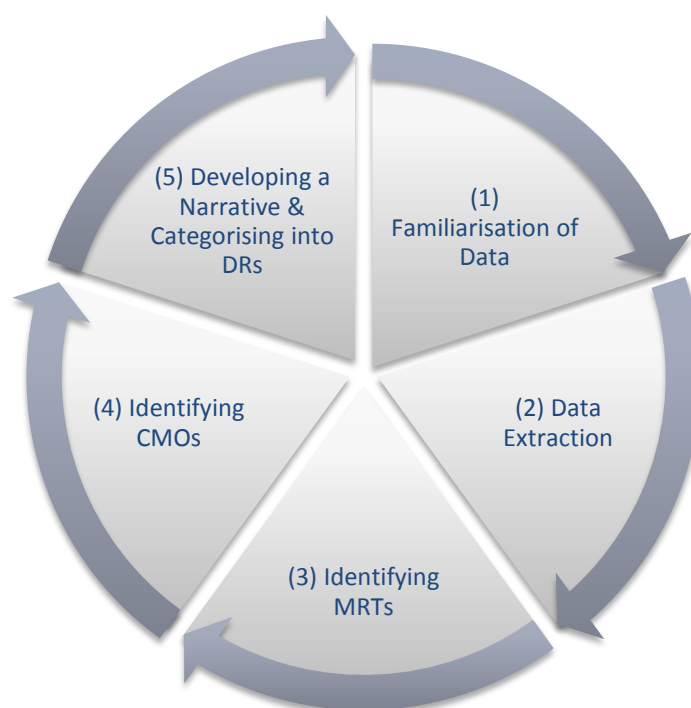
Figure 7:2: Realist review analytic approach

Figure 7.2 illustrates the analytic approach was an iterative process whereby findings were continually reviewed and refined. Steps 1-4 were conducted for

each set before step 5 was conducted across the sets. The analytic strategy is flexible and partly deductive in that it follows conventional overarching questions, however still allows specific concepts and theories to arise. The process outlined in Figure 7.2 was conducted by the principal researcher while the sets were double-checked by two members of the review team. The analytic steps are now discussed in further detail.

1. Familiarisation with the data

Each set of sources were read several times to gain an overall idea of the intervention, and its aims, processes, and outcomes. Notes and summaries were made alongside passages of interest, or where there were descriptions of processes, outcomes, and potential MRTs and CMOS.

2. Data extraction

A data extraction form (Appendix 37) was developed to capture data from each set of sources. All relevant information pertaining to the setting, population group, the targeted health condition, LHWs, the intervention, and outcomes from each set was recorded within the data extraction table. Notes, summaries, and preliminary MRTs and CMOs were recorded alongside.

3. Identifying MRTs

MRTs were identified from the data extraction table of each set. Identification of MRTs involved considering the logic of the intervention, and the processes and outcomes involved. MRTs were reviewed and refined throughout with the research questions in mind.

4. Identifying CMOs

Identifying CMOs from data extraction tables involved considering the underlying mechanisms of the intervention, identifying the effect, and considering the context in which this occurred.

CMOs were grouped under relevant MRTs. CMOs which did not initially fit into an existing MRT were retained, reviewed, and refined and subsequently grouped under the appropriate MRT as the process developed. This element reflects the iterative nature of the analytic approach.

CMOs were reported numerically as CMO1, CMO2, and CMO3 etc. However, CMOs can be fluid and overlapping whereby the outcome of one may be the context of another. In these instances, CMOs were reported as CMO1, CMO1a, and CMO1b to represent the chain of causation (Jagosh et al 2011). Where there was more than one mechanism or outcome within a CMO, they were reported as M1 and M2, or O1 and O2, respectively.

5. **Categorising findings into demi-regularities**

Identifying demi-regularities involved grouping the MRTs and corresponding CMOs, from across the sets, into semi-predictable themes with the research questions in mind. This process facilitated exploration of the relationships between MRTs and CMOs. Relevant data excerpts were selected to illustrate specific points.

7.5 Findings

The realist review findings consist of seven demi-regularities and their corresponding MRTs and CMOs, presented under the three general research questions in terms of appropriateness. Demi-regularities and MRTs from across all sources included within the review can be seen in Appendix 38.

7.5.1 How do Programmes Work?

'How do programmes work' presents the findings in relation to the first research question: which components of child health interventions, delivered by LHWs to parents, cause the intervention to succeed or fail? Three demi-regularities were identified in relation to this question.

7.5.1.1 Strategies of LHW Support

The first demi-regularity from the review evidence is: *Strategies of LHW support that are tailored to need, that draw from community and familial support networks, and that allow for trust to build over time, empower parents to achieve better outcomes.*

MRT 1: Signposting parents to community initiatives for long term support enhances parental self-efficacy and ensures lay health workers do not provide support out with their capacity

CMO1. (C): LHWs are provided with information about the availability of additional resources within the community to signpost parents to various local community initiatives or Health Professionals depending on their needs. These services ranged from health, social, and financial support. For example, mother and toddler groups, Citizens Advice Bureau, and breastfeeding support groups. **(M1)**: LHWs are aware of the limitations of their roles. **(O1)**: LHWs do not support families beyond their capacity. **(M2)**: Enhances parental self-efficacy. **(O2)**: Parents access external support for their long term needs.

> "...many women did not have family around to help...or very limited, experience of young babies. Consequently, they lacked confidence and basic practical knowledge such as how to change a nappy or bath a baby...rather than trying to provide all support herself, after the very early days, she encouraged women to attend community groups and took opportunities to put women in touch with others, for mutual support." **(Set 1. Dykes, 2005 p.39)** [...] [Volunteers] had acquired knowledge about the availability of other resources and support and were aware of the limitations of their role and the need to refer to an appropriate health professional where required." **(Set 5. McInnes, Love, & Stone, 2000 p.66)**

MRT 2: Mobilising external resources sustains motivation and self-efficacy to engage with parenting behaviours.

CMO1. (C): Where possible, LHWS facilitate regular peer support groups with parents, or encourage parents to attend community peer support groups. These may or may not be related to the target child health parenting behaviour, but provided a more general social function. **(M)**: Parents do not feel isolated. **(O)**: Reduces threats to the parenting behaviour.

CMO1a. (C): Attending community support group can reduce threats to parenting behaviours. **(M1)**: Shared experiences with other like-minded parents. **(M2)**: Normalises the parenting behaviour. **(O)**: Sustains positive parenting behaviours.

> "...the 'Babes' co-ran a weekly drop-in breastfeeding support group [...] the number of mothers attending the group increased from three per week in May to 10 per week by September [...] the most important aspects of the group identified by more than 75% of [mothers] were...talking about and seeing breastfeeding happen, getting consistent advice and increased confidence in breastfeeding. The remaining aspects were more social including making new friends and being to talk about other problems [...] 'The support of the breastfeeding group gave me confidence to carry on breastfeeding much longer than I would have done without it'." **(Set 2. Ingram, Rosser, & Jackson, 2005 p.115)**

CMO2. (C): LHWs provide information to additional family members when possible. **(M)**: Mobilising parents' external resources. **(O)**: Increased confidence, skills, and beliefs.

> "Family members were provided with information and support at the antenatal classes, via the phone and/or during the home visits. This extended support often secured enthusiasm and skills to help women breastfeed: 'They did do a section on breastfeeding... [Partner] came away from that completely sold on it. He doesn't normally bother reading things...he was adamant that was what we were going to try and do. He has been amazing' [...] the peer supporters mobilised [mothers] resources (breastfeeding support) to ensure the women had sufficient personal resources to continue breastfeeding [...] This dedicated support service for breastfeeding women was often perceived to have strengthened the women's personal resources through enhancing their confidence, skills and self-beliefs." **(Set. 10. Thomson, Dykes, Hurley, & Hoddinott, 2012a p.348)**

MRT 3: Person centred support, tailored to the needs and circumstances of parents, improves uptake of positive parenting behaviours.

CMO1. (C): Within the target area of London where a breastfeeding intervention was delivered, current community midwifery services provided antenatal and postnatal care. This care primarily consisted of non-tailored, generic information focusing on the benefits of breastfeeding. **(M1)**: Midwifery care is didactic and idealist. **(M2)**: Information is difficult to relate to. **Outcome**: Midwifery care does not directly address the individual personal, physical, emotional, and cognitive barriers regarding engaging with child health parenting behaviours.

> "Information may be provided in a theoretical, rather than person centred or experiential form, and professionals may assume that their clients lack information about the benefits of health behaviours [...] '[I] feel the pressure to breastfeed exclusively of 'NCT style' of breastfeeding Nazi's approach actually puts a lot of women off – surely some feeding is better than none?' " **(Set 1. Beake, McCourt, Rowan, & Taylor, 2005 p.40-42)**

CMO2. (C): LHWs deliver support to mothers over an extended period of time. Within breastfeeding interventions, this is typically throughout the perinatal period and in some cases, even longer. **(M1):** Parents experience continuity of care from one LHW. **(M2):** Peers get to know mothers, their circumstances, their background, and their values and beliefs. **(O):** LHWs can determine individual needs and begin to provide person-centred care, tailored to parent's circumstances.

> "Star Buddies has been fundamentally operationalised as a needs-based rather than service-constrained programme of support. Open and repeated contacts meant that individually determined plans and strategies could be renegotiated to facilitate prolonged breastfeeding [...] The in-depth nature of the relationships forged between the supporters and women led to in-depth insider knowledge of women's lives...these relationships encouraged dialogues around sensitive issues, enabling targeting and authentic support to be provided [...] 'I was so frightened and worried about getting mastitis because that had always stopped me...She would phone me to make sure that everything was all right and I was not in pain or anything and if I was worried about anything, she would come and see me...' (Kayla)" **(Set 10. Thomson, Crossland, & Dykes, 2012b p.352-347; Thomson et al., 2012a p.10):**

MRT 4: Socio-emotional support activates parents' internal resources, such as confidence and motivation, to encourage engagement with the positive parenting behaviour.

CMO1. (C): LHWs praised and encouraged parents for their engagement with positive parenting behaviours. **(M):** Positively reinforces behaviour and activates parents' internal resources. **(O):** Parents are determined to continue with child health parenting behaviours.

> "One mother commenced that she looked forward to the Infant Feeding Advisor's visit each month, and liked being praised for the way she weaned her child." (Set 9. S. Smith & Randhawa, 2006 p.52)

CMO2. Context: LHWs also praise and encourage parents who had *ceased* engaging in the intended child health parenting behaviour (e.g. breastfeeding). **Mechanism**: Protects parents' self-worth. **Outcome**: Parents retain hope and motivation to engage with the behaviour in the future.

> "The supporters also provided praise to those who had discontinued breastfeeding...this acknowledgment protected women's self-worth and re-established their hope for future infant-feeding expectations: 'She [Star Buddy] never made me feel once like I was letting him down or anything...I know next time round, if there was a next time, that one hundred million percent I would be breastfeeding and I will carry it on, because I would be in a better place and obviously because I know, I have done it before. (Christine)." **(Set 10. Thomson et al., 2012b p.350)**

MRT 5: Reliance on LHW socio-emotional support can lead to parents failing to mobilise internal resources resulting in increased risk of physical morbidity and mental illness.

CMO1. (C): The transition to parenthood is as a major life event in which women can experience physical morbidity, fatigue and feel psychologically overwhelmed which put her at a greater risk of postnatal depression. Adapting to motherhood can be mediated by support. LHWs assist mothers in caring for the new-born and offer socio-emotional and practical support for personal care. **(M)**: Reliance on LHW. **(O1)**: Parents become passive and do not mobilise their internal and external resources. **(O2)**: Unwanted outcomes (e.g. physical morbidity and mental illness).

> "...the support induced a passive response instead of improving patients' coping skills...women in the control group quickly mobilised their available support...for women in the intervention group, the support workers presence may have disrupted this mobilisation of support and coping mechanisms, so that at six weeks they were coping less well than women in the control group." **(Set 6. Morrell, Spiby, Stewart, Walters, & Morgan, 2000a p.597)**

MRT 6: Face to face contact between LHW and parents, and delivering support within the family home, facilitates discussion of sensitive topics.

CMO1. (C1): LHW support is delivered face to face. **(C2)**: LHW support is delivered within the family home. **(M1)**: LHW and parent develop a rapport.

(M2): Parents relax in their own environment. (M3): Privacy. (O): Facilitates discussion of sensitive topics.

> "...face to face support appeared to be more effective than strategies that relied on telephone contact." (Set 2. Ingram et al., 2005 p.112)

> "The peer supporters considered that regular face to face access to women...enabled a more meaningful and connected relationship to be forged [...] the trust in their peer supporters lead women to seek out their opinion on personal or family issues." (Set 10. Thomson et al., 2012a p. 8-9)

7.5.1.2 The Peer-ness of the LHW Role

The second demi-regularity from the review evidence under this question is: *Shared experience and commonality with the target families facilitates success in the LHW roles.*

MRT 7: LHWs with shared experiences to parents, are seen as 'one of them' which facilitates parental engagement with the programme and person centred care.

CMO1. (C): LHWs are matched to parents they support based on their socio-economic background. (M): Parents perceive LHWs to be 'one of them'. (O1): Parents engage with the LHW. (O2): Positive impact on health and health-related behaviours, particularly during times of stress.

> "Evidence suggests that social support has a more positive effect on health or health-related behaviours, especially in times of stress, if it is provided by individuals of the same sex, age, ethnicity and socio-economic background, or by people who have shared similar life experiences." (Set 8. R. G. Watt, McGlone, Russell, Tull, & Dowler, 2006 p.715)

CMO2. (C): LHWs may not have shared experiences with target population (e.g. breastfeeding or being a parent). (M1): Parents are suspicious of LHWs with little or no personal experience with the child health parenting behaviour. (O1): Parents are not receptive to LHW support. (M2): LHWs cannot relate their personal experience to parents. (O2): LHWs offer impersonal, generic information only.

> "...professionals, who were seen by some women as too dogmatic or unrealistic. The following quotes illustrate the strength of feeling among women about the negative potential of didactic, impersonal approach: 'it's all very well saying you must breastfeed...but they don't know, they haven't done it' (Miranda-twins). 'My gut feeling is that sadly the vast majority of professionals offering advice to new mothers on breastfeeding, have no experience of breastfeeding themselves, and this creates a confusing discrepancy between advice offered and the realities of the experience'." **(Set 1. Beake et al., 2005 p.8-9)**

MRT 8: Recruiting LHWs from within the community bridged the gap between health services and families.

CMO1. (C): Rates of engagement with positive health behaviours are poor within socially disadvantaged areas i.e. breastfeeding, attendance at dental practice. **(M):** Parents have a negative perception or experiences with health professionals. **(O):** Less likely to voluntarily engage with health services or health professionals.

> "Women in socially disadvantaged areas are often reluctant to ask for help..." **(Set 2. Ingram et al., 2005 p.117)**

CMO2. (C): Recruiting LHWs from within the local communities where the programme will be delivered.

(M1): LHWs understand cultural norms and realities of life within the community (e.g. they 'speak the same language'). **(O1):** LHWs can relate to parents and offer person-centred care.

(M2): Parents perceive LHWs to be part of the community as well as part of the health service. **(O2):** Bridges the gap between services and families, parents engage with the service.

(M3): Social support is embedded within the community. **(O3):** Facilitates informal or off-duty support.

(M4): Mobilising internal and external resources (e.g. confidence and skills) of local parents/LHWs. **(O4):** Positive impact on career and employment prospects.

> "There was a consensus amongst staff that the local experience and background of [LHWs] had proved, as anticipated by most managers, to be beneficial in bridging cultural gaps. One [LHW] illustrated this point: 'We've a common ground, we're fae the same area, we aw use the same shops, we aw have the same kind of housing…we have the same problems that they've probably encountered, so they can relate to you'se…whereas somebody that's not from the area would say 'oh right' but they don't really know. But we know.'" **(Set 4. Mackenzie, 2006 p.527)**

CMO3: **(C)**: LHWs are deliberately employed to engage with families whom they share community experience with, but are not personally acquainted with. **(M)**: LHWs maintain objectivity in their role. **(O1)**: LHW role does not cross over into friendship. **(O2)**: Maintains confidentiality.

> "Matching volunteers with mothers required careful consideration of needs and circumstances of both parties. To assure confidentiality and maintain appropriate boundaries, volunteers were not matched with any mothers who lived in their immediate vicinity or who they knew directly or through friends." **(Set 8. R. G. Watt et al., 2006 p.718)**

MRT 9: Recruiting LHWs with shared linguistic and ethnic background improves ethnic communities' access to health information.

CMO1. **(C)**: Health professionals who are meeting with clients who do not share the same language often use interpreters. Many South Asian communities' mother tongues do not have written form and family members may not speak English. **(M)**: Difficult for health professional to develop a rapport with client. **(O)**: Reduces opportunity to learn family's needs and offer person-centred care.

CMO2. **(C)**: LHWs delivering child health intervention share similar linguistic and ethnic background as the families they are supporting. Health information and support can be delivered in parents' mother tongue. **(M1)**: Parents are reassured LHWs can understand them, and their religious and cultural beliefs. **(O1)**: Parents can follow the information and understanding of information is improved. **(M2)**: LHWs intuitively understand families' religious and cultural beliefs. **(O2)**: LHWs provide person-centred care.

> "The importance of rapport and relationship between client and caregiver was fundamental to offering support and advice that was personal and sensitive to the individuals situation […] The parents responses in this small study appear to indicate that one of the

benefits of employing feeding advisors who are empathetic and knowledgeable about the culture, as well as possessing the relevant language skills, is more effective exchange of health information and improved dialogue between client and practitioner." (Set 9. S. Smith & Randhawa, 2006 p.49-52)

7.5.1.3 Preparing to Deliver the LHW Role

The final demi-regularity from the review evidence for this question is: *Practical, needs based training and peer worker support facilitates better provision through the role.*

MRT 10: Practical-based training improves LHWs confidence and encourages LHWs to draw on personal experiences to support parents.

CMO1. (C): Training involving role play and participative training exercises to practise listening and advice-giving skills. **(M1):** LHWs know how to deliver the role. **(O1):** LHWs experience a smooth transition from training to delivery. **(M2):** Enables LHWs to draw on experiences to provide support. **(O2):** Facilitates shared experiences, and socio-emotional support, rather than factual knowledge alone.

> "The training programme focused very much on developing practical communication skills to deliver empathic support and encouragement. This was achieved through the use of role play and participative training exercises." **(Set 8. R. G. Watt et al., 2006 p.720)**

CMO2. (C): LHWs are provided with training updates and/or encouraged to attend seminars/study days/regular meetings to refresh knowledge and maintain skills. **(M):** Boosts LHW self-esteem and confidence in their abilities. **(O):** Maintains LHW enthusiasm in the role.

> "The helpers were also encouraged to attend seminars and study days to improve their breastfeeding knowledge and skills" **(Set 5. McInnes & Stone, 2001 p.69)**

CMO3. (C): Feature of training included LHWs reflecting upon their experiences of parenting and infant feeding and considering ways mothers can be supported. **(M):** LHWs put themselves in other people's shoes and draw on their own experiences. **(O):** Facilitates empathy and person-centred care.

> "Star Buddies shared their own and others' experiences of breastfeeding, providing breastfeeding women with a range of goal-directed thoughts and strategies. One of the mothers whose child required medical treatment explained: 'she [Star Buddy] had this with one of her children herself and she was saying…don't fret about it, so it was another Mum to talk to. It was nice in that respect really. She was happy to share her experiences.' (Jocelyn)" **(Set 10. Thomson et al., 2012b p.346)**

MRT 11: Evaluating LHW training enables the programme to determine whether it is fit for purpose.

CMO1. (C): Training was evaluated using pre and post-training quizzes which were designed to assess LHWs reported confidence and knowledge. **(M):** Assesses relevance and practically and evaluates the suitability of training. **(O):** The evaluation of training demonstrated significant changes in peers knowledge and confidence to provide support to mothers.

> "Questionnaires were given to the 'Babes' at the start of their training and again after the last session…they rated their knowledge about breastfeeding and ability to support others [...] the initial training significantly increased their knowledge about breastfeeding and their confidence in talking to others (Wilcoxon, p, 0.05), the two main areas in which they showed a lack of confidence before training." **(Set 2. Ingram et al., 2005 p.112-113)**

MRT 12: Dedicated Coordinator or Mentor role identifies training needs and improves LHW confidence to deliver the role, and maintains enthusiasm and commitment to the role.

CMO1. (C): A dedicated Coordinator or Mentor, who is mindful of LHWs background, needs and skills, is available to support LHWs. Some also carry out performance monitoring. **(M):** LHWs feel they have a 'safety net' of support. **(O1):** Maintains LHWs internal resources: confidence, contentment, enthusiasm for the role. **(O2):** Training needs can be identified

CMO2. (C) LHWs have access to regular support meetings with Coordinator and other LHWs during working hours where they can share experiences as a group. **(M):** LHW feel socially supported and do not feel isolated. **(O1):** Maintains LHW enthusiasm and commitment to the role and retention of volunteers.

> "...to maintain a social support intervention, it is essential that volunteers are provided with ongoing support and encouragement. Without this, retention of volunteers becomes a major challenge. In this project a dedicated volunteer co-ordinator was appointed to perform this task [...] excellent interpersonal and organisational skills are essential to perform these tasks well. Dealing emphatically with volunteer queries takes a considerable amount of time and skill." **(Set 8. R. G. Watt et al., 2006 p.718-720)**

MRT 13: Opportunities for peer support among LHWs facilitate shared learning and reinforces LHWs perception of value.

CMO1. (C): LHWs have a single community base. **(M1)**: LHWs are embedded within the community. **(O1)**: Reinforces LHWs identity and sense of value. **(M2)**: LHWs do not feel isolated or cut-off from the programme. **(O2)**: Facilitates LHW support and shared learning.

> "...the lay volunteers did indeed develop a collective identify that was strongly rooted in the local community, as reflected by their renting of office premises..." **(Set 5. McInnes et al., 2000 p.143)**

CMO2. (C): LHWs deliver support in pairs. Pairing is changed frequently to give helpers an opportunity to work with one another. **(M1)**: LHWs feel safe. **(O1)**: LHWs feel confident delivering the role. **(M2)**: LHWs have opportunity to share learning. **(O2)**: LHWs have a repertoire drawn from shared learning.

> "The helpers worked in pairs to ensure personal safety and to provide each other with support needed when working in an unfamiliar environment. The pairing of helpers was changed every second month to give them the opportunity to work with each other." **(Set 5. McInnes & Stone, 2001 p.67)**

7.5.2 For whom do Programmes Work?

'For whom for programmes work' presents the findings in relation to the second research question: for whom are child health interventions, delivered by LHWs to parents, successful and/or unsuccessful? One demi-regularity was identified in relation to this question.

7.5.2.1 Motivated Parents

The demi-regularity in this regard identified from the review evidence is:

Parental motivation is key to success and can be intrinsic or extrinsic

MRT 14: LHWs often find themselves supporting parents who are already motivated to engage with the child health parenting behaviour.

CMO1. (C): Parents refer themselves to the programme, LHW or stakeholder for support. LHWs will not receive referrals for unmotivated or parents or parents who are not confident asking for help. **(M):** Parent is motivated to engage with parenting behaviour, and confident requesting support. **(O):** The self-selecting parents may not be those in need of most support.

> "Initially it was planned that midwives would refer women for support, using a simple pro-forma, either ante-natally or postnatally. This did not prove effective in practice and a form of Support Worker/maternal self-referral was developed [...] the Support Worker made an introductory visit to all new mothers in the area...if the woman wanted additional support, further visits would be arranged, taking the woman's desire as the cue." **(Set 1. Beake et al., 2005 p.38)**

CMO2. (C): LHWs provide support to parents who are already engaging with the parenting behaviour i.e. breastfeeding. **(M):** Parental motivation and self-efficacy already high. **(O):** LHW support is not directed where it might be needed more.

> "Peers supporters had little or no contact with women in hospital, so that only hospital midwives helped mothers in both groups, to initiate breastfeeding. Mothers still breastfeeding on return from the hospital would be contacted..." **(Set 7. Muirhead, Butcher, Rankin, & Munley, 2006 p.193)**

CMO3. (C): LHWs facilitate or signpost parents to local support groups. **(M):** Uptake is voluntary, depending upon motivation. **(O):** Only parents who are motivated to engage with behaviour and/or support group will use the service.

> "...one of the outcomes of the Star Buddies service is to encourage and/or accompany a woman to a breastfeeding group (p.349) [...] Peer supporters reported that the number of women accessing the breastfeeding support groups increased over the incentive

programme." **(Set 10. Thomson et al., 2012b p.349; Thomson et al., 2012a p.8)**

CMO4. (C): LHWs adopt motivational interviewing when supporting parents. **(M)**: Parents do not feel ostracised or criticised for their parenting choices. **(O)**: LHWs can identify parent's stage of motivational readiness to engage with the behaviour.

> "From discussions with the breastfeeding helpers it became apparent that they employed a form of motivational counselling to identify each mothers' beliefs about breastfeeding and so provide appropriate information. The helpers would ask each mother about her choice of feeding and why she had made that decision then move onto to asking her what she knew about breastfeeding and her feelings about breastfeeding. By doing this, the helpers could identify those who may have been receptive to further information and support, those who knew enough and had sufficient support and those who appeared hostile to the subject." **(Set 5. McInnes & Stone, 2001 p.68)**

MRT 15: Relevant free resources incentivise parents to engage with the LHW and facilitates regular contact.

CMO1. (C): In a weaning intervention, LHWs provide parents with infant feeding cups when children were aged six months old. **(M1)**: Prompts parents to engage with the behaviour. **(M2)**: Free resource. **(O1)**: Increases likelihood of engaging with behaviour, regardless of motivation. **(O2**: Removes financial barriers to engaging with the behaviour (e.g. cannot afford the resources).

> "Core components of weaning intervention: Infant feeding cups given when babies aged six months [...] the use of cups/beakers for drinks other than milk had been encouraged throughout the intervention and with the exception of one child, everyone was using a cup for drinks other than milk." **(Set 9. Beake et al., 2005 p.49-51)**

CMO2. (C): LHWs deliver financial 'gifts' to parents selected based on specific child health parenting issues. **(M)**: The gift is desirable in itself. **(O1)**: Facilitates engagement with LHW. **(O2)**: Allows the relevant parenting issue to be introduced.

> "The incentives were referred to as gifts and were selected through consultation with peer supporters and breastfeeding women...chosen to facilitate targeted discussions about specific breastfeeding issues [...] Details of gifts, order of receipt and rationale: Hot drink/cake

from department store (week 5): To initiate discussions on breastfeeding outside the home" **(Set 10. Thomson et al., 2012a p.4)**

CMO3. (C): Gifts are scheduled to be delivered on a regular weekly basis for eight weeks by LHWs. **(M)**: The gift is desirable in itself. Parents are incentivised to accept ongoing LHW support and adhere to schedule. **(O)**: Facilitates regular home visits to parents and engagement with the LHW.

> "Women participating in the incentive intervention received a mean of 3.3 home visits compared to 0.9 before the incentive intervention. Similarly the mean contact time with peer supporters was considerably higher for the incentive intervention (225minutes) compared to the peer support programme alone (145 minutes)." **(Set 10. Thomson et al., 2012a p.6)**

7.5.3 In What Context do Programmes Work?

'In what context do programmes work' presents the findings in relation to the third research question: which contexts facilitate success for child health interventions, delivered by LHWs to parents? Three demi-regularities were identified in relation to this question.

7.5.3.1 Cultural Norms Influencing Parenting Behaviours

The first demi-regularity in relation to intervention context is: *Social/cultural norms influence engagement with positive child health parenting behaviours by shaping parental values.*

MRT 16: Cultural norms, or perceived cultural norms, influence the extent to which parents engage with child health parenting behaviours.

CMO1. (C): UK cultural norms surrounding child health parenting behaviours, for example bottle feeding rather than breastfeeding. **(M1)**: shapes parental values, beliefs and motivations. **(M2)**: Parents perception of what is 'normal' behaviour **(O)**: Influences the extent to which parents engage with a positive child health parenting behaviour.

> "Peer support programmes are particularly important in areas in which breastfeeding is not the cultural norm, for example within socially deprived communities within the UK [...] It is crucial to develop an in-depth understanding of the local culture before

implementing innovation and change [...] This exploratory phase enabled the project teams to elicit: cultural beliefs related to infant feeding; cultural norms...constraints to women in initiating and continuing with breastfeeding. It also enabled the teams to understanding how and why some of the infant feeding practices has developed." (**Set 1. Dykes, 2005 p.23-26**)

7.5.3.2 Families at Risk of Poor Child Health

The second demi-regularity in the contextual sense is that: *At risk families, most in need often need specific strategies towards their engagement*

MRT 17: Proportionate Universalism removes perceived associated stigma of using LHW support

CMO1. (C): LHW-delivered child health programme delivered in a locality of high socio-economic deprivation where uptake of positive child health parenting behaviours may be lower. Programme is universal and offered to all families, with children, within the locality. **(M1):** Parents do not feel stigmatised for using the service. **(O1):** Parents engage with the programme.

> "First, Starting Well took an area-based approach to improving health within vulnerability defined geographically. This approach was taken to avoid stigmatising families." (**Set 4. Mackenzie, 2008 p.1030**)

MRT 18: Early interventions address attitudes and motivations to child health parenting behaviours

CMO1. (C): LHWs support parents during the antenatal period to address child health parenting behaviours in the postnatal period. **(M):** LHWs have time to get to know parents. **(O):** Address attitudes and motivations to parenting behaviours in advance.

> "Monthly home visits were then offered from when the baby was about three months old until their first birthday. (**Set 8. R. G. Watt et al., 2009 p.157**)

7.5.3.3 Embedding of the Programme

The final contextual demi-regularity is: *Programmes which are embedded in communities through engagement with other stakeholders have better deliverables*

MRT 19. Positive stakeholder buy-in can bridge the gap between LHWs and community and produce a stable model of delivery

CMO1. (C): Community outreach to local health professionals, stakeholders, agencies and wider community to promote programme and child health parenting behaviour. **(M)**: Embedding the programme and LHW role into community. **(O)**: Bridges the gap between LHWs and community.

> "The consultant obstetrician, with a special remit for Easterhouse, acknowledged that a growing number of mothers were attempting to breastfeed and that the initiative seemed to be beneficial to helpers…he invited the helpers to provide peer support at his outreach antenatal clinic in the community health centre. This obstetrician later won the Obstetrician of the Year Award in 1996 for team working, an event that also featured the breastfeeding helpers." **(Set 5. McInnes & Stone, 2001 p.70)**

CMO2. (C): Involvement of health professionals who do not endorse the LHW role. **(M1)**: LHWs feel undervalued. **(M2)**: Health professionals LHWs to be a burden or a threat to their role. **(O)**: Resentment between stakeholders and unstable delivery of programme.

> "Hospital midwives were more varied in their response to the initiative…some appeared to feel threatened that peer breastfeeding support was undermining the role of the midwife. After the project had run for six months, one midwife said: 'Do you really think this project is working, because I've only seen one women, who I wouldn't have expected to breastfeed, breastfeeding.'." **(Set 5. McInnes & Stone, 2001 p.71)**

CMO3. (C): Stakeholder buy-in to the LHW role/programme. **(M)**: Health professionals perceive LHW to be an asset to their role. **(O1)**: Continuity of care across agencies. **(O2)**: Can change how stakeholders support parents.

> "…as [stakeholder] groups become more familiar with each other, the attitude to the initiative and to the helpers became generally more

positive. As an indication of the acceptance of the group by hospital-based health professionals, the helpers were invited to assist with running breastfeeding workshops in Glasgow Royal Maternity Hospital." **(Set 5. McInnes & Stone, 2001 p.71)**

MRT 20: Engagement between LHW-delivered programmes and existing agencies strengthens community resources and facilitates stakeholder buy-in

CMO1. (C): There are pressures at every level of the NHS workforce and demands will increase as the ageing workforce reduces. Hiring LHWs is becoming increasingly popular within health services LHW delivered child health interventions. **(M)**: Complements, does not replace, existing services. **(O)**: Improved communication and collaboration between organisations.

> "The experience of the implementation of this scheme was encouraging. Two quite different organisations concerned with maternal and infant health were able to work together effectively to establish a Support Worker role. At the end of the pilot period, the post was continued and the closer communication between the agencies and professions continued to develop." **(Set 1. Dykes, 2005 p.42)**

CMO2. (C): Engagement between LHW delivered programmes and existing agencies. **(M)**: Utilising skill mix **(O)**: Develop new community initiatives and strengthen community resources.

> "The skill mix approach that evolved within the reduced caseloads of Starting Well allowed the provision of a range of intensive supports to be delivered to families over prolonged periods of time [...] mainstreaming skill-mix approaches and the diffusion of good practice were the key objectives for the future...'I don't want to have this 'fix it' team or elitist team and I would be more comfortable if we spread the skills around.'" **(Set 4. Mackenzie et al., 2004 p.67-70)**

CMO3. (C): Engaging with local statutory and voluntary agencies involved in child health and wellbeing. **(M)**: Raises profile of programme and LHW role. **(O)**: Facilitates stakeholder buy-in.

> "In the first few months of the project a considerable amount of time was spent meeting with the wide range of relevant local agencies and organisations involved in child health and well-being...as well as raising the profile of the project with key local stakeholders, the meetings also provided very valuable information on a whole range of practical and organisational issues specifically in relation to

recruitment and training of volunteers." **(Set 8. R. G. Watt et al., 2006 p.715)**

7.6 Key Learning

This chapter described a realist review following established protocol. The general aim was to determine: how and why programmes succeed or fail, for whom programmes appear to work, and in what contexts programmes are and are not successful.

The approach extracted mid-range theories and CMOs from the literature and synthesised these into seven semi-predictable patterns, termed demi-regularities. These are as follows:

1. Strategies of LHW support that are tailored to need, that draw from community and familial support networks, and that allow for trust to build over time, empower parents to achieve better outcomes.

2. Shared experience and commonality with the target families facilitates success in the LHW roles.

3. Practical, needs based training and peer worker support facilitates better provision through the role.

4. Parental motivation is key to success and can be intrinsic or extrinsic.

5. Social/cultural norms influence engagement with positive child health parenting behaviours by shaping parental values.

6. At risk families, most in need of support often need specific strategies towards their engagement.

7. Programmes which are embedded in communities through engagement with other stakeholders have better deliverables.

In the following synthesis, this learning from out with the Childsmile programme is integrated with evidence from within the programme (Chapters 5 and 6) to provide evidence for discussion and recommendations.

7.7 Chapter Summary

This chapter outlined the aims, research questions, methods and analytic approach and findings for the realist review of child health interventions, delivered by LHWs to parents, which provided learning from out with Childsmile. Chapter 8 contains a synthesis of review findings and evidence from within the Childsmile programme.

Chapter 8 Discussion

This chapter presents the key learning derived from an integration of the research conducted within and out with the Childsmile programme, and discusses the strengths and limitations of the methodological aspects of the three research studies. Recommendations for enhanced effectiveness of the Dental Health Support Worker role in Childsmile Practice and wider lay health worker delivered child health interventions, including recommended areas for future research are made.

8.1 Summary of Overarching Aims and Objectives

The overarching aim of this doctoral research was to establish which factors and variants (contextual and those associated with programme delivery) impact on effectiveness of the Dental Health Support Worker (DHSW) role within Childsmile Practice.

As the research was a component study of the national Childsmile evaluation strategy, findings were intended to provide evidence to optimise delivery of the DHSW role and to enable future evaluative effort to assess impact. This means the approach was partly deductive (whereby research questions focused on areas known to be of interest to the programme) but yet allowed for flexibility and for themes to emerge from the data.

The overarching research objectives were to:

1. Provide evidence for those developing programme theory for the DHSW role in Childsmile Practice.

2. Identify variation from initial programme theory in delivery of the DHSW role, between and within NHS boards.

3. Gain further understanding of which aspects of variation in the DHSW role are positive adaptations to context, and which constitute unwanted variation that negatively impacts on programme outcomes.

4. Identify causal relationships between context, delivery and outcomes of the DHSW role; and inform this through wider identification of components of similar lay worker child health interventions delivered to parents which can positively influence 'child health parenting behaviours'.

Research objectives 1-3 were achieved through the sensitising study and comparative case studies which provided learning from within the Childsmile programme. Objective 4 drew derived learning from out with Childsmile via a

realist review of programmes with similar characteristics. The following section integrates findings from within and out with the Childsmile programme.

8.2 Integration of Findings

The integration of findings compares and contrasts key demi-regularities extrapolated from within and out with the Childsmile programme with reference to the wider literature. This integration of findings facilitated the development of recommendations for the DHSW role within Childsmile Practice, and for wider child health interventions delivered by LHWs to parents.

Demi-regularities are presented according to the following questions: how do programmes work; who programmes work for; and in what context do programmes work.

8.2.1 How do Programmes Work?

Key demi-regularities extrapolated from within and out with Childsmile in relation to 'how do programmes work' are presented in Table 8.1.

Table 8.1. How to programmes work: demi-regularities explicated from within and out with Childsmile

Demi-regularities within Childsmile	Demi-regularities out with Childsmile	Description of demi-regularities
• The use of visual aids to deliver oral health advice, and the provision of free oral health resources, facilitates parental engagement with the DHSW and POHPBs. • Person-centred support, tailored to the needs and circumstances of parents and which address cognitions, improves uptake of POHPBs. • Delivering an early intervention and multiple visits to families addresses and pre-empts the barriers to engagement with POHPBs.	• Strategies of LHW support that are tailored to need, that draw from community and familial support networks, and that allow for trust to build over time, empower parents to achieve better outcomes. • At risk families, most in need, often need specific strategies towards their engagement	**Person-centred support**
• The DHSW role is positively affected by peer-ness- shared characteristics with parents.	• Shared experience and commonality with the target families facilitates success in the LHW roles	**Peer-ness of the role**

8.2.1.1 Person-centred Support

In comparison to generic health messages, individuals are more likely to comply with health messages if the information is tailored to their needs and circumstances (Kreuter, Oswald, Bull, & Clark, 2000). This positive engagement with tailored information is thought to be attributed to the extent to which individuals perceive the information to be relevant (Bull, Kreuter, & Scharff, 1999).

Learning from Childsmile highlighted that DHSWs do tailor oral health advice to the age of children and to oral health parenting behaviours they are advised of in advance or which they witness within the home. However, DHSWs do not attempt to glean this information from parents via asking open-questions or by engaging in a two-way conversation. Instead, DHSWs rely on parents sharing personal information. Such a strategy places a great deal of emphasis on the parents confidence and motivation to share such information, not to mention the extent to which parents feel comfortable to share this information with the DHSW.

A combined strategy of early intervention and multiple visits has the potential to address this barrier because as learned from the review, LHWs have time to develop a therapeutic relationship and establish families' needs, attitudes, and behavioural barriers to the behaviour (Mackenzie, 2006). Yet learning from Childsmile indicated that delivery of multiple visits from the DHSW were dependent on parental motivation to accept or request support.

The learning derived from Childsmile indicated there was contention as to how early support should be provided to parents. In relation to oral health behaviours, early intervention can reduce the risk of dental caries among infants and young children and embed positive oral health behaviours as a habitual and normalised behaviour (Duijster et al., 2014; Trubey et al., 2013). However, learning from Childsmile indicated there was a fine line between delivering oral health advice early to address attitudes and barriers to engagement with POHPBs and delivering advice at the relevant point in time.

8.2.1.2 Peer-ness of the Role

The review findings highlighted that professional-based care can be perceived by parents to be somewhat didactic and idealistic, rather than realistic, which can present barriers with uptake of positive health parenting behaviours. The review also highlighted a perception that health professionals tend to deliver advice based on an assumption that engagement with the positive health parenting behaviour is low because the parents lack the information about the benefits of the behaviour (Jones, Sidell, & Douglas, 2002). Although, simply providing information regarding the benefits of the positive behaviour or the consequence of the negative behaviour is not enough to influence behaviour change (Eagly & Chaiken, 1993). Learning derived within and out with Childsmile tentatively suggested that engagement with positive health parenting behaviour is influenced by attitudes, motivations, perceived subjective norms, and wider environmental context.

The findings extrapolated within and out with Childsmile demonstrated that DHSWs and LHWs can encourage parental engagement with the programme, and encourage uptake of positive health parenting behaviours, because of the *peer-ness* of the role. Unlike LHWs from the review literature, DHSWs within Childsmile are not recruited based on their commonality with parents however many DHSWs are parents and refer to/draw on their experiences of engaging with POHPBs when supporting families. DHSWs who adopted this strategy agreed it enabled them to speak to parents *as* a parent which they perceived to have a positive impact on parental engagement with the information. This suggests DHSWs believe this information gives them a heightened degree of credibility with parents.

It was evident from across the research studies that the peer-ness of the DHSW/LHW role means health advice is more likely to be delivered in a conversational and non-didactic format which speaks to parents 'on their level'. This 'equality' between DHSW/LHW and parent was supported by the wider literature which highlighted that by being equal with the individuals they are supporting, LHWs can understand and respond to individual situations in a way which health professionals cannot (Dennis, 2003).

As engagement with health services and health outcomes among those living in the most deprived areas is typically lower compared to the least deprived areas, these findings support Lewin et al's (2010) findings that LHWs are useful for supporting 'hard to reach' groups. Findings from the review indicated that LHWs can bridge the gap between community health services and those living within the most deprived areas (Mackenzie, 2006) because the LHW is perceived to be 'one of them' meaning individuals are generally more accepting and trusting of the LHW in comparison to professionals. This is most evidenced in interventions where the LHW is recruited from within the same community as the target population group (Eng, Parker, & Harlan, 1997).

8.2.2 For whom do Programmes Work?

The key demi-regularity extrapolated from within and out with Childsmile in relation to 'for whom do programmes work for', is presented in Table 8.2.

Table 8.2. Who do programmes work for: demi-regularities explicated within and out with Childsmile

Demi-regularities within Childsmile	Demi-regularities out with Childsmile	Description of demi-regularities
• The triage and referral process does not always target the right children for DHSW support	• Parental motivation is key to success and can be intrinsic or extrinsic	Targeting

8.2.2.1 Targeting

Learning from across the studies indicated that families referred for DHSW/LHW support can be categorised in relation to parental motivational readiness to engage with the behaviour, and the child's subsequent level of risk of poor health outcomes). The three types of families referred for support are:

1. **High-risk families**: typically those whereby parents are not motivated to engage with the positive health parenting behaviour and the child is at a relatively high risk of poorer health outcomes.

2. **Moderate-risk families**: typically those whereby parents are motivated to engage with the positive health parenting behaviour but they require support to do so, consequently the child is at a relatively moderate risk of poorer health outcome.

3. **Low-risk families**: typically those whereby parents are motivated and currently engage with the positive health parenting behaviour therefore the child is at a relatively lower risk of poorer health outcomes.

Learning from Childsmile indicated that the DHSW role could address they key programme outcome of reducing inequalities in oral health and in attendance at dental services if they were targeting high-risk families. However, findings indicated that there is a contrast between who DHSWs *ought* to support in order to address programme aims, and who they have capacity to support: both in terms of their workload and as a LHW.

Learning within and out with Childsmile indicated that in a LHW capacity, DHSWs are equipped to support moderate-low risk families only, because they do not have the skills nor the capacity to deliver an intensive behaviour change intervention to parents who are not motivated to engage with POHPBs. Yet, supporting low-risk families does not appear to be an effective use of the DHSW role because parents are already motivated and engaging in POHPBs. Findings indicated that DHSW time and support would be better directed towards moderate-risk families only whereby the parents are motivated but do need support to engage with POHPBs.

In order for DHSWs to gain access to moderate-risk families and distinguish between high and low-risk families, families need to be triaged according to their needs and motivational readiness. Learning from Childsmile indicated that PHNs/HVs are best placed to do this due to their knowledge of the family and professional judgement, however individual subjective interpretation of triaging criteria can impact on the type of family referred. The review indicated that Motivational Interviewing can be adopted as a triaging strategy by LHWs and enable them to determine parents' motivational readiness and whether parents would be receptive to support (McInnes & Stone, 2001). Such a strategy may

prove useful as a secondary triaging method and ensure DHSWs do not provide support to families out with their capacity.

8.2.3 In What Context do Programmes Work?

The key demi-regularity extrapolated from within and out with Childsmile in relation to contextual influences on programmes are presented in Table 8.3.

Table 8.3. In what context do programmes work? Demi-regularities explicated from within and out with Childsmile

Demi-regularities within Childsmile	Demi-regularities out with Childsmile	Description of demi-regularities
• Where the DHSW is based within the NHS board, and whom they are line managed by, can influence the extent to which the role is delivered as intended. • Wider social and environmental factors, and stakeholder buy-in, can influence delivery of the role	• Social/cultural norms influence engagement with positive child health parenting behaviours by shaping parental value	Context
• Wider social and environmental factors, and stakeholder buy-in, can influence delivery of the role • Where the DHSW is based within the NHS board, and whom they are line managed by, can influence the extent to which the role is delivered as intended.	• Programmes which are embedded in communities through engagement with other stakeholders have better deliverables	Stakeholders

8.2.3.1 Context

A systematic review of the risk factors for dental caries among infants and young children indicates that psycho-social factors, such as individual beliefs and perceived social norms, can reduce parent's capacity to adopt POHPBs (Leong et al., 2013).

It is believed that a 'sweetie culture' (Smith & Freeman, 2009) has shaped individuals attitudes and behaviours regarding oral health in general and the adoption of positive oral health behaviours. In their sample of 19 parents whose children had been referred to a dental hospital within Scotland for dental extraction as a result of dental caries, Smith & Freeman noted that despite parents' awareness regarding the relationship between sugar and dental caries, and despite their child's poor oral health status, parents perceived the regular consumption of sugared drinks and snacks to be a normal part of childhood.

With the learning derived from within and out with Childsmile it is thought that cultural norms (or at least *perceived* cultural norms) can reduce parent's capacity to adopt positive health parenting behaviours by reducing parents self-efficacy and perceived locus of control (Bandura, 1997). For example, if parents believe that sweets and sugared drinks are a normal part of childhood they may feel they cannot control their child's consumption.

This concept of wider contextual barriers impacting on parents' locus of control to engage and/or maintain positive health parenting behaviours was also evidenced within Childsmile whereby environmental factors presented a key barrier. Within many rural or island localities across Scotland a combination of: poor transport links; inaccessibility of out of town shops; and the limited range of fresh food or low sugar/sugar-free food within local shops, means many rural families struggle to engage with the positive health parenting behaviours recommended by DHSWs, regardless of their motivational readiness.

It is evident that an environment which fosters engagement with positive health behaviours are facilitative to overcome many of the psycho-social barriers individuals face (Seguin, Connor, Nelson, LaCroix, & Eldridge, 2014; The Marmot Review team, 2010).

8.2.3.2 Stakeholders

Learning from the review highlighted that engagement in community outreach to stakeholder groups can facilitate embedding of the LHW programme and acceptance of the LHW role within the community. The benefits of embedding the programme and role established from the review mirrored those extrapolated from Childsmile. For example, access to the target population group, bridging various health services, and encouraging stakeholders to use the LHW/DHSW as a resource.

Findings from the review also highlighted that low stakeholder buy-in to a LHW programme can arise from misunderstanding of the role, and/or the perception from health professionals that the LHW is a threat or burden to their role. These findings were also evidenced within Childsmile to a degree, whereby the Childsmile programme is thought to be perceived by some dental practices to be a burden.

However, as a programme which has been delivered on a national scale over ten years Childsmile has demonstrated that delivery over a prolonged period of time has served to embed the programme within the NHS boards and has facilitated a general perception among many stakeholders that Childsmile is another component of the healthcare system. This is thought to be attributed to stakeholders having the opportunity to witness the long-term benefits of the programme: a finding which was also evidenced from within the review (McInnes & Stone, 2001).

While delivery over a prolonged period of time has provided an opportunity for stakeholders to buy-in to the programme, it was evident that incorporating Childsmile into the Early Years Pathway and GIRFEC policy; and the recent changes to the Children and Young Person Act (Scotland) Act (2014), has formalised stakeholders' duty of care and engagement with Childsmile.

8.3 Methodological Strengths and Limitations

One of the key strengths of this research was that it was embedded within the national evaluation of the Childsmile programme where much of the groundwork had been laid by the comprehensive process evaluation (CERT and CS RRTs,

2011). Consequently, the researcher had full access to a raft of existing data already collected by the evaluation team, who also facilitated access to stakeholders from within the programme.

The evaluation of an ongoing programme also has its challenges, one being the pace of the research compared to the pace at which the programme changes *on the ground*. Within Childsmile, NHS boards are given autonomy over how the programme is implemented therefore systems and processes can be adapted at a local level quite rapidly thus emphasising the importance of close working relationships with the programme during the evaluation.

8.3.1 Research Design

A key strength of the overarching design lies in the triangulation of the three research studies which incorporated learning from within and out with the Childsmile programme. Triangulation provides a holistic understanding of a process and adds to the reliability and generalisability of the findings because each source of information is corroborated by another (Baxter & Jack, 2008; Yin, 2009).

8.3.2 The Sensitising Study

The sensitising study triangulated the views and experiences of 32 individual stakeholders across eight NHS boards through interviews and focus groups. This provided a rich and detailed description of the DHSW role and delivery of Practice across various contexts, and was the first study of its kind within Childsmile to draw on such a large sample of DHSWs. We acknowledge, however, that in excluding six NHS boards from the sensitising phase we could have overlooked important factors unique to those boards. However, purposeful selection of NHS boards based on theoretical characteristics which were known to influence delivery of the role was believed to have captured the variation in delivery across the NHS boards.

The sensitising study was guided by research questions, however its broad scope facilitated exploration of every aspect of the DHSW role from the perspectives of various stakeholders, which allowed for unknown issues and concepts to arise.

This enabled identification of the key issues which impacted on delivery of the role to be 'funnelled' for the case study research.

The use of Thematic Analysis further aided this broad research design and funnelling nature of the analysis. The flexibility of Thematic Analysis meant that it could be moulded to suit the research needs (Braun & Clarke, 2006) which for the sensitising study required being able to use the findings to develop research questions, design the case studies, and inform the case study enquiry. In retrospect, if the sensitising study had been redesigned it could have been to incorporate a realist analytic strategy. Such an approach would have facilitated development of preliminary mid-range theories and CMO configurations which could later be tested and refined within the comparative case studies and the realist review.

Finally, a major success of the sensitising study was in establishing good relationships with the stakeholders. This facilitated recruitment of stakeholders for the case studies. DHSWs in particular appeared eager to be involved in the case studies research.

8.3.3 Comparative Case Studies

Multiple case studies (n=3) were bound to an individual DHSW, designed using findings from the sensitising study, and data were analysed using a Realist-inspired approach. This approach facilitated an in-depth exploration and comparison of the DHSW role across various contexts (Wong, Westhorp, et al., 2013; Yin, 2009).

Originally, six case studies were proposed across three NHS boards with two DHSWs selected per board (one a high performer and one a low performer gathered from routinely collected data). Conducting six case studies would have provided an opportunity to compare the DHSW role within a NHS board and may have identified variation within boards. Unfortunately the data were not reliable enough to select DHSWs based on performance, and it was decided to reduce the number of case studies to three. Yet what may have been lost in breadth of information from the cases was gained in the *depth* of information because

fewer case studies provided an opportunity for a more detailed exploration (Yin, 2009)

The case studies still retained the ability to draw comparisons across NHS boards and regions, and the heterogeneity of the selected NHS boards facilitated exploration of various contextual factors. Furthermore, fewer case studies meant data collection could continue until saturation was achieved within each case thus providing rich and detailed information for analysis.

Much like the DAPER study (Chambers & Freeman, 2010), the inclusion of parents into the case studies was a real strength of this study. As Chambers & Freeman had identified, there was a paucity of research focusing on the barriers to parental attendance at dental appointments for their children. Even within the wider Childsmile process evaluation, to date there had been limited work with parents, and as *end users* their voices were important.

Finally, the case study approach fostered the development of a positive relationship between the researcher and the DHSWs which enhanced engagement. After conducting several interviews with DHSWs and subsequently shadowing them on home visits over a prolonged period of time, not to mention having made contact during the sensitising study, the researcher developed a rapport with the DHSWs and they became less of a participant and more of an 'informant' whereby they recommended lines of enquiry (Yin 2009).

Despite initial trepidations about DHSWs treating the researcher with caution because they felt evaluated or monitored, the DHSWs were instead accommodating and at times very open and frank about their experiences particularly when 'off the record'. While 'off the record' discussions surrounding their role were not included within the case study data and was treated confidentially, it is believed that these discussions encouraged the DHSWs to be open and honest with their responses during the recorded sessions, and having this deeper insight facilitated later data analysis.

8.3.3.1 Data Collection Methods

The qualitative data collection methods employed for the case studies (interviews and observations) provided an in-depth exploration and rich description of the role from various stakeholders. Participation was voluntary so there was always the concern that those who took part held a more favourable view on the programme than those who refused. However, the converse could equally hold, and on analysis it did not appear that the discussions were influenced by overtly strong opinions from either side.

Observations of home visits provided a unique and detailed perspective of delivery of the DHSW role and allowed the researcher to witness not only the strategies employed by DHSWs to support parents, but also how DHSWs and parents interacted with one another during the session. Data collection via this method, in addition to interviews could lead to the researcher receiving desired responses rather than the 'truth'.

A drawback of conducting observations was parents' reluctance to participate within the recorded observation sessions. Furthermore, the extent to which the presence of the researcher influenced DHSWs and/or parents behaviour is unknown. Despite these limitations, observations provided an opportunity to draw comparisons between what DHSWs report they are doing in their role, and what they *actually* do.

8.3.3.2 Analytic Approach

While the overarching research design was inherently Realist in nature, a unique element of the case studies was the application of a Realist-inspired approach as a standalone analytic method rather than forming part of a realist evaluation or review. After reviewing the publication standards and after informal discussions with leading authors within this field of research, it was believed that such a stance was a reliable and valid interpretation of the data. Applying the CMO configurations to the qualitative data proved fruitful for the purposes of this research and is a recommended method for future research.

As a component study of the Childsmile evaluation the research design was pragmatic and applied in nature, and findings and recommendations had to be

applicable to the programme. Therefore the strength of this analytic approach lay in the fact that findings would outline specific components of the DHSW role which facilitated success across a range of contexts. Whereas the thematic approach adopted for the sensitising study may only have enabled development of high level themes. Additionally, the reductionist nature of this approach provided the opportunity to answer multiple research questions, across several domains, and from a large dataset.

8.3.4 Realist Review

The realist review was designed to provide learning from out with Childsmile. A key strength of this method was that it is specifically designed for use within complex health interventions and is ideal for developing a depth of understanding. It was the adoption of a realist review, as opposed to a traditional systematic literature review, which provided the opportunity to generate findings which were reliable yet generalizable across different settings (Pawson et al., 2004; Wong, Westhorp, et al., 2013).

The rigorous nature of the realist review combined with the pragmatic yet creative nature of the analytic process meant it was best suited for this research. As with the case studies, this process enabled us to look beyond what was observable or explicitly reported, and develop testable and reliable theory from a large body of evidence which is applicable to the Childsmile programme (Jagosh et al., 2012; Wong, Westhorp, et al., 2013).

The retroductive reasoning, a unique component of Realist research, provided an opportunity to develop findings via implicit data (e.g. contexts, processes and outcomes) rather than solely what was explicitly reported within the literature. Consequently, the findings were relevant and applicable to the research aims. However this process should not be confused with 'cherry picking' the findings, instead the researcher is simply given the opportunity identify data which may not have been considered significant to the authors (Jagosh et al., 2012; Wong, Westhorp, et al., 2013).

Due to the retroductive and theorising nature of the analytic approach the findings of a realist review are arguably difficult to reproduce in comparison to

traditional systematic reviews (Durham & Blondell, 2014). However, measures were taken to ensure the process of literature searching, appraisal, and analysis were transparent and duplicated where possible in order to demonstrate how we arrived at the findings.

As the realist review rejects the notion of methodological hierarchy, literature which may previously have been excluded by traditional review methods on account of not being 'gold standard', but which was still relevant to the research aim, could be included. Consequently a richer and more detailed description of the interventions was retained because sources from multiple paradigms utilising a range of methods, including grey literature (e.g. flyers, websites, training guides), was included within the body of evidence.

It is worth noting that the scope and size of the body of literature being examined was extensive therefore to fully explore the evidence it was necessary to take a pragmatic approach in what interventions would be included within the review. A strength of the realist review lies in the systematic and transparent process adopted which drew heavily from the literature and leading authors within the field.

The decision to focus solely on UK-based interventions was primarily a pragmatic one however we felt it was justified in that we wanted to learn from programmes/interventions that were implemented within the framework of the UK health system. It is critical to the success of Childsmile that it operates within the structure of the NHS however as a consequence there are certain organisational and systems level constraints to implementation that will never be removed. Thus the findings may not be generalisable to all LHW delivered interventions and should be applied to other contexts with caution. Furthermore, the varied terminology surrounding the role of a LHW and various definitions as to what constitutes a LHW, and its impact on the search terms ought to be considered. There is potential that key interventions involving LHWs within the UK were missed primarily due to the lack of standardised terminology surrounding this role.

While the research was guided by the Jagosh et al (2011) protocol, a leading author in the field, the research team had one criticism of his approach: This

was the decision to exclude sources whereby the author had not responded to the call for companion papers. The approach for this review was adapted to exclude this caveat and all sources would be included regardless of whether the author had responded to the call for companion papers. This would ensure that potentially relevant sources could still be appraised and included within the review.

In retrospect, if the realist review were to be redesigned it would be conducted before the case study research. Therefore the research would follow a linear design of: (1) sensitising study; (2) realist review; and (3) comparative case studies. As identified earlier, such an approach would facilitate the identification of preliminary mid-range theories and CMO configurations during the sensitising study, which could then be later rested and refined throughout the case studies and review.

8.4 Recommendations

The learning derived from within and out with Childsmile was used to develop recommendations to feedback to the programme to support optimisation of delivery of the DHSW role in Childsmile Practice, and for wider child health interventions delivered by LHWs to parents.

8.4.1 Recommendations for Delivery of the DHSW Role in Childsmile Practice

The recommendations for the DHSW role in Childsmile Practice take into account the overarching programme aims and the capacity of the DHSW as a LHW.

8.4.1.1 Strategies for Supporting Parents

It is recommended that DHSWs move away from a model of delivery which focuses primarily on information provision and facilitating the family into a dental practice, and incorporate socio-emotional and person-centred support. The recommended strategies for achieving this model of delivery include, but are not limited to:

- Oral health advice which is both practical and realistic for the family and their needs.

- Practical tips and advice on how to engage with POHPBs.

- Socio-emotional support to address the internal and external barriers to engagement with POHPBs.

- Signposting to community initiatives which support POHPBs and wider non-oral health related initiatives.

- Where possible, incorporating or considering all members of the family when delivering oral health support and advice.

- Delivering oral health advice and support in a non-didactic and natural conversational manner.

- Where relevant, DHSWs drawing on and referring to their own experiences engaging in POHPBs.

- Asking open-ended questions to establish parental attitudes, behaviours, current routines, barriers etc.

- Deliver support tailored to the individual family.

Visual aids can be used to deliver oral health advice but should be incorporated in a natural and conversational manner. Free Childsmile resources can be provided to encourage uptake and engagement with POHPBs.

To improve uptake of behaviours, early intervention and multiple home visits to parents is recommended. Furthermore, consideration should be paid to the timing and relevance of when oral health advice is delivered, and pre-empting oral health behaviours before they occur. For example, DHSWs can deliver several visits and focus each visit on a different behaviour i.e. an initial tooth brushing visit to prepare parents for when the teeth come through, a later dietary visit to prepare parents for weaning.

8.4.1.2 Preparedness to Deliver the Role

Training for the DHSW role in Childsmile Practice should incorporate practical elements such as role play and participatory exercises. Training ought to equip DHSWs with the knowledge and strategies in how to:

- Support families to engage with POPHBs.

- Address barriers to engagement with POHPBs.

- Motivational Interviewing techniques.

- Draw on their personal experiences.

- Deliver advice and information in a conversational and non-didactic manner.

- Determine the motivational readiness of the parents to engage with the support or attend a dental practice.

Work-based shadowing within the NHS boards should follow a standardised and outcome-focused structure. While evaluation of training could assess whether DHSWs have the necessary skills and knowledge to deliver the role, and whether DHSWs feel confident and prepared to deliver the role.

8.4.1.3 The Right Child for DHSW Support

In terms of DHSW capacity and addressing programme aims, the right child for DHSW support are moderate-risk families whereby parents are motivated to engage with POHPBs but who require support to do so. As it stands, the DHSW role is not equipped to support high-risk families who are not motivated to engage with POPHBs. However, as a key programme aim is to reduce oral health inequalities, the DHSW role will require further development in order to support high-risk families.

The PHN/HV six-eight week referral pathway (with or without a local referral form) is the best method of accessing moderate-risk families. The criteria

outlined in the Childsmile programme manual are suitable for triaging families to determine whether they require DHSW support. However PHNs/HVs interpretation and application of these criteria ought to be addressed from a programme level to ensure continuity.

8.4.2 Recommendations for LHW Delivered Child Health Interventions

The recommendations for wider LHW delivered child health interventions are as those listed in the recommendations for the DHSW role in Childsmile practice including:

- LHW delivered interventions are suitable for community-level interventions, particularly within areas whereby engagement with health services or access to health services and information is limited.

- LHWs can be successful when they are delivered as a complementary (rather than a replacement) service and when there is positive buy-in from wider health services and stakeholders.

- Training for the LHW role should incorporate practical and theoretical elements, and training should be evaluated to ensure it is fit for purpose.

LHWs are suited to supporting families whose children are at heightened risk of poor health outcomes, and families who are less likely to engage with health services and positive health parenting behaviours. However, LHWs are best suited to support both:

- Low-risk families whereby parents are motivated and are engaging in positive health parenting behaviours.

- Moderate risk families whereby parents are motivated to engage with positive health parenting behaviours but require support to do so.

Supporting the former category of parents can encourage maintenance of the behaviour while supporting the latter category can encourage uptake and

maintenance of the behaviour. Therefore which of these LHWs should support will be dependent on the programme's overarching aims.

8.4.3 Future Research

Based on the learning derived from within and out with Childsmile it is evident that further research is required to examine the impact of social, cultural, and environmental factors on uptake of POHPBs and effectiveness of the DHSW role within. It is recommended that further research attempt to elicit how attitude and motivations surrounding oral health behaviours are formed.

Now that areas of detrimental adaptation of the DHSW role in Childsmile Practice have been highlighted, it would beneficial to channel future research towards establishing a standardised process for developing and implementing pilot initiatives at a local level, as recommended by Craig et al (Medical Research Council, 2000b). Furthermore, a randomised controlled trial would be recommended to determine whether a universal model of DHSW delivery within areas of concentrated deprivation, as evidenced within Starting Well (Mackenzie, 2006), may be suitable for achieving programme outcomes.

By highlighting the factors and variants which impact on effectiveness of the DHSW role and examining the causal relationships embedded within the role, using learning derived from within and out with the programme, future research ought to now focus on refining programme theory for the role. Childsmile logic models ought to be updated to reflect learning, and acceptable and detrimental adaption of the role. Moreover, a definition of who the right child is for DHSW support should be established and standardised language regarding the right child should be introduced. Once programme theory for role has been refined, future evaluative effort can focus on assessing impact.

8.5 Conclusion

This thesis explored the factors and variants (contextual and those associated with programme delivery) which impact on effectiveness of the DHSW role within Childsmile Practice, and on LHW roles within wider child health interventions delivered to parents. The research was a component study of the

national Childsmile evaluation strategy and findings will be fed back to the programme to optimise delivery of the role.

Due to the widespread variation in delivery of the DHSW role between and within NHS boards, and the need to further develop and evidence the DHSW role, this research was necessary to optimise the DHSW role to enable future evaluation of the role's impact. Learning and evidence was generated by explicating:

- Existing programme theory and establishing the delivery of the role and exploring the casual links between context, delivery, and outcomes in delivery of the DHSW role within Childsmile.

- Evidence from out with Childsmile via a Realist Review of child health interventions, delivered by lay health workers to parents.

Triangulating learning from within and out with Childsmile established that that in relation to motivation readiness to engage with POHPBs, three types of families are referred to the DHSW for support: (1) low, (2) moderate, and (3) high-risk. To address programme aims DHSWs ought to support moderate-high risk families yet current capacity only enables DHSWs to support low-moderate risk families. It was evident that PHNs/HVs are best placed to triage families according to their needs and motivational readiness, although subjective interpretation of existing triaging criteria results in low, moderate, and high-risk families being referred for support and thus stretching capacity of the DHSW role.

It was revealed that the peer-ness of the DSHW role could positively influence parental engagement with the programme and facilitated person-centred support. While an embedded 'sweetie culture' within Scotland, in addition to health damaging environments, negatively impacted on parents' self-efficacy and perceived locus of control to engage with POHPBs. Furthermore, it was established that: delivery of Childsmile over a prolonged period of time; incorporating the programme into the Early Years Pathway and GIRFEC policy; and recent changes to the Children and Young Person (Scotland) Act (2014), has served to embed Childsmile within the NHS boards and has facilitated

stakeholder buy-in: which are shown to have a positive impact on delivery of the DSHW role.

In light of these findings, recommendations for the DHSW role in Childsmile Practice include: (1) Expanding the DHSW to incorporate socio-emotional and person-centred support which address parental barriers to engagement with POHPBs; (2) revising referral criteria so the 'right child' is referred for support, and working with PHNs/HVs to ensure continuity in the interpretation and application of referral criteria; and (3) refining programme theory for the DHSW and focus future evaluative effort to assessing impact.

Appendices

Appendix 1: Guidance and policy which shaped Childsmile

Guidance	
SIGN Guideline 47 (2000)	Recommended targeted preventative oral health care for children between the ages of six and 16 years
The Scottish Intercollegiate Guidelines Network (SIGN) Guideline 83 (2005)	Recognised that one-to-one oral health education is not enough to change behaviour and recommended: tailored assessment; targeted programmes for those at a higher risk of decay; and a wide range of health & dental professionals involved in prevention of tooth decay in pre-school children
The Scottish Dental Clinical Effectiveness Programme (SDCEP) Guidance on the Prevention and Management of Dental Caries in Children (2010)	Presented clear and consistent evidence to support dental professionals delivering preventative care
Oral Health and Nutrition Guidance for Professionals (2012)	Provided evidence based guidance on oral health and nutrition for professionals and advise for the public and highlighted an intervention within the early years can improve short and long term outcomes
Policy	
Health for all Children 4: Guidance on implementation in Scotland (Scottish Executive 2005)	Reflects a shift from the medical model of screening towards health promotion, primary prevention and targeting children and families at risk
The (2005) Action Plan for Modernising Dental Services in Scotland (Scottish Executive)	Outlined a comprehensive oral health care programme for children aged 0-2 years old in areas identified as having the greatest level of need. The programme would incorporate the Public Health Nurse / Health Visitor referral system and implement changes in dental services and establish a nursery and school preventative programme
Better Health, Better Care: Action Plan (Scottish Government 2007)	Focused on health improvement, tackling health inequalities and improving the quality of health care. Set out Governments plans to develop early intervention programmes and a holistic approach to care, comprising universal and targeted services. This policy announced CS drive towards national implementation
Equally Well: Report of the Ministerial Task Force for	Recommended a holistic approach and funding for evidence-based anticipatory care for families with

Health Inequalities (Scottish Government 2008)	young children at risk of poor health and other poor outcomes
Getting it Right for Every Child (Scottish Government 2008b) (GIRFEC)	A national programme promoting the streamlining of assessment and decision-making process for children
Early Years Framework (Scottish Government 2009)	Focused on programmes and services including: GIRFEC, HALL 4 and support for families from pre-conception. Emphasis was placed on children's oral health and its relationship with deprivation, which can be a sign of the wider issues related to the quality of care and support children receive
HEAT Target: Child Oral Health (2010)	From April 2010 an oral health HEAT target (a national NHS performance indicator) was developed to focus on reaching the most disadvantaged children. The HEAT target stipulated that at least 60% of children aged 3 – 4 years in each SIMD quintile should receive at least two FVAs each year by 2014
A New Look at HALL 4: The Early Years, Good Health for every Child (Scottish Government 2011)	HALL 4 supplements Health for all Children 4 and re-frames it's commitment in light of GIRFEC, Early Years Framework, Equally Well and Achieving our Potential. Three areas of focus are (1) identifying need, (2) delivering early preventative advice and support and (3) reintroducing a 24 month review to facilitate development of a complementary oral health review on the CS pathway
Improving Maternal and Infant Nutrition: A Framework for Action (Scottish Government 2011)	Coordinated, multi-agency, multi-faceted approach focusing on improving pregnant women's nutrition and infant nutrition. Two areas of focus include (1) supporting parents with information on infant feeding, complementary feeding and early eating patterns and (2) supporting women to initiate and continue breastfeeding

Appendix 2: University of Glasgow Ethical Approval

RE: Guidance on ethical approval for service evaluation work
William Martin
You replied on 07/03/2013 12:18.

Sent: 07 March 2013 12:15
To: Mairi Anne Young

Dear Mairi
You have raised a few issues here which I will deal with separately.

I don't know the details of what you have submitted to Judith Godden, but if Judith advises that you need NHS approval, then you need to go down that route – you will not need additional approval from the College Ethics Committee. However, if Judith regards your study as a service evaluation, you will not need HNS ethics approval. However, if your research is to be published or disseminated to a wider audience and involves interaction with patients or patient data or tissues, NHS practitioners or patients' relatives, you will need College ethics approval.

If your supervisor already has College ethics approval for the study and there is no new element to the experimental protocol, you will not need to make another application. All your supervisor has to do in this case is to submit in writing to the Committee a note asking for you to be added as a researcher to the existing study (quoting the title and MVLS Ethics Application number). If, however, the research protocol differs from that of the existing study, you will need to make a fresh application.

I hope this helps.
Best wishes
Billy

Appendix 3: West of Scotland Research Ethics Service ethics ruling

NHS
Greater Glasgow and Clyde

WoSRES
West of Scotland Research Ethics Service

West of Scotland Research Ethics Service
Ground Floor – The Tennent Institute
Western Infirmary
38 Church Street
Glasgow G11 6NT

Ms Mairi Young
University of Glasgow

Date	25 March 2013
Your Ref	
Our Ref	WoS ASD 893
Direct line	0141 211 2126
Fax	0141 211 1847
E-mail	Judith.Godden@ggc.scot.nhs.uk

Dear Ms Young

Full title of project: Childsmile Evaluation (Phase 2 Case-Studies)

You have sought advice from the West of Scotland Research Ethics Service Office on the above project. This has been considered by the Scientific Officer and you are advised that it does not require ethical review under the terms of the Governance Arrangements for Research Ethics Committees (REC) in the UK. The advice is based on the following.

- The project involves observation of routine clinical intervention and feed back interviews with parent and NHS Staff.

- Recruitment is invitational and the transcripts from face to face interviews will be irreversibly anonymised so that the respondent's is fully protected.

- It is not possible to identify the individual from any direct quotation used in the reporting of your project.

Note that this advice is issued on behalf of the West of Scotland Research Ethics Service Office and does not constitute a favourable opinion from a REC. It is intended to satisfy journal editors and conference organisers and others who may require evidence of consideration of the need for ethical review prior to publication or presentation of your results.

However, if you, your sponsor/funder or any NHS organisation feels that the project should be managed as research and/or that ethical review by a NHS REC is essential, please write setting out your reasons and we will be pleased to consider further.

Continued…

Where NHS organisations have clarified that a project is not to be managed as research, the Research Governance Framework states that it should not be presented as research within the NHS.

Kind regards

Dr Judith Godden
WoSRES Scientific Officer/Manager

Appendix 4: NHS Ethical Approval

Reply | Reply to All | Forward | Move | Delete | Close

R&D Review
McGarry, Joanne [Joanne.McGarry@ggc.scot.nhs.uk]
You forwarded this message on 10/06/2013 09:48.

Sent:	07 June 2013 16:43
To:	Mairi Anne Young
Cc:	Faith Hodgins

Dear Mairi and Faith,

Re: Clinical governance for Optimising the role of the Dental Health Support Worker (DHSW) in CS Practice: PhD study.

Thank you for the information you sent regarding the two PHD studies:

PhD 1: A mixed methods approach to evaluating the Childsmile Practice referral pathway and exploring the DHSW role by Principal Researcher (PR) Faith Hodgins.

PhD 2: Optimising the role of the DHSW within Childsmile Practice: A qualitative case study approach by Principal Researcher (PR) Mairi Young.

I can confirm that I have reviewed this information on behalf of NHS GG&C R&D Management and consider this to come under the remit of service audit or service evaluation. Therefore does not require R&D management approval.

You should, however, inform Clinical Effectiveness that you are contributing to this review (Contacts) Jen Doherty tel 201 0728 email: jennifer.doherty@ggc.scot.nhs.uk Hazel Moss 201 0728

If you require any further information, please do not hesitate in contacting me.

Kindest Regards
Joanne

Joanne McGarry

Academic Research Co-ordinator
Research and Development Management Office
NHS Greater Glasgow and Clyde
Tennant Institute
38 Church Street
Western Infirmary
Glasgow

Human Resources Directorate
Law House
Airdrie Road
Carluke
ML8 5ER

NHS
Lanarkshire

Telephone: 01698 377771
Fax: 01698 377776

Enquiries to: Lorraine Scott
Telephone: 01698 377771

PLEASE SIGN
& RETURN

PERSONAL

Ms Mairi Young
7/1 Templeton Court
Glasgow
G40 1EF

Dear Ms Young

This letter confirms your right of access to undertake work for PhD fieldwork within NHS Lanarkshire for Childsmile. This right of access commences on 21st October 2013 and ends on 20th October 2015 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such services delivered by Childsmile, NHS Lanarkshire.

You are considered to be a legal visitor to NHS Lanarkshire premises. You are not entitled to any form of payment or access to other benefits provided by NHS Lanarkshire to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking the Researcher in NHS Lanarkshire you will remain accountable to your employer University of Glasgow but you are required to follow the reasonable instructions of Susan Frew, Childsmile Co-ordinator in NHS Lanarkshire or those given on her/his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by NHS Lanarkshire in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with NHS Lanarkshire policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with NHS Lanarkshire in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on NHS Lanarkshire premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

2nd Draft. 25th May 2016

Rachel Hill
Clinical Governance Manager
John Dewar Building
Inverness Retail & Business Park
Highlander Way
Inverness IV2 7GE
Telephone: 01463 706823
Fax: 01463 713844

www.nhshighland.scot.nhs.uk

NHS
Highland

Private and Confidential

Mairi Young
PhD Student
The University of Glasgow
Glasgow Dental Hospital & School
Level 8 COH Office
378 Sauchiehall Street
Glasgow
G2 3JZ

Date: 18 June 2013
Your Ref:
Our Ref:

Enquiries to: Rachel Hill
Extension   6823
Direct Line: 01463 706823
Email: Rachel.Hill1@nhs.net

Dear Mairi

RE: Your Proposed Study: Optimising the role of DSHW in a Childsmile Practice: A qualitative case study approach

Thank you for submitting your project form. I note from the form that your project is funded, you have ethical approval in place and you have agreement from managers to undertake this project. I also note that David Babb is supportive of this project and that you have agreed to information relating to your project being stored on a database and that you agree to comply with data protection legislation and good practice on confidentiality of project work. I therefore have no objection to you taking this study forward.

I wish you every success in your study. Please contact me if you require any further assistance.

Yours sincerely

Rachel Hill
Clinical Governance Manager

Research and Development

NHS
Shetland

17 July 2013

Clinical Governance Support Team
Brewick House
South Road
Lerwick
Shetland
ZE1 0RB

Our Ref: 03NRG1314

Enquiries to   Fiona Morgan
Extension: 3234
Direct Line: 01595 743234
Email: fionamorgan@nhs.net

Ms Mairi Young
The University of Glasgow
Glasgow Dental Hospital & School
Level 8 COH Office
378 Sauchiehall Street
Glasgow G2 3JZ

Dear Ms Young

Project Title: Optimising the role of the Dental Health Support Worker (DHSW) in a Childsmile Practice: A qualitative case study approach

Thank you for notifying us of the above evaluation project and providing confirmation that ethical approval is not required.

We have consulted with our local Childsmile Programme Coordinator and can confirm that NHS Shetland is happy to support this project taking place within our Health Board.

Wishing you every success with the project.

Yours sincerely,

Dr R Diggle
Medical Director

2nd Draft. 25th May 2016

NHS Forth Valley

Euro House
Wellgreen Place
Stirling
FK8 2DJ

Telephone: 01786 431144
Fax:

NHS
Forth Valley

Mairi Anne Young BA (hons) MSc
PhD Student
The University of Glasgow Dental Hospital &
School
Level 8 COH Office, 378 Sauchiehall Street
Glasgow G2 3JZ

Date   21st June 2013
Your Ref
Our Ref

Enquiries to   Leslie Simpson
Extension
Direct Line   01786 431144

Dear Ms Young

Childsmile Process Evaluation Component Title:
Optimising the role of the DHSW in Childsmile Practice: A qualitative case study approach.

I am writing to confirm that this project has been registered with the NHS Forth Valley Quality Improvement department and you are free to begin data collection, subject to the following conditions:

You will require a Letter of Access before having direct contact with patients/service users or patient identifiable information. Please contact the R&D office to complete this process. You may carry out those parts of the project that do not involve any access to patients or identifiable data while waiting for the Letter of Access to be completed.

Yours sincerely

Leslie Simpson
Senior Facilitator
Quality Improvement

RESEARCH & DEVELOPMENT
Greater knowledge,
Better services ...

NHS
Fife

Faith Hodgins & Mairi Anne Young
The University of Glasgow Dental Hospital &
School
Level 8, COH Office
378 Sauchiehall Street
GLASGOW
G2 3JZ

R&D Office,
Education Centre,
Queen Margaret Hospital,
Whitefield Road,
Dunfermline, KY12 OSU
Tel: 01383 623623

Enquiries to:	Aileen Yell
Direct Line:	01383 623623 Ext 20940
Fax:	01383 674163
Email:	aileenyell@nhs.net
Date	7 June 2013

Dear Faith & Mairi Anne

A Mixed Methods Approach to Evaluating the Childsmile Practice Referral Pathway and Exploring the Dental Health Workers Role
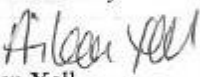
Thank you for sending the following documentation relating to the above study :-

Document	Version	Date
Covering letter		24 May 2013
REC letter2		25 March 2013 2 May 2013
PhD Summary – Faith Hodgins Mairi Anne Young		

I note that you have sought advice from the West of Scotland Research Ethics Service in connection with your projects and that they have advised you that they consider this to fall into the category of 'Service Evaluation' rather than 'research'. Accordingly, R&D do not need to give management approval for the study within NHS Fife. However, there is a requirement for such studies to be recorded by Clinical Effectiveness on their database and we have passed the details of your studies to our colleagues for this purpose.

We would like to wish you every success with your projects.

Yours sincerely

Aileen Yell
Research Governance Officer

Appendix 5: Active Reading Strategies

Establish pre-reading questions: • What is Childsmile? • What do I already know about it?
Identify and define unfamiliar terms: • GIRFEC (Getting it Right for Every Child) • FVA (Fluoride Varnish Application)
Make notes, comments and questions alongside the text. These will be posed to CS stakeholders at the subsequent meetings
Create diagrams and flow charts to map out the integrated CS programme in order to understand how it operates. These will be checked with CS stakeholders at the subsequent meetings to ensure accurate understanding
Highlight key ideas and concepts for later reading and to discuss at subsequent meetings
Summarise the documents to capture the essential ideas and ensure understanding
Using the references list to identify additional papers for review

Appendix 6: NHS Boards and Regions

North Region	East Region	West Region
NHS Grampian	NHS Borders	NHS Ayrshire & Arran
NHS Highland	NHS Fife	NHS Dumfries & Galloway
NHS Orkney	NHS Forth Valley	NHS Lanarkshire
NHS Shetland	NHS Lothian	NHS Greater Glasgow & Clyde
NHS Western Isles	NHS Tayside	

Appendix 7: Characteristics of NHS Boards influencing Delivery of the Role

Characteristics	Label	Description
Geographical characteristics	Rural	The NHS board is predominantly rural
	Island	The NHS board is an island
	Urban	The NHS board is predominantly urban
Where DHSW are based	PHN/HV	The DHSW is based within the Public Health Nurse or Health Visiting Team
	DS	The DHSW is based within dental health services
DHSW Role	Single	The DHSW delivers one component of the Childsmile programme (Childsmile Practice)
	Dual	The DHSW delivers more than one component of the Childsmile programme
DHSWs Engagement with Stakeholders	High	There is reported frequent and positive communication between DHSW and PHN/HVs and Dental Practice Staff
	Low	There is reported low communication between DHSW and PHN/HVs and Dental Practice Staff
Intensity of DHSW Support	High	Families are typically provided with several home visits
	Low	Families typically receive one home visit

Appendix 8. Selection Matrix for selecting NHS Boards

NHS Boards	Health Boards / CHPs Characteristics				
	Size of NHS board	Where the DHSW is base	The DHSW Role	DHSWs Engagement with Stakeholders	Intensity of DHSW Support
West Region					
NHS Ayrshire & Arran	Rural	DS	Dual	High	High
NHS Dumfries & Galloway	Rural	DS	Dual	High	Low
NHS Greater Glasgow & Clyde	Urban	PHN/HV	Single	High	High
NHS Lanarkshire	Urban	PHN/HV	Single	High	High
East Region					
NHS Borders	Rural	DS	Dual	High	High
NHS Fife	Urban	DS	Dual	Low	Low
NHS Forth Valley	Urban	DS	Dual	N/a[23]	N/a
NHS Lothian	Urban	DS	Dual	N/a	N/a
NHS Tayside	Urban	DS	Dual	Low	High
North Region					
NHS Highland: Aberdeen City CHP[24]	Urban	DS	Dual	Low	N/a
NHS Highland: Aberdeenshire CHP	Rural	PHN/HV	Dual	High	Low
NHS Highland: Argyll & Bute CHP	Rural	DS	Dual	High	High
NHS Highland: Moray CHP	Rural	DS	Dual	High	Low
NHS Highland: Mid Highland CHP	Rural	DS	Dual	High	High

---

[23] N/a means there is no information available on this aspect, or this aspect of the programme was not delivered within the NHS board at the time of selection

[24] Individual CHP data was only available for Highland CHPs (2012 Process Evaluation)

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NHS Highland: North Highland CHP	Rural	DS	Dual	Low	High
NHS Highland: South East Highland CHP	Rural	DS	Dual	Low	High
NHS Orkney	Island	DS	Dual	High	Low
NHS Shetland	Island	DS	Single	High	Low
NHS Western Isles	Island	DS	Dual	Low	High

Appendix 9: Selection Pool of Stakeholders delivering Childsmile Practice

NHS Board	Stakeholder
West Region	
NHS Greater Glasgow & Clyde	Operational Service Manager Health Visitor Team Leader [25] Single Role DHSWs[26] x 33
NHS Lanarkshire	Programme Coordinator Public Health Nurse Manager Single Role DHSWs x 4 Dual Role DHSWs x 17[27]
East Region	
NHS Fife	Programme Coordinator Dual Role DHSWs x 15
NHS Forth Valley	Programme Coordinator Childsmile Development Officer[28] Single Role DHSWs x 4 Dual Role DHSWs x 6
North Region	
NHS Highland: Argyll & Bute CHP	Oral Health Improvement Manager Dual Role DHSWs x 4 Dual Role Term Time DHSWs x 3
NHS Highland: Moray CHP	Programme Coordinator Dual Role DHSWs x 2
NHS Highland: Mid Highland CHP	Programme Coordinator Dual Role DHSWs x 5
NHS Shetland	Programme Coordinator Single Role DHSW x 1

---

[25] DHSWs Line Manager

[26] Delivers CS Practice only

[27] Delivers more than 1 component of Childsmile

[28] Oversees Childsmile Practice

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Appendix 10. Information and Consent form

INFORMATION & CONSENT FORM
Focus Groups with DHSWs. Phase 1 Sensitising

Title: Optimising the role of the DHSW in CS Practice:
A scoping exercise

Researcher: Mairi Anne Young
Supervisors: Dr. Wendy Gnich & Dr. Andrea Sherriff.

The Childsmile (CS) evaluation is co-ordinated by the Central Evaluation and Research Team (CERT) based within The University of Glasgow Dental School. This study is a PhD project and part of the national CS evaluation.

You are being asked to participate in:

A focus group discussion with other DHSWs within your area to discuss your views and experiences of delivering CS Practice.

The information obtained will be used to explore variation in the DHSW role in order to select case studies for the second phase of the PhD project. The results will be used to feedback to the programme to improve delivery and optimise the DHSW role.

Your participation is entirely voluntary. The session will be audio recorded. Information will be strictly confidential and kept in a secure environment in accordance with the Data Protection Act 1998. Please indicate whether you are willing to take part in by initialling the appropriatte boxes overleaf.

	Please mark your initials in each box you agree with
I have read the paragraph above and have had the opportunity to ask questions. I agree to take part in a discussion about Childsmile.	
I give permission for the discussion to be audio taped.	
I understand anonymous quotations may be included within the final report and may be published.	

Name ....
Signature ....
NHS Board......................
Date................................

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Appendix 11. Process Evaluation Data Collection Tool

Category A:	Staffing & team structure

In relation to all questions in this section:

Ask the respondent to consider whether there have there been any major changes relating to staffing & team structure.

Where possible – obtain dates for when these changes have taken place.

1. Have there been any changes to your role since we last spoke to you?
   If so what have they been?

2. Have there been any changes to the role of your staff or team structure?
   If so what have they been?

3. What constitutes full staff quota in your area?

4. Are you at your full quota?

YES	
NO	

a. If not why not?

5. Do you have any staff with a dual role?

	YES	NO
DHSW		
EDDN		
Other		

a. If you have staff with a dual role, please give further details (e.g. does their dual role just involve different Childsmile components; do they work on other oral health initiatives in addition to Childsmile; do they carry out non-oral health work? Is the role banded differently?)

6. What have been the key barriers in terms of staffing within the programme?
7.

7. To what level have these barriers impacted on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

8. What training have staff (both in your own team and GDS EDDNs) received for their Childsmile role (national & local)?

9. Have there been any issues with training availability? If so, what have these been?

10. Has the availability of training impacted on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great	Quite a	Some	Hardly	None at

deal	lot		any	all	

Please explain your answer

11. Has the content of the training been fit for purpose/sufficient enough to support staff to deliver their   roles effectively?

Level		
Completely sufficient	Somewhat sufficient	Not at all sufficient

Please explain your answer

12. If training has not been **completely** sufficient /fit for purpose, how much has this impacted on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

13. Are there any issues impacting on your staff's capacity (e.g. time available, resources) to deliver all aspects of the programme?

Please explain your answer

14. To what extent do those issues affecting capacity impact on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

Logic Model; Activity 14: recruitment, training/ongoing CPD,

15. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Do you have any other relevant information to add?

Category B:	Model of delivery for Core

<table>
<tr><td colspan="5">In relation to all questions in this section:

Ask the respondent to consider whether there have there been any major changes relating to the delivery of the Core programme.
Where possible – obtain dates for when these changes have taken place.</td></tr>
</table>

1.	Have there been any significant changes to how the Core programme has been running since we last spoke? If so, what have these been?
2.	What have been the key barriers/risks to the delivery of the core programme?
3.	To what extent have these barriers impacted on the ability/likelihood of meeting intended outcomes?

<table>
<tr><td colspan="5" align="center">Level of impact</td></tr>
<tr><td>A great deal</td><td>Quite a lot</td><td>Some</td><td>Hardly any</td><td>None at all</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Please explain your answer

4.	What have been the key facilitators in delivery of the Core programme?
5.	Which of the facilitators identified would you say have been the most influential in driving the success of the programme?

Logic Model; Activity 2: OH packs provided to all children @ 1,3,4 & 5

Logic Model; Activity 3: All nurseries (LA & private) implement daily supervised brushing programme

Logic Model; Activity 4: All primaries in most deprived SIMD quintiles implement daily supervised brushing programme (P1&2)

6. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Do you have any other relevant information to add?

Category C:	**Model of delivery for N&S**

In relation to all questions in this section:

Ask the respondent to consider whether there have there been any major changes relating to the delivery of the N&S programme.
Where possible – obtain dates for when these changes have taken place.
Note; changes to the consent and prescribing process will be explored in detail later on in this section.

1.	Have there been any significant changes to how the N&S programme has been running, over and above the changes to the consent and prescribing process since we last spoke to you? Please explain your answer
2.	Who is currently being targeted for the Nursery programme?
3.	Who is currently being targeted for the School programme?

Consent and Prescribing Process

4.	How were the changes to the consent and prescribing process implemented in your

board?

E.g.

- How did you communicate the changes with education? With families? With your staff?

---

5. Please describe the consent and prescribing process in your board;
- How is consent gathered? Please explain

Method	Yes	No
Consent Meeting		
Face to face		
Home via school		
Parents evening		
Initial registration pack		
Other (specify)		

- How do parents provide medical history updates?
- What role does the validating dentist now play?
- How do families communicate their wish to opt out of the programme?
- How do you encourage non-consenting families to consent?

6. Have any changes been made to the way in which you deliver the N&S programme as a result of the changes to the Consent and prescribing process
Please explain your answer

7. Have these changes had any impact on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

8. Have you noticed any differences in the consent rates in your board as a result of the changes to the consent process?

Difference				
A big difference	Some difference	Unsure if difference	Hardly any difference	No difference at all

Please explain your answer

Standardising the threshold for referral letters

9. In light of recent discussions around standardising the threshold for referral letters, please describe the referral process in your board. How has this changed, if at all?

10. Have your staff received training with regards to standardising the referral process?
Please explain your answer

11. Do you have a procedure in place to review registration status of those children who have received a consecutive number of referral letters?

	YES	
	NO		Please explain your answer

12. Do you ever refer children from the N&S programme into the Childsmile practice programme?

YES	
NO	

Please explain your answer

13. Do you have a procedure in place to link with other professionals/systems as part of the follow-up process?
E.g. Linking with other professionals, social work, child protection, Do you link with any board   wide systems E.g. Child Health Early Warning Systems (CHEW) or Trak?

YES	
NO	

Please explain your answer

14. Are your staff familiar with the principles of GIRFEC?

YES	
NO	

Please explain your answer

15. Would your staff know how to find out who the named person is for a given child?

YES	
NO	

Please explain your answer

16. What have been the key barriers/risks to the delivery of the N&S programme?

17. To what extent have these barriers impacted on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

18. What have been the key facilitators in delivery of the Nursery and School Programme?
Are they the same/different for each programme element?

19. Which of the facilitators identified would you say have been the most influential in driving the success of the nursery/school programmes?

Logic Model; Activity 9: Twice yearly FVA for children in targeted schools & nurseries

20. How likely are the outcomes to be achieved through these activities?

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Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Do you have any other relevant information to add?

Category D:	**Model of delivery for Practice**

In relation to all questions in this section:

- *Ask the respondent to consider whether there have there been any major changes relating to the delivery of the Practice programme.*
- *Where possible – obtain dates for when these changes have taken place.*

1. Have there been any significant changes to how the Practice programme has been running since we last spoke? If so, what have these been?

Referral Process

2. What tools are used to refer into the Practice programme?
   (E.g. 6-8 week assessment, local referral form, HV birth book, other processes)?

Referral Tool	Tick box
6-8 week assessment	
Local referral form	
HV birth book	
clinic	
Other (specify)	

Please explain your answer
   a. If clinic, what type of clinic?, please explain the process involved
   b. If other, please explain

3. Has the introduction of the 6-8 week assessment had any impact on referrals to the Childsmile Practice programme?

4. Have other referral tools other than the 6-8 week assessment tool had any impact on delivery of the Childsmile practice programme? E.g. Local referral form, HV birth book, clinic

5. Is the 27-30 month assessment form being used in your board, if yes, when was this rolled out?

YES	
Date of roll out	
NO	

6. Has the 27-30 month assessment tool had any impact on the Childsmile practice programme?

8. Who refers children into the Childsmile practice programme? E.g. HV, Social work, school nurse, self-referral, other

Referrer	Tick box
HV	
OHP	
DHSW	
Social Worker	
School Nurse	
Self-Referral	
Other (specify)	

8. At what age are children typically being referred into the programme?

Children	Tick box
new-born	
under 5 years	
over 5 years	
Other (specify)	

9. What 'type' of children are typically referred into the programme in your health board? Please explain your answer

10. How is the decision made to refer a child to Childsmile practice?

E.g. based on need/ Universal (all children referred)

Need	Universal

a. If based on 'need', how does the referrer determine 'need'?

E.g. is it a 'gut' feeling, based on indicators?

11. Who receives the referral?

Referral letter received by	Tick box
Referral sent to central email then forwarded to DHSW	
Referral sent direct to the coordinator	
Referral sent direct to the DHSW	
Other (specify)	

12. Once a referral is received how is the referral dealt with? What happens next?

13. Are referrals ever made directly to a practice?

Yes	
No	

    a. If so by whom?
    b. How is this recorded?

14. In your opinion are the 'right' children being referred into the programme?

Yes	
No	
Unsure	

Please explain your answer
E.g.
- If no why not?
- Can you define 'right child'?

15. In your opinion how often are the 'right' children being referred?

Level of impact				
Always	Most of the time	Sometimes	Hardly ever	Never

Please explain your answer

Model of family support; communication from referral source

16. What information do Childsmile staff receive from the referrer?
    a. Do referrers provide Childsmile with any 'additional' information?
       E.g. any information other than name, age, contact details.

17. How much does the additional information provided, support Childsmile staff in making decisions around **when/how to make initial contact with the family**?

Level of additional information				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

18. How much does the additional information provided, support Childsmile staff in making decisions around **the level/type of support a family requires during initial contact?**

Level facilitation				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

Model of family support; 'initial' contact with family

19. How (E.g. phone call, letter, home visit) and when (E.g. age, timeframe) is *initial contact* established with the family and who is responsible for this?

Method	Tick box
Telephone Call	
Letter	
Home visits	
Baby Clinic	
Other (please specify)	

Age	
Time frame	

Who is responsible	Tick box
HV	
DHSW	
Coordinator	
Administrator	
Other (please specify)	

20. What is the procedure in the case where a family cannot be contacted?

21. What is involved in the initial contact with the family?

      a. What information is given to the family

      b. What information is received from the family?

22. During this initial contact how is the level and type of support for each family decided?
      a.   Who is involved in deciding this?
      b.   To what extent is support tailored for each family during this initial contact?

Extent of tailoring				
A great deal	Quite a lot	Some	Hardly any	Not at all

    Please explain your answer

23. How is support provided to families? (Via which 'route' does this take place E.g. via home visits, at baby clinics, by telephone, or via another route?)

Method	Tick box
Home visits	
Baby Clinic	
Telephone	
Text message	
Other (please specify)	

a. Why was this route chosen?
b. Are there any benefits; drawbacks to the chosen route?
c. Does the chosen route vary depending on circumstance/context? If so how?
Please explain your answer

24. Which staff deliver support to the families via the route(s) described above?

25. What information/support is given to families via the chosen route(s)?
    Please describe how each type of support is delivered

26. Are families routinely signposted to other services/sources of support?

YES	
NO	

    Please explain your answer;
    E.g.
    - If yes, how are these needs identified?
    - If no – is there a particular reason this does not happen?

27. How do Childsmile staff remain familiar with available signposting services in their areas?

28. Is there a drive to get the family to a dental practice after one visit?

YES	
NO	

    Please explain your answer

Model of family support; continued support

29. Do DHSWs provide continued support to families after initial contact stage but prior to dental registration?

YES	
NO	

30. How is it decided that a family requires continued support prior to dental registration?
    a. Who makes these decisions?
    b.

Who makes decisions	
DHSW	
HV	
Coordinator	
Other (specify)	

31. What is involved in providing continued support to families to enable them to become registered with a dentist?

Type of Support	Tick box
Provide number of Dentist	
Phone dentist to register family	
Phone dentist to make appointment	
TB advice	
Dietary Advice	
TB instruction	
TB demonstration	
OH pack deliveries	
Other (specify)	

32. Is this different from information given at initial contact? Please describe the differences.

33. How is it decided that a family is ready to attend the dentist?
   a. Who makes this decision?

Who makes decision	
Coordinator	
HV	
DHSW	
Other (specify)	

34. Are families given further support from a DHSW once they have become registered with a dental practice?

YES	
NO	

a. Who would decide that the family requires further support at this stage?

Who makes decision	
Coordinator	
HV	
DHSW	
Other (specify)	

b. What does this further support involve?
   E.g. the DHSW will help make appointment, go with family to dentist appointment.

Type of Support	Tick box
Phone dentist to make appointment	
Attend dentist with family	
TB advice	
Dietary Advice	
TB instruction	
TB demonstration	
OH pack deliveries	
Other (specify)	

Please explain your answer

35. Are there any examples were Childsmile staff have gone to 'extra lengths' to support families to register with /attend the dentist?
E.g. anything that was above and beyond 'normal procedure'?

36. Is there a usual expected number of home visits for a family?
- If so, what number? And with what frequency?

37. How is it decided that a family no longer requires DHSW support?
a. Who makes this decision?

Who makes decision	
Coordinator	
HV	
DHSW	
Other (specify)	

Model of family Support; Communication with referral source

38. How does the feedback loop between the Childsmile team and the referral source work? E.g.
- How do DHSWs give feedback to the referral source about the support provided to families?

39. At what point would a family be referred back to their health visitor (e.g. if no progress was being made)?
- How are health visitors involved if particular issues arise?

40. How good is the feedback loop between Childsmile and the referral source?

Level of impact				
Very good	**Good**	**Acceptable**	**Poor**	**Very poor**

Please explain your answer

DHSW preparedness for role

41. In general, how prepared/equipped are DHSWs to carry out their role in relation to Childsmile practice?

42. Is there anything that impacts on the DHSWs ability to conduct their role to the extent that it should be carried out within the Childsmile practice programme?

43. To what extent have these barriers impacted on the ability/likelihood of meeting intended outcomes

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

44. Are DHSWs provided with any further guidance or training on how to interact with families to support behaviour change?

YES	
NO	

Please explain your answer

45. To what extent are your DHSWs equipped to deliver interventions that lead to behaviour change?

Level				
Completely equipped	Very well equipped	Somewhat equipped	Not very well equipped	Not at all equipped

Please explain your answer

46. Do DHSWs have the 'freedom' to tailor support to the needs of the family to the extent that they feel is required?

YES	
NO	

Please explain your answer;

- E.g. do DHSWs have the autonomy to make decisions regarding models of family support or is there a more prescribed approach that they must follow?

Delivery of programme in practice

47. Who delivers Childsmile Practice in your area? (I.e. GDS practices, CDS, both?)

48. Who is typically involved in delivering Childsmile appointments in your area? (I.e. dentists, EDDNs, others?)

Who delivers Childsmile appointments	
Dentist	
EDDN	
Hygienist	
Therapist	
Other (specify)	

49. What role does each professional play in the delivery of Childsmile interventions in

practice?

Professional	role
Dentist	
EDDN	
Hygienist	
Therapist	
Other (specify)	

50. Please describe how each type of intervention is delivered in practice

Intervention	Description of delivery
FV application	
TB advice	
TB instruction	
TB demonstration	
Dietary Advice	
OH pack	
Other (specify)	

51. Are you aware of any particular methods/techniques/resources to support the delivery of Childsmile interventions in practice (Please give details);

E.g.
- Acclimatisation techniques
- Visual aids

52. In your opinion, Is the programme being delivered as intended in the practice setting?

YES	
NO	

Please explain your answer

53. What methods are implemented to support practices to deliver interventions as intended?

54. Considering all situations where the programme may not be delivered as intended, to what extent is this impacting on the ability/likelihood to meet intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

55. Now that the SDR has been in place for some 18 months do you think this has had an impact on programme delivery and/or the ability/likelihood of meeting intended outcomes?

YES	
NO	

Please explain your answer

56. How often is your team in contact with practices regarding programme delivery?
a. Who in your team makes these contacts (e.g. Coordinators; DHSWs)?
b. Has this contact been recorded?

Fail To Attend (FTA) Process

57. Do practices follow the FTA guidance as directed by the programme?
E.g. the Childsmile manual states; "*Where a child enrolled in Childsmile fails to attend a practice appointment on more than one occasion the practice should contact the DHSW to inform them of this.*"
"*If a child fails to attend practice on two occasions the practice will inform the DHSW who will decide the best course of action in collaboration with the HV/PHN. Where applicable follow local fail to attend policy.*"

YES	
NO	

a. If no why not?

58. In general what FTA protocol is implemented in Childsmile practice?
E.g.

- How many failed appointments take place before a child is referred back to the Childsmile team?

No. of FTAs	Tick box
1	
2	
Other (specify)	

- Who do they report FTAs to?

Who	Tick box
DHSW	
Coordinator	
HV	
Other (specify)	

- By what method and how often are these reported?

59. How good is the feedback loop between dental practices and Childsmile in terms of communication of FTA's?

Level of impact				
Very good	Good	Acceptable	Poor	Very poor

Please explain your answer

60. What action does Childsmile take following notification from practice that a child has FTA

61. Do you inform the family's health visitor or other professional groups if a child has failed to attend their appointment(s)?

YES	
NO	

Please explain your answer

62. What action does the HV/other professional take in respect of this communication

63. Do dental practices contact health visitors/other professionals directly to discuss FTA's or general concerns about families?

YES	
NO	
Unsure	

a.   If Yes, how is this communication fed back to the Childsmile team?

64. What have been the key barriers/risks to the delivery of the practice programme?

65. To what extent have these barriers impacted on the ability/likelihood of meeting intended outcomes?

Level of impact				
A great deal	Quite a lot	Some	Hardly any	None at all

Please explain your answer

66. What have been the key facilitators in delivery of the Practice programme?
67. Which of the facilitators identified would you say have been the most influential in driving the success of the programme?

Logic Model; Activity 5: HVs/PHNs routinely link all new-borns to Childsmile

Logic Model; Activity 6: Enhanced home/community visits from DHSW for targeted families

Logic Model; Activity 7: Targeted families linked to community health improvement activity via DHSW

68. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Logic Model; Activity 8: Tailored OH advice (0-3) [from DHSWs and practices] & clinical

prevention (FV) from 2 years via primary care dental services

69. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Logic Model; Activity 11: Follow up of children not regularly attending PCDS

70. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Logic Model; Activity 13: Childsmile pathway developed/linked with existing dental & child health systems

71. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Logic Model; Activity 15: Financial incentives for GDPs

72. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Do you have any other relevant information to add?

Category E:	Communication

1. Do you carry out any local awareness-raising or promotion of Childsmile?

YES	
NO	

a. Please explain your answer; please provide details (e.g. description of the activities; where they take place; who is targeted etc)

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E.g. how do you engage professional groups and the general public

Logic Model; Activity 1: Awareness raising, marketing, communications, identification & engagement

2. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Logic Model; Activity 12: Multi-disciplinary working among wider health prof & DHS, collaborative working across NHS/education

3. To what extent does multi-disciplinary/collaborative working happen within the Childsmile integrated programme in your board?

Multidisciplinary working				
A great deal	Quite a lot	Some	Hardly any	Not at all

Please explain your answer

4. How likely are the outcomes to be achieved through these activities?

Extremely likely	Very likely	Somewhat likely	Not very likely	Not at all likely

Please explain your answer

Do you have any other relevant information to add?

Category F:	**Context**
1. Have there been any changes to the context of your area?	
2. Are there any particular contextual factors that you take into account when planning Childsmile delivery?	

Category G:	**Logic model outcomes/Mechanisms of change**
1. Are there any activities in the logic model that you are not carrying out?	
2. Are there any activities that are being delivered differently to the logic model? If so, why are these delivered differently?	

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3. Where delivery of the programme does not match the logic model, to what extent do these differences in delivery impact on the ability/likelihood to meet intended outcomes?

impact				
A great deal	Quite a lot	Some	Hardly any	Not at all

Please explain your answer

4. Does the delivery of any of these activities raise concerns?

5. Are there any other activities you carry out over and above those in the Logic Model?

YES	
NO	

a. If yes, please describe these

6. Do you think you're on the right track to achieving the outcomes in general through programme activities in your area?

YES	
NO	

Please explain your answer

7. In your opinion what is/are the key factor(s) that will lead to the overall general outcome of improvement in children's oral health?

E.g. if there was one action that needed to happen, what would this be?

8. What would you say has been the biggest barrier to the delivery of the Childsmile programmes?
a. Can the barrier(s) be addressed (or have they already been addressed)? If so, how?

9. In which aspects of the programme do you feel you have made the greatest progress to date?
Please explain e.g. Why have these been successful?

10. In your opinion is there anything that should be done differently in the delivery of the Childsmile programme?

11. In your opinion, does the programme take the users perspective into account?
E.g. Do you feel that users have the opportunity to shape the programme?

12. How does communication work between the national programme and local boards?
E.g. How are national programme changes communicated to boards?

13. How good is this communication between the national programme and local boards?

Level of impact				
Very good	Good	Acceptable	Poor	Very poor

Please explain your answer

14. In your opinion is there the right balance between direction from the programme i.e.; 'prescription' and the ability to apply the programme to your local context?

15. What are the key areas that the programme should focus on? Are these local or national responsibilities?

Do you have any other relevant information to add?

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Finally…
1. Is there anything else you would like to mention regarding programme delivery?
2. Is there anything you think may be important for the evaluation team to know?

Appendix 12. Focus group discussion data collection tool

INTRODUCTION
Thank the group for attending. Introduce myself. Today's session is part of a series of focus groups being carried out with other DHSWs across several health boards. The focus groups are being held as part of my PhD which is part of the national Childsmile evaluation. The overarching aim is to gain further understanding of which factors impact on the effectiveness of the DHSW role. The aim of today's session is to learn from <u>you</u> how we can optimise the role before it is evaluated. We will do this by focusing on your experiences of delivering CS Practice, the variances in the role and the barriers and facilitators. The data from these sessions will be used to select case studies for my 2nd year of work. The results will be shared with the CS Executive in order to optimise the role and improve programme delivery.
SESSION INFO
1. **I would like you to do the talking.** • Your input is vital and appreciated. I encourage you to be honest and open with your opinions. • For the same of the recording, please give people time to finish before making your own point 2. **There are no right or wrong answers.** • Everyone's experiences and opinions are valued. 3. **The session will be audio recorded** • This is only to capture what you say accurately • I will not identify anyone by name in the final report • Your identity will be anonymous and a random pseudonym will be used to refer to your responses. *Ask if there are any questions before commencing. Turn on the Dictaphone & confirm I am doing so.*

A: DHSW Role
This section will focus broadly your role 1. **Can we start with going round and confirming:** • Where you are based (i.e. your CHP) • Your job title • How long you have been post for • Has your job description changed at all since coming into post? • Whether you have a dual or single role • How do you juggle the responsibilities of the dual role? 2. **In your area, what does a DHSW do?** • Key features of the role • The purpose of the role 3. **What attributes do you feel are important to carrying out this role?** • Education attainment

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- Professional training
- Previous experience (professional / personal)
- Personality
- Relating to the families
- Having children yourself

B: Training

This section will focus on the training for the role.

4. **What are your feelings regarding the national NES training?**
   - When did you complete training
   - Content of the course
   - Length of the course
   - What you would like to see included in the course which would have been useful.
   - Your confidence & competence in the role before and after completion.
   - How did it prepare you for the role?
   - Adequacy for the role

5. **What are your feelings concerning the CPD training?**
   - When did you last complete CPD training
   - What training have you attended
   - Type of training available
   - What you would like to see available that would be useful.
   - Your confidence & competence in the role before and after completion
   - How has it prepared you for the role
   - Adequacy for the role

6. **What local training have you received?**
   - Shadowing
     - Was there anything you learned here that you didn't in training
   - Mandatory board training.

7. **How long did it take for you to feel fully prepared and confident in your role?**

8. **What were your expectations before coming into post?**
   - Do they influence how you carry out the role
   - What influenced these expectations
   - Were they different to the role? If so, why

C: Behaviour Change

This section focuses on behaviour change

9. **What does behaviour change mean to you?**

10. **Do you think in your role, you are able to encourage behaviour change in parents / children?**
    a) If not, why not?
    b) If so, what aspects are key to your success?

D: Stakeholders

This section will focus on your relationships & communication with CS Stakeholders (i.e. HVs, Dental Practice Staff and Coordinators).

11. **How is your relationship with the HVs?**
    - Are you assigned to a HV team
    - How do you communicate (methods, frequency)
    - How do you think they see CS & your role?
    - Barriers / Facilitators

12. How is your relationship with Dental Practice Staff in your area?
- Are you assigned to specific practices
- How do you communicate (methods, frequency)
- How do you think they see CS and your role
- Barriers / Facilitators

13. How is your relationship with Coordinators within your area?
- Are you line managed by the Coordinator
- How do you communicate (methods, frequency)
- How do you think they see your role
- Barriers / Facilitators

E: Delivery

This section will focus on the delivery of CS Practice.

14. Please outline the <u>referral process</u> in your area?
- Who can make a referral or where does the referral come from
  - *If other than 6-8wk assessment:* Do you get a lot of referrals from these sources?

- Who receives the referrals
- Are there local forms in use
- What information do you receive from the referrals?
- What information is not included which would be useful
- How do you use this information
  - delivering support
  - 1st contact

- Are there any problems in obtaining additional information
- What is the approx timeframe between:
  - The referral being made & you receiving it
  - You receiving the referral & 1st contact
  - Making 1st contact & 1st home visit

- What is the typical age of the child being referred
- What type of child is normally referred
  - LAC
  - Siblings
  - Most deprived
  - All children
  - Babies

- Are the right children being referred?
- Who are the right children?
- How does the person referring know this is the right child? Is it instinctual or is there a list of criteria?

15. Please outline the process of making the <u>1st contact</u> with a family who has been referred.
- Who would make the 1st contact
- What methods do you use
  - Telephone
  - Email
  - Text

        ○ Letter / Calling card
        ○ Cold calling

- What do you say on the 1st contact
- Who decides whether a home visit is required
  - *If DHSW* – How do you decide this? What are the signs?

- How do you frame the suggestion of a home visit to the parent?
  - Do you ask, offer, suggest?

16. **Please outline the <u>home visits</u>.**
    - How do you introduce yourself, CS & the purpose of the visit to parents & child?
    - How do you assess a family's needs at that 1st meeting
    - How do you decide what to start with
      - Do you ask the parents what their current routine is
      - Do you ask them what they are struggling with

    - Is the session structured
    - How much time would you aim on spending with a family
    - What materials do you bring with you
    - Do you ever do home visits in pairs
      - If so: Who do you visit with
      - Does this affect how many visits you can do in a week or day
      - Who delivers the sessions

    - How do you feel about going into people's homes
    - How would you decide whether continued support is needed
      - How do you arrange the next visits
      - What is the aim of the next visit

17. **Please outline the <u>content of the home visits</u> including how you would use the materials**
    - Information & advice
      - Diet
      - Tooth brushing

    - Demonstrations
      - Tooth brushing

    - Signposting
      - What services do you signpost to
      - How do you know about these services
      - How would you signpost

    - Registering the family with Dentist & Booking appointment
      - How do you decide which practice to register them
      - Where is this done
      - How far in advance would you book the appointment
      - How much success have you had facilitating the family into practice
      - What happens now

    - Reinforcing HV messages (which ones)

18. **When delivering these sessions, how do you ensure parents understand the messages and know how to carry it out?**

19. **What is your aim at the end of the 1st support session?**

20. **Have you gone to any extra lengths with a referred family?**
    o   What would you consider to be extra lengths?

21. **How well do families engage with yourself & the support sessions?**
    - Negatively – what can be done to overcome this?
    - Positively – what contributes to this?

22. **Please explain the FTA procedure**
    - Who do you receive FTAs for (referred or all)
    - How do you find out about FTAs
    - How many would you receive in a typical month /week
    - What typically happens once you are notified of an FTA
    - In your experience, what have been the typical reasons for FTAs

F: Barriers & Facilitators

This section focuses on the barriers and facilitators to your role and delivery of Practice.

23. **What key issues would you say have impacted (positively or negatively) on delivering your role?**

DHSW Role:
- Training
- IT / Admin elements
- Dual or single role (time spent on dual elements)
- Where you are situated
- Being or not being linked with the PHN/HV team
- Carrying out non CS elements.

Stakeholders:
- Relationships with HVs, Dental Practice Staff, Coordinators
- Stakeholders engagement with CS

Delivery:
- Referral Process
- Engagement of the family
- Support sessions
- Being in the family home
- Facilitating families into a practice
- FTAs procedures
- Guidelines (Coordinators, handbook, training manual, local)

24. **If we can focus a little on the wider context of your health board or CHP.**

- Do people recognise CS
- Do they understand what it's for
- How do families respond to CS
- Do the referred families recognise CS

25. **Are there any specific characteristics within this board which impact on how you**

deliver your role?

- Geography
- Travelling
- Rural / Urban
- Population
- Local or National policies (i.e. Early Years Pathway, GIRFEC)

G: Additional

26. Are there any elements of the role you would change or introduce?
27. Is there anything further you would like to add?

DEBRIEFING

- Turn off the Dictaphone.
- Make the DHSWs aware I will be available if they have any further questions for a period of time after the session.
- Ensure they have my contact details if they wish to get in touch in the future.
- Remind about possible case study selection for the next phase of work.

Appendix 13. Process for Developing the Focus Group Data Collection Tool

Review Delivery of Practice models and (2012) Process Evaluation Health Board Summaries.
List areas where there is not enough information. For example: content of home visits and training for the role)
Develop questions which expand on these areas
Review programme theory for the Practice DHSW role.
Develop questions surrounding what DHSWs are doing
Review the RQs to ensure questions are developed to answer the RQs
Identify areas where personal opinions are relevant. For example, whether training is adequate for the role or issues which have impacted positive or negatively on the role
Introduce concepts picked up from the documentary review. For example: autonomy, behaviour change and extra lengths. This information can also be used as prompts for open-ended questions
Use a similar structure and wording from the Process Evaluation interviews
Use Delivery of Practice models to tailor the DCT for each health board/CHP. For example, the model would highlight if the DHSWs are based with the PHN/HV team or if home visiting has not yet been established within the health board/CHP

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Appendix 14. Coding Scheme for Data Analysis

Childsmile	Aims of Practice Executive & Research Handbook/Guidelines Intended Stakeholder Roles Targets
National	Multi-Disciplinary Working National Training NHS Boards
Local	Coordinator Management Staffing Work Base Outcomes Targeting Admin/IT Travelling Resources Core N+S Practice Internal Mail Piloting The Wider Community
Stakeholders	PHNs/HVs Oral Health Promoters/Educators Other DHSWs within the board Additional Stakeholders
Dental Practices	Staff Appointments/Clinics Types of practices The statement of dental remuneration
CS Practice: The Role	Changes to the role Autonomy Non CS Work Hours of Work/Job Title/Banding/Pay Workload Support for DHSW
Delivery of CS Practice	Contacting families Extra Lengths FTAs Referrals Facilitating families into practice Signposting Tailoring Engaging with families Structure & Content of Home Visits Demonstrations Lone Working Supporting Families Dual Visits

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	Number & Length of home visits
Behaviour Change	
The Family	Engagement Motivation Family's needs
Training	Availability Shadowing Learning on the job Updates/CPD
The Individual DHSW	Attitudes Confidence Competence Previous Experience Time in Post

Appendix 15. Topics Covered in Childsmile Training

Childsmile Training Topics

Dental public health	Caries and fluoride
Oral soft and hard tissue	Application of Fluoride Varnish
Health, safety and infection control	Benefits of breastfeeding, weaning, and early nutrition
Child protection	
Health behaviour change and effective communication	Working with children in the clinical/community setting
Inequalities/equitable services in health and a community development approach	The social and medical model of health
A mini Objective Structured Clinical Examination (OSCE) to test knowledge and skills on standard and enhanced caries prevention	Action planning a CS oral health promotion session

Local training for DHSWs

Mandatory	Useful
Hand washing	Violence and aggression
Basic life support	Child protection
Manual handling	Weaning and nutrition
Infection control	Breastfeeding
Fire safety	Domestic abuse
	Equality and diversity
	Suicide brief intervention
	Community development
	Post-natal depression
	Smoking cessation
	Substance misuse

CPD training for DHSWs

Antenatal and maternal oral health
Community development
Oral health update sessions
Brief intervention training
Nutrition training (accredited by REHIS[29])
Study skills

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[29] The Royal Environmental Health Institute for Scotland (REHIS)

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Appendix 16. Delivery of Practice Models

NHS GRAMPIAN / ABERDEEN CITY CHP

REFERRALS	DHSW SUPPORT	DENTAL PRACTICE

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment
↓
- Family referred to DIAL
- Family referred to CS using 6-8wk assessment form
↓
CS Administrator receives referral. Updates a spreadsheet
↓
CS refers family to dental practice

DHSW SUPPORT

Family referred to CDS/SDS to register

DENTAL PRACTICE

Family FTA twice
↓
Practice refers family to CS via phone/email
↓
DHSW contacts family to encourage new appointment
↓
DHSW updates PHN/HV

NHS HIGHLAND: ARGYLL & BUTE CHP

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

Family referred to CS using local form

Family referred to CS using 6-8wk assessment form

Family referred to Dental Practice

DHSW SUPPORT

OHSW contacts family via phone

Arranges home visit

Offers phone support

Home Visit

Signposting

Dental registration

Oral health advice

Offer to accompany parents to appointment

Book dental appointment

Phone Support

Dental registration

Offer to accompany parents to appointment

Oral health advice

Book dental appointment

Updates PHN/HV

DENTAL PRACTICE

Family FTA twice

EDDN contacts OHSW

OHSW contacts dental practice for FTAs

OHSW contacts PHN/HV for advice on how to proceed

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NHS GRAMPIAN: ABERDEENSHIRE CHP

REFERRALS

PHN/HV assesses child's oral health needs from 3mths old

Family referred to CS using local form

Family referred to DIAL

DHSW allocates own referrals from central system

DHSW SUPPORT

DHSW contacts PHN/HV to discuss family needs

Home visit required

Home visit not required

Home Visit

Signposting

Tooth brushing advice

Diet advice

Family referred to baby clinic

Update PHN/HV

DENTAL PRACTICE

Family FTA twice

Family referred to DHSW via phone

DHSW contacts family to offer

DHSW updates PHN/HV

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NHS GRAMPIAN: MORAY CHP

REFERRALS

PHN/HV assesses child's oral health needs at 6-8wks

No oral health problems & require assistance registering with dental practice

Oral health problems & require assistance registering with dental practice

Family referred to DIAL

Family referred to CS

DHSW SUPPORT

DHSW contacts family via phone to arrange home visit when child is 3mths

Home Visit

Weaning advice

Tooth brushing advice

Book dental appointment

Diet advice

Register with dental practice

Update PHN/HV

DENTAL PRACTICE

Referred Family FTA twice

Family referred to CS via email/phone

DHSW contacts family to offer support

Update PHN/HV

NHS HIGHLAND: MID HIGHLAND CHP

REFERRALS

PHN/HV assesses child's oral health needs at 6-8wks

DHSW attends PHN/HV led baby clinics

Children referred to CS using EYP criteria

Families not registered with dental practice referred to CS

Verbal referral to DHSW

Referral via 6-8wk assessment form

DHSW SUPPORT

Family's needs assessed by PHN/HV & DHSW

DHSW contacts family via phone to arrange home visit

Home Visit

Oral health advice

Tooth brushing advice

Diet advice

Register with dental practice

Update PHN/HV

DENTAL PRACTICE

Family FTA two / three appointments

Health board FTA policy for all GDPs

Family referred to CS

DHSW contacts family to offer support

Family referred to SDS

Update PHN/HV

NHS HIGHLAND: NORTH HIGHLAND CHP

REFERRALS

PHN/HV assesses child's oral health needs at 6-8wks

Family referred to CS, level of need indicated on referral

Family referred to Dental Practice

Need = CORE

Need = ADDITIONAL

Input from PHN/HV

DHSW SUPPORT

DHSW contacts family via phone to arrange home visit / group session when child is 4mths old

Home Visit

Oral health advice

Book dental appointment

Group Session in Health Centre

Oral health advice

Book dental appointment

Update important details to EDDN

DENTAL PRACTICE

Family FTA two appointments

Dental staff notifies CS

DHSW liaises with PHN/HV

DHSW contacts family to offer support

Update PHN/HV

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NHS ORKNEY

REFERRALS

DHSW SUPPORT

DENTAL PRACTICE

All newborns referred to CS by PHN/HV

Referral received by EDDN

EDDN books 2 appointments for family on 1 day (Dentist & EDDN)

Family requires additional support

Family FTA two appointments

EDDN Appointment

Local Meeting

Home Visit

Dental practice follows own FTA procedure

CS aware of the FTA

Oral health advice

Weaning advice

Tooth brushing advice

Book dental appointment

Diet advice

Signposting

CS liaises with PHN/HV

Update PHN/HV

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NHS SHETLAND

REFERRALS

All newborns referred to CS by PHN/HV

Referrals from School Nurses

Referral made via 6-8wk assessment form

DHSW SUPPORT

DHSW contacts family via phone

Books Dental Appointment

Arranges home visit when child is 9mths old

Home Visit

DHSW liaises with PHN/HV

Tooth brushing advice

Diet advice

Register with Dental Practice

DENTAL PRACTICE

Family FTA two appointments

Reception updates the spreadsheet

DHSW checks the spreadsheet

DHSW contacts family

Update Coordinator

Update PHN/HV

NHS HIGHLAND: SOUTH EAST HIGHLAND CHP

REFERRALS

PHN/HV assesses child's oral health needs at 6-8wks

PHN/HV refers family to CS using 6-8wk assessment form

Coordinator receives referral & forwards to relevant OHSW

DHSW SUPPORT

OHSW contacts family via phone

Home Visit arranged when child is 3-6mths old

Unsuccessful

Home Visit

Oral Health Messages

Register with Dental Practice

Signposting

3 phone attempts

Send letter

Refer to PHN/HV

DENTAL PRACTICE

Family FTA one appointment

Family FTA two appointments

Family referred to CS

OHSW contacts family

2nd appointment may be refused

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NHS FIFE

REFERRALS	FAMILY NURSE PARTNERSHIP (FNP)	DHSW SUPPORT	DENTAL PRACTICE

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

↓

PHN/HV refers CS administrator

Face to Face

6-8wk assessment form

Administrator passes details to DHSW for that geographical area

FAMILY NURSE PARTNERSHIP (FNP)

FNP nurse assesses child's oral health needs of young 1st time mothers

Refers family to CS Coordinator

Family receives support from FNP nurse

Coordinator contacts EDDN for that geographical

DHSW SUPPORT

DHSW contacts family via phone

↓

Home Visit

Signposting | Diet Advice

Tooth brushing Advice

↓

Update PHN/HV

DENTAL PRACTICE

Family FTA once | Family FTA twice

Family referred to CS | Update PHN/HV

NHS FORTH VALLEY

REFERRALS

DHSW SUPPORT

DENTAL PRACTICE

PHN/HV assesses child's oral health needs up to age 5yrs 11mths

DHSWs attend baby clinic

CS Development Officer contacts family within 1 week of referral

Family FTA twice

Family referred to CS via local referral form (email/post)

Family referred to Dental Practice

3 Phone Calls

Book dental appointment

Confirm dental appointment & provide OH advice

Reminder of appointment

Unsuccessful

Family referred to CS

Update PHN/HV

Referral received by CS Development Officer

Update PHN/HV

NHS LOTHIAN

REFERRALS

DHSW SUPPORT

DENTAL PRACTICE

Referrals received via email

Dental Therapist contacts family via phone

No information available

Child is 6-8wks old

Child is older than 6-8wks

Therapist arranges to call back when child is older

Therapist arranges dental appointment

NHS BORDERS

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

↓

PHN/HV refers family to CS Coordinator using 6-8wk assessment form

↓

Coordinator inputs details into HIC system

↓

Coordinator passes referral to DHSW for that geographical area

DHSW SUPPORT

DHSW contacts family via phone at 3mths

Refers to Dental Practice

Unsuccessful

Home Visit

| Signposting | Diet Advice |
| Nutrition Advice | Register with Dental Practice |

Update Coordinator

↓

Update PHN/HV

DENTAL PRACTICE

| Family FTA once | Family FTA twice | No contact from family |

↓

Family referred to CS

↓

DHSW contacts family

↓

DHSW updates PHN/HV

NHS TAYSIDE

REFERRALS

DHSW SUPPORT

DENTAL PRACTICE

PHN/HV assesses child's oral health needs at 6-8wks

Family referred to CS via 6-8wk assessment form

DHSW contacts family via phone to assess need

Arranges a Home Visit

OH advice & Dental Registration

Unsuccessful

Home Visit

Signposting

Diet Advice

Tooth brushing Advice

Oral Health Packs

Signposting

Dental Registration

Confirm family attended dental appointment

Update PHN/HV

Family FTA CDS twice

Family FTA GDS

Family referred to CS

DHSW contacts dental practice for FTAs

DHSW contacts family

Details recorded on Child Health Early Warning System

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NHS LANARKSHIRE

REFERRALS

DHSW SUPPORT

DENTAL PRACTICE

Blanket Approach: All children referred to CS

↓

Children picked up by DHSWs via PHN/HV Birth Book

DHSWs contacts family to arrange home visit

↓

Home visit when child is 3-6mths old

↓

Home Visit

Oral health advice | Information on CS

Book dental appointment

Accompany family to dental appointment

GDS

Family FTA 1 appointment

↓

2nd appointment booked

Family FTA 2 appointments

↓

Family referred to CS

↓

DHSW contacts family

↓

Refers family to PHN/HV if necessary

↓

Update PHN/HV

CDS

Family FTA 3 appointments

↓

Recorded in PHN/HV case file

↓

Family referred to PHN/HV

↓

Family supported by DHSW/EDDN

NHS GREATER GLASGOW & CLYDE

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

DHSW attends Mother & Toddler groups/weaning Fayres

Family referred to CS using local method

Blanket approach: all children referred

DHSW SUPPORT

DHSW sends home visit appointment letter to family

Home visit when child is 3-6mths old

Home Visit

Book dental appointment

Signposting

Accompany family to dental appointment

DENTAL PRACTICE

DHSW liaises with dental practice to follow up on FTAs

Family FTA 2 appointments

DHSW contacts family

Refers family to PHN/HV if necessary

Supports family back into practice

NHS DUMFRIES & GALLOWAY

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

↓

Family referred to CS using local GIRFEC form

↓

Referral form sent to a central contact

↓

Referral sent to DHO for that area

DHSW SUPPORT

DHO contacts family to assess level of need

Phone Support

Home visit arranged when child is 6mths old

Tooth brushing advice

Diet Advice

Home Visit

Accompany family to dental appointment

Signposting

Oral health messages

Update PHN/HV

DENTAL PRACTICE

Family FTA an appointment

↓

Dental practice own FTA protocol / Refers family to DHO

↓

DHO contacts family

Dental appointment

Accompanied dental appointment

Home Visit

Update PHN/HV

NHS AYRSHIRE & ARRAN

REFERRALS

PHN/HV assesses child's oral health needs at the 6-8week assessment

Family referred to Community Nursing Staff CS using 6-8wk assessment form

Referral (with recommended level of support) Received by Coordinator

Coordinator forwards referral to DHSW

DHSW contacts PHN/HV to confirm any issues

DHSW SUPPORT

DHSW contacts family

Home visit arranged when child is 4mths old

Phone support arranged when child is 4mths old

Home Visit

Register family with dental practice

Signposting

Oral health messages

Phone Support

Book dental appointment

Signposting

DENTAL PRACTICE

DHSW liaises with dental practice to follow up on FTAs

Family FTA 1 appointment

DHSW contacts family

DHSW liaises with PHN/HV if necessary

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Appendix 17. DHSW Support

Tooth brushing advice	
What age to start brushing the child's teeth	The amount of toothpaste to use depending on the age of the child
What age children can start brushing their own teeth	How many times a day children's teeth should be brushed
Encourage a tooth brushing routine	Recommended toothpaste brands for children
Recommended fluoride content of toothpaste depending on child's age	Tooth brushing tip s based on personal experience
What size of toothbrush to use depending on child's age	'Spit, don't rinse' after brushing

Dietary Advice	
Sugar free, or low sugar snacks for children	Sugar free, or low sugar drinks for children
Encourage parents to delay introducing sugars into the child's diet	At what age children should stop using the bottle and use a drinking cup
Sugar content of popular drinks and snacks for children	Restrict sugars to children's mealtimes

Facilitation into dental practice	
Register the child (and family) with a dentist	Book dental appointments for the child (and family)
Accompany the family to the dental appointment	Send phone or text appointment reminders to the family

Signposting	
Mother & toddler group	Weaning fayres
Weaning groups	Book Bug
Fruit barras (markets)	Baby massage classes
Baby cafes	Cookery skills classes
Smoking cessation groups	

Resources	
Toothbrushes for children and parents	Stickers
Toothpaste & Dental floss	Free flow drinking cups
Tooth brushing charts	High chair mats
Sports cups	NHS cards for parental dental registration
Tooth brushing timers	
DIAL cards (to find a local dentist in highlands)	Baby bottle caries model
	Model of children's teeth
Stephan curve chart	Tooth brushing DVD
Healthy Smiles, and First Teeth, Healthy Teeth flipchart	Puppets with teeth
	Fun First Foods booklet
Food diaries	Sugar Bags
Book Bug resources	Top Tips for Tooth brushing leaflet

Appendix 18. Characteristics Influencing Delivery of the DHSW Role

Characteristics	Label	Description
Type of NHS board	Rural	NHS Board is predominantly rural
	Urban	NHS Board is predominantly urban
	Island	NHS Board is an island
Where the DHSW is situated	PHN/HV	DHSW is based within PHN/HV department
	DH	DHSW is based within dental health services department
DHSW Role	Single	DHSW delivers one component of CS
	Dual	DHSW delivers more than one component of CS
Referrals	Targeted	Families identified as being in need of support are referred
	Universal	All families, regardless of need, are referred

Appendix 19. Selection Matrix for NHS Boards/CHPs

NHS Boards	Type of NHS board	Where the DHSW is based	DHSW role	Referrals
NHS Lanarkshire	Urban	PHN/HV	Dual	Universal
NHS Greater Glasgow & Clyde	Urban	PHN/HV	Single	Universal
NHS Fife	Rural	DH	Single	Targeted
NHS Forth Valley	Mixed	DH	Single	Targeted
NHS Highland, Mid Highland CHP	Rural	DH	Dual	Universal
NHS Shetland	Island	DH	Multiple	Targeted
NHS Highland, Argyll & Bute CHP	Rural	DH	Multiple	Universal
NHS Highland, Moray CHP	Rural	DH	Multiple	Targeted

Appendix 20. Calculating DHSW performance

Practice Monitoring Data from HIC

Variable	Label	Purpose
Unique assigned child ID number		Identifies child (derived from CHI number)[30]
SIMD		Child's SIMD category
NHS board ID		Identifies health board / CHP of DHSW
DHSW name and code		Identifies individual DHSW
Referred to CS by/at	PHN/HV, Clinic, Other	Identifies who referred the child to CS and the date of referral
Date of intervention		Date of DHSW contact with family
Type of intervention	Home visit, Clinic, Telephone, Other	Identifies the type of intervention delivered by DHSW
No action required	Yes, No	Identifies whether the child is already registered with a dental practice
Dental practice code		Identifies dental services location code
Family no contact		Family could not be contacted by DHSW
Result	Declined, No Entry, Success	Result of the DHSW intervention
Outcome home support		Outcome of DHSW intervention
Outcome referral		Outcome of DHSW intervention
Outcome dental services		Outcome of DHSW intervention

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[30] CHI number is a unique 10-digit number to identify individuals on the Community Health Index: a population register used in Scotland for health care purposes (ISD Online 2016)

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Practice Dental Data from MIDAS

Variable	Purpose
Unique assigned child ID number	Identifies child (derived from CHI number)
Start date for dental treatment	Identifies the date child attended the dental practice
Childsmile code	Location number of the dental practice
Type of dental practice	Identifies whether dental practice is Salaried, Community or General

Performance Measure 1: Engagement with Families

Engagement performance assessed parents of children referred to the DHSW received DHSW support (via a home visit or telephone call). DHSWs from selected NHS boards were identified from the HIC dataset and child records were extracted for each DHSW. From these variables the number of families referred to the DHSW can be identified.

Whether DHSW had delivered support to a family or not can be determined by identifying the:

- Number of children DHSWs attempted to contact

- Number of children who had successfully been contacted

- Number of children where support was labelled 'Success'

To ensure every child was counted once, regardless of number of attempted contacts, all duplicate records were removed.

A percentage of the number of children referred to a DHSW who subsequently received support, was calculated. An example of this calculation and output can be seen in Table 23.

Performance Calculation for DHSW Engagement with Families

DHSW ID	Health board ID	Total No. of children DHSW attempted to contact (n)	Total No. of children DHSW contacted (n)	Children contacted by DHSW (%)
213P Smith[31]	Lan	200	150	75
402M Cowan	FV	172	120	67
103P Liddle	MidCHP	76	43	56

---

[31] DHSW ID's have been replaced with anonymised pseudonyms

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DHSW Performance Measure 2: Family Support

DHSW support performance aimed to establish whether all referred children who received DHSW support, subsequently attended a dental practice.

DHSWs from selected NHS boards were identified from the HIC dataset and child records were extracted for each DHSW. From these variables we could identify the number of families referred to the DHSW.

Referred children who received DHSW support and subsequently attended a dental practice were identified via:

- Records for children referred to a dental practice following DHSW support

or

- Records for parents who had arranged for the child to attend the family dental practice

After duplicate records were removed, a percentage of the number of children referred to a DHSW who received support, and who subsequently attended a dental practice, was calculated. An example of this calculation and output can be seen in Table 25.

Performance Calculation for DHSW Family Support

DHSW ID	NHS Board ID	No. of children with final outcome 'dental services' (GDS, SDS) (n)	No. of children attending dentist (GDS, SDS) (n)	No. of children attending dentist (GDS, SDS) (%)	No. of children still receiving DHSW support (%)
213P Smith[32]	Lan	100	80	80	20
402M Cowan	FV	86	75	87	13
103P Liddle	MidCHP	38	30	79	21

---

[32] DHSW ID's have been replaced with anonymised pseudonyms.

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To ensure a meaningful and accurate performance could be calculated for DHSWs across the NHS boards three control measures were established: Time; Child still in receipt of support; and Child attending CDS or own dental practice.

1. Time

To ensure there was enough throughput for each NHS board, regardless of size, time parameters were applied to DHSW performance calculations. This provides sufficient time in which to view outcomes and calculate a meaningful performance.

For performance measure 1: engagement, six months of DHSW activity was assessed, from 1st October 2011 to 31st March 2012. This provided DHSWs with a six-month window to deliver support (home visit or telephone call) to a referred family from the date of first contact.

For performance measure 2: support, six months of attendance at the dental practice was assessed, from the date of last contact with the DHSW until 30th September 2012. This timeframe provided DHSWs with six months to facilitate children into a dental practice from the date of final contact.

2. Child still in receipt of support

Using the HIC dataset, children who were still in receipt of DHSW support were identified and excluded from performance calculations. This ensured DHSWs who were still supporting families would not be categorised as low performance.

3. Child attending CDS or own dental practice

Due to incomplete data for CDS practices within some health boards /CHPs it was not possible to determine whether a child had attended a dental appointment within a CDS practice. Therefore, all records for children who were attending a CDS practice were removed from the dataset.

Records for children whose parents confirmed they will arrange to register the child with the family dental practice were removed because there was no way to determine whether the family practice was CDS or not.

This was not thought to impact on the dataset because very few children are thought to be referred to CDS practices. For example, between 1991 and 2007 the number of children receiving dental treatment at CDS dropped by 72% and current policy is to encourage children to attend GDS practices (ISD 2013).

Calculating performance

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DHSW performance were ranked in descending order for each performance category then separated into quartiles. DHSWs who ranked in the top and bottom 25% quartile for each performance measure would be categorised as high and low performing respectively.

Programme Coordinators would be contacted to confirm the names of DHSWs still in post and whether they delivered a single or multiple role. This information would be used to exclude DHSWs from datasets who were no longer in post, who were on long term leave and who were not delivering CS Practice.

Appendix 21. Process for Developing Data Collection Tools

1. Review findings from Phase 1: Sensitising Study

2. Review research questions for Phase 2: Case Study

3. Identify where there is not enough information, or where information needs to be updated, surrounding the DHSW role (e.g. tailoring support, changes to the role)

4. Identify where personal opinions are relevant (e.g. adequacy of training, targeting)

5. Identify what the DHSW should be doing

6. Refer to findings from Phase 1 to tailor interview schedules to each case

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Appendix 22. Example Data Collection Tool (DHSW Interview)

Thank the DHSW for attending. Introduce myself.

This session is part of a series of interviews I will be carrying out with you. I am also conducting the same series of interviews with a DHSW in 2 other boards. The aim is to create a case study of the DHSW role within these 3 boards. I will also be looking to organise:

- A focus group with yourself and other DHSWs within the board

- An interview or focus group with Health Visitors

- An interview or focus group with Dental Staff within your area

- An interview with your Coordinator

- An observation of a home visit with a family from your caseload

- An interview with the parent.

The aim of today's session is to learn from <u>you</u> how we can optimise the role before it is evaluated. We will do this by focusing on your experiences of delivering CS Practice only and the barriers and facilitators while picking up on some topics we discussed last year in the focus group.

The information will form part of my PhD which is part of the national Childsmile evaluation and the results will be shared with the CS Executive in order to optimise the role and improve programme delivery.

SESSION INFO

The session will be audio recorded but this is only to capture what you say accurately and so I don't have to take notes. However when it comes to the write up a random pseudonym will be used to refer to your responses.

During the session I will ask you a series of open & closed questions. I encourage you to be as honest and open with your answers as you feel comfortable. You can stop the interview at any point without having to explain why and you can withdraw data from the study even after the interview if you want to. Are you happy with all this?

Before we start can I ask you to read through the consent form and if you are happy to commence, please fill in the details. Do you have any other questions before we commence? I'm going to turn the Dictaphone on now.

A: General

This section is to get an overview of your role since we last spoke

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1. Can you to confirm again how long you've been in post for?

2. Where is your work base?

3. What area do you cover for Practice

4. How has your role in Practice been since we spoke last year?

5. Have you had any other training updates

6. Has your workload changed?

7. Do you still have Dual Role?

8. Are you doing any non CS Work

9. What hours & days are you working?

10. Have there been changes to referrals?

11. Have there been changes to the delivery of the role?

B: The DHSW

This section is focused on your background and any experience you bring to the Practice role.

1. Can you tell me a little about your background?

   - Previous employment

   - Training

   - Education

   - Experience

2. Can you tell me how your background impacts on you carrying out your role?

   - Transferable skills (listening, communication, engaging with parents)

   - Knowledge about behaviour change, psychology, barriers, inequalities

   - Confidence

   - Competence

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- delivery of the role

4. How do you see your role in Practice?

- Purpose of DHSW?

- Purpose of Practice

- Purpose of Childsmile?

5. Is there anything you would consider not part of your role? If so, what is it?

6. Do you feel confident delivering the Practice role?

7. What are the key facilitators to you carrying out your role? (What helps?)

8. What are the key barriers to you carrying out your role?

C: Training

This section will focus on the training you received for the Practice role

1. When did you complete the initial NES training?

2. Have you had any training updates in the last year?

- How relevant have then been to your role?

- Were the courses available useful to you?

3. Do you have a Personal Development Plan (PDP)?

4. Have you received any non-Oral Health training in the last year?

5. You mentioned last year you didn't get any opportunities for shadowing is that right?

6. What do you think you could have gained from shadowing?

- How to deliver the intervention?

- Talking to parents? Getting them to engage? Confidence that you are doing it right?

7. Are the skills you have received from training adequate for delivering the home visit

8. How did you find putting the training into practice?

9. What are the key facilitators to the training for the role?

10. What are the key barriers in the training?

D: Workload/Dual Role

This section will focus on your workload for Practice.

1. Last time we spoke you had a dual role working on N+S & Practice. Is that still the case?

2. Have you always had a dual role?

3. How does having a dual role impact on:

   • Delivery of practice (number of visits, longer visits)

   • Referrals (seeing more people, response time)

   • Yourself (confident, content in the role)

4. What are your feelings concerning a DHSW working a Single or a Dual role?

   • Should it be one or the other?

5. Are there benefits to the Dual role which make it worthwhile?

6. What are the key facilitators to your workload?

7. What are the key barriers to your workload?

E: Overall Barriers & Facilitators

1. Reflecting on everything we have discussed, what is the 1 thing which has helped you in your role?

2. What would be the key barrier?

Thanks very much for your participation. Is there any information you wish to remove from the transcript? My contact details are on the bottom of the information sheet, so please don't hesitate to get in touch if you have any further questions etc. I'll be in touch so we can arrange the next couple of interviews.

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Appendix 23. Home Visit Observation Guide

Category	What to pay attention to
Appearance of families & the home	Individuals: Age, gender, ethnicity, appearance, how welcoming they are, how they engage with the DHSW, who is present during the home visit. The Home: Cleanliness, indications of family's diet (e.g. bottles of fizzy juice, sweets), number of family members, the community, the condition of the home (inside and out), distractions during the visit (e.g. TV being left on).
Verbal behaviour & interactions	Interaction between DHSW and family members, who initiates the interaction, is the listener paying attention? Does the listener understand the information? Is the DHSW taking time to ensure understanding? What language is used? (E.g. jargon), dialects or 'slang', language barriers, tone of voice, are questions asked or encouraged? Are materials used? (e.g. leaflets)
Physical behaviour & interaction	Body language, eye contact, who is and who is not interacting, where the DSHW is during the home visit (e.g. sitting beside the parent), how the DHSW engages with children, does the parent appear to understand the information? How comfortable do the family and DHSW appear?
Interactions which stand out	Messages or component of the home visit which stand out. E.g. unique resources, communication methods, signposting.
Time spent delivering home visit	How long does the DHSW spend in the home? How much time is focused on each message or behaviour? Are messages rushed or detailed? What messages are covered in detail and which (if any) are rushed?
Key focus of the session	The focus of the visit (e.g. registering the child with a dental practice), whether the session was geared towards behaviour change, information provision or signposting
Tailoring	Whether the session was tailored to family's needs, how did the DHSW assess need? Did the DHSW has prior information about needs? Where did this come from? Whether they used open questions, what was distinctive about tailored messages compared to non-tailored?
Outcome/Next Steps	How was the visit concluded? Was there a clear outcome? Did the outcome match the family's needs? Where future visits arranged? Were the next steps made clear? Did the family understand what was to happen next? In the PRs opinion, was the home visit enough?

Appendix 24. Home Visit Observation Report

NHS Board: **Date & Time:**
The Introduction
The Family & Home
Support
Ending Support

Appendix 25. Information and Consent Form for DHSWs

Childsmile's Central Evaluation and Research Team (CERT) would like to invite you to participate in a study that forms part of Mairi Young's PhD and is an important component of Childsmile's national evaluation. Please take the time to read this information before deciding whether you wish to take part.

What is the purpose of the study?
The study aims to optimise the DHSW role. Specifically, we aim to gain further understanding of which factors and variants impact on the effectiveness of the DHSW role. This project will build on previous learning gained from key stakeholders through Process Evaluation interviews conducted by Childsmile's Regional Research Teams and focus group discussions (which you may have taken part in) with DHSWs conducted by Mairi Young.

We want to capture your learning and insights from delivering the programme and relate this to insights from other initiatives in order to ensure that the DHSW has the best chance of meeting the aim of supporting oral health improvement nationally. These results will be fed back to the programme to improve delivery and optimise the DHSW role.

Why have I been chosen?
NHS Forth Valley and two other health boards were selected to build case study units which will allow for further exploration of the factors and variants which impact on the effectiveness of the DHSW role. I am looking for one DHSW from each board to participate within each case study because in order to fully explore the DHSW role we need to listen to your views and experiences of delivering the programme in varied contexts across Scotland.

What am I being asked to do?
The project will involve:

- One-to-one interviews with the DHSW
- An observation of home support sessions & a brief one-to-one interview with a family from the DHSWs caseload
- One-to-one interview with a PHN/HV within your locality
- One-to-one interview with Dental Practice Staff within your locality
- One-to-one interview with your Coordinator

All sessions would be conducted by Mairi Young and discussions will be entirely **confidential**. I aim to be flexible and work around your schedule and locality for the sessions so you may participate.

Will I be recorded and how will the recorded media be used?
All sessions will be audio recorded so I do not have to take detailed notes. This means I can pay full attention to what you are saying during the session. Audio recordings will be transcribed afterwards however no names or identifiable details

will be included in the written transcription. The transcription will be stored under strict data protection guidelines.

What will happen to the findings of this project?
As a result of this research, recommendations for optimising the DHSW role will be made to the Childsmile Executive and NES. The results will also be summarised and shared with you and other Childsmile stakeholders in your board. The research will be published in peer-reviewed journals in order to contribute to international knowledge and inform the development and implementation of healthcare support worker interventions in the UK and abroad.

What are the benefits of taking part?
You will have had an opportunity to put forward your views, share your experiences and shape the development of the DHSW role for the future. In addition you will be contributing to wider knowledge about effective health promotion. It is hoped that any barriers to the success of the role can be addressed and facilitators capitalised in all areas prior to the effectiveness of the role being assessed at a local and national level.

What are the next steps?
If you wish to participate please contact myself (details provided below) to confirm and I will arrange a schedule of sessions with authorisation from your Coordinator. Please do not hesitate to get in touch if you require any further information.

Mairi Young m.young.3@research.gla.ac.uk

Project: Optimising the role of the DHSW in Childsmile Practice: Case Studies.
Researcher: Mairi Anne Young
Supervisors: Dr. Wendy Gnich & Dr. Andrea Sherriff.

The Childsmile evaluation is co-ordinated by the Central Evaluation and Research Team (CERT) based within The University of Glasgow Dental School. This study is a PhD project and part of the national CS evaluation. You are being asked to participate in a case study to explore your views and experiences of delivering CS Practice. This will involve:

- A series of one-to-one interviews
- An observation of a home support session & an interview with a family from your caseload
- One-to-one interviews with Health Visitors within your locality
- One-to-one interviews with Dental Staff within your locality
- One-to-one interview with your Coordinator

Your participation is entirely voluntary. The session will be audio recorded. Information will be strictly confidential and kept in a secure environment in accordance with the Data Protection Act 1998. The information obtained will be used to gain further understanding of what factors and varients impact on the effectivenes of the DHSW role in ChildsmileThe results will be used to feedback to the programme to improve delivery and optimise the role.

Please indicate whether you are willing to take part in by initialling the appropriatte boxes overleaf:

	Please mark your initials in each box you agree with
I have read the page above and the information sheet. I have had the opportunity to ask questions. I agree to take part in the case study for Childsmile Practice.	
I give permission for the discussion to be audio recorded.	
I understand anonymous quotations may be included within the final report and may be published.	

NHS Board………………………
Date…………………………………………

Appendix 26. Prochaska and DiClemente (1984) Transtheoretical Stages of Change Model
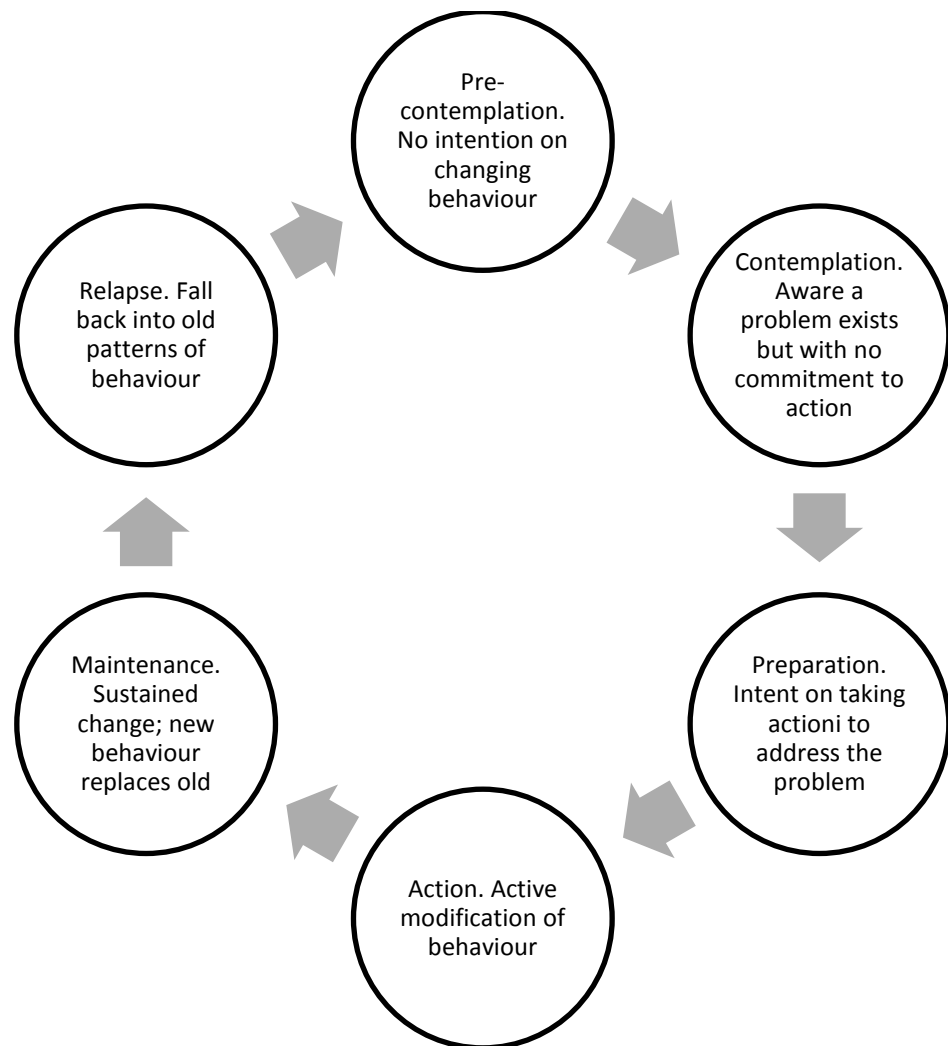
Appendix 27. Mid-range Theories Identified from Across Cases

Case No.	Middle-range theories (MRT)
1	MRT1: CS training does not prepare DHSWs in how to deliver the role MRT2: DHSWs learn practical techniques for delivering home visits by 'learning on the job' MRT6: Situating DHSWs together alongside the Coordinator supports DHSWs in all aspects of their role, and ensures the role is delivered as intended MRT8: The dual DHSW role is a cost effective method of delivery for rural NHS boards/CHPs MRT9: The dual DHSW role promotes continuity of care which positively influences delivery of the role MRT10: Autonomy counterbalances the demands of a dual DHSW role and impact of local contextual factors
2	MRT1. CS training does not prepare DHSWs in how to deliver the role MRT4: Situating DHSWs within PHN/HV teams seamlessly integrates the DHSW role into PHN/HV services and improves stakeholder buy-in MRT5. Situating DHSWs alongside one another facilitates peer support MRT8. A dual DHSW role promotes continuity of care and facilitates person-centred care
3	MRT1. CS training does not prepare DHSWs in how to deliver the role MRT4. Situating DHSWs alongside one another facilitates peer support MRT5. Situating DHSWs within the community develops stakeholder buy-in MRT6. A single DHSW role facilitates development of the role MRT7. A single role increases DHSWs capacity to provide social and emotional support to parents

Appendix 28. Mid-range Theories for Demi-regularities, Across Cases

Demi-Regularity 1: DHSW Training	
Case No.	Mid-range theories (MRT)
1	MRT1: CS training does not prepare DHSWs in how to deliver the role. MRT2: DHSWs learn practical techniques for delivering home visits by 'learning on the job'. MRT3: The Transtheoretical Model (TTM) enables DHSWs to identify parents' motivational readiness to engage with 'positive oral health parenting behaviours' (POHPBs).
2	MRT1. CS training does not prepare DHSWs in how to deliver the role. MRT2. The TTM enables DHSWs to identify parents' motivational readiness to engage with POHPBs.
3	MRT1. CS training does not prepare DHSWs in how to deliver the role. MRT 2: The Transtheoretical Model (TTM) enables DHSWs to identify parents' motivational readiness to engage with positive oral health parenting behaviours (POHPBs).

Demi-regularity 2: Where DHSWs are based within the NHS Board	
Case No.	Mid-range theories (MRT)
1	
2	MRT6. A poor feedback loop between PHN/HV services and CS influences where the DHSW role is delivered as intended.
3	MRT9. Counterbalancing autonomy in the DHSW role with support, facilitates development of the role. MRT10. Ongoing monitoring of the DHSW role improves delivery and highlights training gaps. MRT23: Ongoing evaluation and monitoring at a local level improves delivery of the role.

Demi-regularity 3: Organisational Context	
Case No.	Mid-range theories (MRT)
1	MRT7: NHS HEAT targets restrict dual role DHSWs capacity to deliver Practice. MRT24: Universal FTA policy reduces DHSWs capacity to support families.

	MRT26: Embedding of CS within Early Years Pathway and GIRFEC policy positively influences stakeholder buy-in MRT27: Lack of progression in the DHSW role contributes to high staff turnover and the type of person applying for the role. MRT28: Understaffing within CS, and the dual role impacts on the extent to which DHSWs can support families. MRT29: Health damaging environments reduce parents' locus of control to engage with POHPBs.
2	MRT7. NHS HEAT targets restrict dual role DHSWs capacity to deliver Practice. MRT8. A dual DHSW role promotes continuity of care and facilitates person-centred care. MRT14. DHSWs do not have capacity to support families who FTA dental appointments. MRT23. Dental practices perceive the costs of engaging with CS to outweigh the benefits. MRT24. Variation in delivery between dental practices places a strain on PDS practices. MRT26: Delivery of CS Practice over a prolonged period of time period facilitates stakeholder buy-in. MRT27: Delivery of CS Practice over prolonged period of time has hindered evolution of the DHSW role. MRT28. Scotland's cultural norms present a barrier to DHSWs encouraging uptake of POHPBs.
3	MRT21. Poor engagement from dental staff with regards to delivering CS treatments is attributed to ingrained habits. MRT22: Term-time contracts limit capacity in the DHSW role. MRT24. Changes to the Children and Young People (Scotland) Act (2014) improves dental staff buy-in.

Demi-regularity 4: The Right Child for DHSW Support	
Case No.	Middle-range theories (MRT)
1	MRT12: Interpretive triaging criteria for referrals, results in referrals of families who do not need oral health support. MRT13: Attending PHN/HV-led Baby Clinics provides DHSWs with the opportunity to register all new-born babies with a dental practice.
2	MRT10. Referrals via the PHN/HV Birth Book results in a universal method of delivery of the DHSW role. MRT11. Generating referrals via the PHN/HV Birth Book ensures DHSWs are not reliant on PHN/HV buy-in for referrals. MRT12: Universal referrals facilitate registration of all new-born children with a dental practice. MRT13. DHSW support consists of information provision and facilitation into a dental practice. The depth of information covered is dependent on parental motivation.
3	MRT11: Applying referral criteria rigidly results in low-risk children being referred to DHSW for support.

	MRT12. Universal referrals enable DHSWs to reach high-risk families.
	MRT13: Electronic referrals (via MIDAS[33]) improve the number and quality of referrals.
	MRT14. DHSWs do not have capacity or skills to provide long-term behaviour change support to unmotivated parents.

Demi-regularity 5: Freebies and Visual Aids	
Case No.	Mid-range theories (MRT)
1	MRT16. Complex information is easier to digest when presented visually.
2	N/a
3	MRT18. Free resources facilitates parental engagement with the DHSW and engagement with POHPBs

Demi-regularity 6: Person centred Support	
Case No.	Mid-range theories (MRT)
1	MRT11: Autonomy enables DHSWs to provide person-centred care. MRT14. DHSW support consists of information provision and facilitation into a dental practice. The depth of information covered is dependent on parental motivation. MRT20. Open dialogue and off-topic general chat facilitates shared experience and person-centred support.
2	MRT9. Autonomy enables DHSWs to provide person-centred care. MRT18. Generic oral health information is a suitable strategy for motivated parents only.
3	MRT8. Autonomy enables DHSWs to provide person-centred care. MRT17. Person-centred care encourages uptake of POHPBs.

Demi-regularity 7: Early intervention and Multiple Visits	
Case No.	Mid-range theories (MRT)
1	MRT15. Explaining the reasoning behind recommended POHPBs improves parental retention and recall of information.

[33] As seen in case study one MRT 12, p.68-9

	MRT17. Parents are not receptive to oral health messages if they believe the DHSW is judging them or their oral health parenting behaviours. MRT18. Practical solutions improve parental self-efficacy to engage with POHPBs. MRT19. Encouraging parents to make small changes is perceived to be achievable and leads to positive outcomes. MRT21. Praise and encouragement reinforces positive oral health parenting behaviours.
2	MRT15. DHSWs perception of what constitutes success in the role influences the number of home visits delivered to families. MRT16. The duration of the home visit is dependent on the extent to which parents interact with the DHSW. MRT17. Contacting parents within the child's first year facilitates uptake of POHPBs. MRT19. Tooth brushing demonstrations delivered to children improves uptake of oral health behaviours. MRT20. Acclimatising children to the clinical dental environment from a young age normalises preventative oral health care.
3	MRT15. Early intervention improves parental engagement with POHPBs. MRT16. Multiple home visits reinforce oral health messages and encourage uptake of POHPBs. MRT19. DHSW-led acclimatisation clinics address the psychological barriers to parents/children attending the dental practice.

Demi-regularity 8: The peer-ness of the DHSW role	
Case No.	Mid-range theories (MRT)
1	MRT4: The right person for the DHSW role is someone who has shared experience with parents in receipt of support. MRT5: Communication and interpersonal skills are indicators of the right person for the DHSW role.
2	MRT 3. Interpersonal skills and personality traits are indicators of the right person for the DHSW role.
3	MRT3. Personality traits and interpersonal skills are indicators of the right person for the DHSW role.

Demi-regularity 9: The wider context	
Case No.	Mid-range theories (MRT)
1	MRT22: Attendance at Baby Clinics facilitates regular face to face communication between DHSW and PHNs/HVs. MRT23: Dental practices perceive the costs of engaging with CS to outweigh the benefits.

	MRT25: Face to face communication with dental practice staff facilitates stakeholder-buy in.
2	MRT22. Regular face to face communication, between DHSWs and PHNs/HVs, encourages stakeholder buy-in and facilitates person-centred care.
	MRT25. Poor communication with dental practice staff reduces stakeholder buy-in
3	MRT20. Face to face communication between DHSW and stakeholders, encourages stakeholder buy-in to the programme.

Appendix 29. Realist Review Search Terms (without lay health worker)

Concept	Search No.	Free Text Terms[34]
Children	1	"post NEAR partum" OR child OR teen OR new-born OR toddler OR adolescent OR baby OR babies OR paediatric OR infant OR "pre NEAR school"
Parent	2	Mother OR father OR parent
Health	3	Health OR Health outcome OR Health care OR Physical health OR Health knowledge OR illness OR Health Behaviour OR Health Attitude OR Sickness OR Public health OR Health Inequalities OR health Disparities
Intervention	4	planning OR behaviour change OR (behaviour NEAR change) OR program OR intervention OR strategy OR training OR support OR (group NEAR based) OR (community NEAR health) OR promotion OR evaluation OR trial OR education OR prevention OR improvement OR (home NEAR visit) OR communication OR (phone NEAR support) OR (home NEAR training) OR tailored OR personalised OR individualised OR (face NEAR face)
All concepts	5	#1 AND #2 AND #3 AND #4
Concept	**Search No.**	**MeSH Heading**
Children	6	Pregnancy, paediatrics, pre-school students, child, adolescent, infant
Parent	7	Parents, mothers, fathers
Health	8	Physical health, health knowledge, health behaviour, health attitudes, public health, health disparities, health knowledge/attitudes/practice, health care outcomes, attitudes to health
Intervention	9	Behaviour change, intervention, health promotion, health education, community health services, health communication
All concepts	10	#6 AND #7 AND #9 AND #9
Merged Searches		#10 OR #5

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[34] Appropriate Boolean logic and proximity terms were used for each database

Appendix 30. Realist Review Search Terms (with lay health worker)

Concept	Search No.	Free Text Terms[35]
Children	1	"post NEAR partum" OR child OR teen OR new-born OR toddler OR adolescent OR baby OR babies OR paediatric OR infant OR "pre NEAR school"
Parent	2	Mother OR father OR parent
Health	3	Health OR Health outcome OR Health care OR Physical health OR Health knowledge OR illness OR Health Behaviour OR Health Attitude OR Sickness OR Public health OR Health Inequalities OR health Disparities
Intervention	4	planning OR behaviour change OR (behaviour NEAR change) OR program OR intervention OR strategy OR training OR support OR (group NEAR based) OR (community NEAR health) OR promotion OR evaluation OR trial OR education OR prevention OR improvement OR (home NEAR visit) OR communication OR (phone NEAR support) OR (home NEAR training) OR tailored OR personalised OR individualised OR (face NEAR face)
Lay Health Worker	5	Community worker OR community volunteer OR Para professional OR Community Health Worker OR Support Worker OR Social Assistant OR Community Health Advisor OR link Worker or Health Trainer OR Health Worker OR Health Advisor OR Home Visitor OR Lay Educator OR Community Health Agent OR Trainee Health Educator OR Lay Health Worker OR Lay Health Advisor OR Health Educator
All concepts	6	#1 AND #2 AND #3 AND #4 AND #5
Concept	Search No.	MeSH Heading
Children	7	Pregnancy, paediatrics, pre-school students, child, adolescent, infant
Parent	8	Parents, mothers, fathers
Health	9	Physical health, health knowledge, health behaviour, health attitudes, public health, health disparities, health knowledge/attitudes/practice, health care outcomes, attitudes to health
Intervention	10	Behaviour change, intervention, health promotion, health education, community health services, health communication
Lay Health	11	Para-professional personnel, community health worker, health educator

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[35] Appropriate Boolean logic and proximity terms were used for each database

Worker		
All concepts	12	#7 AND #8 AND #9 AND #10 AND #11
Merged Searches		#12 OR #6

Appendix 31. Realist Review Search Terms for Educational and Social Science Databases

Concept	Search No.	Free Text Terms (With Health)[36]
Children	1	"post NEAR partum" OR child OR teen OR new-born OR toddler OR adolescent OR baby OR babies OR paediatric OR infant OR "pre NEAR school"
Parent	2	Mother OR father OR parent
Health	3	Health OR Health outcome OR Health care OR Physical health OR Health knowledge OR illness OR Health Behaviour OR Health Attitude OR Sickness OR Public health OR Health Inequalities OR health Disparities
Intervention	4	planning OR behaviour change OR (behaviour NEAR change) OR program OR intervention OR strategy OR training OR support OR (group NEAR based) OR (community NEAR health) OR promotion OR evaluation OR trial OR education OR prevention OR improvement OR (home NEAR visit) OR communication OR (phone NEAR support) OR (home NEAR training) OR tailored OR personalised OR individualised OR (face NEAR face)
Lay Health Worker	5	Community worker OR community volunteer OR Para professional OR Community Health Worker OR Support Worker OR OR Community Health Advisor OR link Worker or Health Trainer OR Health Worker OR Health Advisor OR Home Visitor OR Lay Educator OR Community Health Agent OR Trainee Health Educator OR Lay Health Worker OR Lay Health Advisor OR Health Educator
All concepts	6	#1 AND #2 AND #3 AND #4 AND #5
Concept	Search No.	Free Text Terms (Without Health)[37]
Children	7	"post NEAR partum" OR child OR teen OR new-born OR toddler OR adolescent OR baby OR babies OR paediatric OR infant OR "pre NEAR school"
Parent	8	Mother OR father OR parent

[36] Appropriate Boolean logic and proximity terms were used for each database

[37] Appropriate Boolean logic and proximity terms were used for each database

Intervention	9	planning OR behaviour change OR (behaviour NEAR change) OR program OR intervention OR strategy OR training OR support OR (group NEAR based) OR (community NEAR health) OR promotion OR evaluation OR trial OR education OR prevention OR improvement OR (home NEAR visit) OR communication OR (phone NEAR support) OR (home NEAR training) OR tailored OR personalised OR individualised OR (face NEAR face)
Lay Health Worker	10	Community worker OR community volunteer OR Para professional OR Community Advisor OR link Worker OR Home Visitor OR Lay Educator OR Community Agent OR Lay Worker OR Lay Advisor
All concepts	11	#7 AND #8 AND #9 AND #10
Health & Non-health merged	12	#6 AND #11
Concept	**Search No.**	**MeSH Heading (with health)**
Children	13	Pregnancy, paediatrics, pre-school students, child, adolescent, infant
Parent	14	Parents, mothers, fathers
Health	15	Physical health, health knowledge, health behaviour, health attitudes, public health, health disparities, health knowledge/attitudes/practice, health care outcomes, attitudes to health
Intervention	16	Behaviour change, intervention, health promotion, health education, community health services, health communication
Lay Health Worker	17	Para-professional personnel, community health worker, health educator
All concepts	18	#13 AND #14 AND #15 AND #16 AND #17
Health & non-health merged concepts	19	#11 OR #18

Appendix 32. Description of Electronic Literature Databases (University of Glasgow)

Name	Description
MEDLINE (Ovid)	Covers clinical medicine, health care, veterinary medicine, pharmacology, biosciences, human and dental medicine, and clinical-related research.
EMBASE (Ovid)	Covers all aspects of human medicine and related biomedical research.
PsychINFO (EBSCOhost)	Psychological literature including personality, mental health, behaviour, health care and education.
CINAHL (Cumulative Index to Nursing & Allied Health) (EBSCOhost)	Literature relating to nursing and allied health professions.
Web of Science (incorporates Web of Knowledge)	Covers science, social sciences, arts and humanities including life and physical sciences, medicine, dentistry and veterinary medicine.
Cochrane Library	Contains Cochrane standard systematic reviews and evaluated trials

Appendix 33. Realist Review Database Searches and Output

Medline Database Search			
Concept	Search No.	Free Text terms	Output
Child	#1	child$ or teen$ or newborn or toddler or adolescen$ or baby or babies or infan$	3,492,114
Parent	#2	mother$ or father$ or parent$	540,123
Health	#3	Health or Health outcome$ or Health care or Physical health or Health knowledge$ or illness$ or Health Behavior$ or Health Behaviour$ or Health Attitude$ or Sickness$ or Public health$ or Health Inequalities or Health Disparities	2,426,782
Health Intervention	#4	planning or behaviour change or behavior adj1 change$ or program$ or intervention$ or strateg$ or training$ or support or group adj1 based or community adj2 health or promotion$ or evaluation$ or trial$ or education$ or prevention$ or improvement or home adj1 visit$ or communication or phone adj1 support$ or counselling or counselling or home adj1 training or tailor$ or personalised or personalized or individualised or individualized or face adj1 face	154,897
Lay Health Worker	#5	community worker$ or community volunteer$ or Para professional$ or Community Health Worker$ or Support Worker$ or Social Assistant$ or Community Health Advisor$ or link Worker$ or Health Trainer$ or Health Worker$ or Health Advisor$ or Home Visitor$ or Lay Educator$ or Community Health Agent$ or Trainee Health Educator$ or Lay Health Worker$ or Parent Aide$ or Lay Health Advisor$ or Lay Community Worker$ or Health Educator$	18,267
Merged Concepts	#6	#1 AND #2 AND #3 AND #4 AND #5	53
Concept	Search No.	MeSH Heading Search	Output
Child	#7	Child OR adolescent OR pregnancy OR infant	3,551,456
Parent	#8	Mothers OR Fathers OR Parents	78,735
Health	#9	Health OR health knowledge, attitudes, practice OR health behavior OR public health	6,214,855
Health Intervention	#10	Community Health Services OR health promotion OR health education OR health communication	565,615

Lay Health Worker	#11	Community Health Worker OR health educator	3,895
Merged Concepts	**#12**	**#7 AND #8 AND #9 AND #10 AND #11**	**47**
Concept	**Search No.**	**Free Text and MeSH Heading Search**	**Results**
Merged Concepts	#13	#6 or #12	97
	#14	Applied Language (English) limit	95

Embase Database Search			
Concept	**Search No.**	**Free Text terms**	**Output**
Child	#1	child$ or teen$ or newborn or toddler or adolescen$ or baby or babies or infan$	3,676,372
Parent	#2	mother$ or father$ or parent$	681,407
Health	#3	Health or Health outcome$ or Health care or Physical health or Health knowledge$ or illness$ or Health Behavior$ or Health Behaviour$ or Health Attitude$ or Sickness$ or Public health$ or Health Inequalities or Health Disparities	3,209,204
Health Intervention	#4	planning or behaviour change or behavior adj1 change$ or program$ or intervention$ or strateg$ or training$ or support or group adj1 based or community adj2 health or promotion$ or evaluation$ or trial$ or education$ or prevention$ or improvement or home adj1 visit$ or communication or phone adj1 support$ or counselling or counselling or home adj1 training or tailor$ or personalised or personalized or individualised or individualized or face adj1 face	245,241
Lay Health Worker	#5	community worker$ or community volunteer$ or Para professional$ or Community Health Worker$ or Support Worker$ or Social Assistant$ or Community Health Advisor$ or link Worker$ or Health Trainer$ or Health Worker$ or Health Advisor$ or Home Visitor$ or Lay Educator$ or Community Health Agent$ or Trainee Health Educator$ or Lay Health Worker$ or Parent Aide$ or Lay Health Advisor$ or Lay Community Worker$ or Health Educator$	19,122
Merged Concepts	**#6**	**#1 AND #2 AND #3 AND #4 AND #5**	**58**

Concept	Search No.	MeSH Heading Search	Output
Child	#7	Child OR adolescent OR pregnancy OR infant	3,593,921
Parent	#8	Mothers OR Fathers OR Parents	218,079
Health	#9	Health OR health knowledge, attitudes, practice OR health behavior OR public health	886,434
Health Intervention	#10	Community Health Services OR health promotion OR health education OR health communication	398,343
Lay Health Worker	#11	Community Health Worker OR health educator	5,354
Merged Concepts	#12	#7 AND #8 AND #9 AND #10 AND #11	35
Concept	Search No.	Free Text and MeSH Heading Search	Results
Merged Concepts	#13	#6 or #12	97
	#14	Applied Language (English) limit	95

PsychINFO Database Search			
Concept	Search No.	Free Text terms	Output
Child	#1	child* or teen* or newborn or toddler* or adolescen* or baby or babies or infan*	818,847
Parent	#2	mother* or father* or parent*	303,482
Health	#3	Health or Health outcome* or Health care or Physical health or Health knowledge* or illness* or Health Behavior* or Health Behaviour* or Health Attitude* or Sickness* or Public health* or Health Inequalities or Health Disparities	1,014,689
Health Intervention	#4	planning or behaviour change or behavior N1 change* or program* or intervention* or strateg* or training* or support or group N1 based or community N2 health or promotion* or evaluation* or trial* or education* or prevention* or improvement or home N1 visit* or communication or phone N1 support* or home N1 training or tailor* or personalised or personalized or individualised or individualized or face N1 face	2,127,114
Lay Health Worker	#5	community worker* or community volunteer* or Para professional* or Community Health Worker* or Support Worker* or Social Assistant* or Community Health Advisor* or link Worker* or Health Trainer* or Health Worker* or Health Advisor* or Home Visitor* or Lay Educator* or Community Health Agent* or Trainee Health Educator* or Lay Health Worker* or Lay Health Advisor* or Health Educator*	18,305
Merged Concepts	#6	#1 AND #2 AND #3 AND #4 AND #5	1,138
Concept	Search No.	MeSH Heading Search	Output
Child	#7	Pregnancy OR Pediatrics OR Preschool students	43,744
Parent	#8	Parents	32,641
Health	#9	physical health OR health knowledge OR health behavior OR health attitudes OR public health OR health disparities	52,085
Health Intervention	#10	Behavior change OR intervention OR health promotion OR health education	76,998
Lay Health Worker	#11	Paraprofessional Personnel	1,401

Merged Concepts	#12	#7 AND #8 AND #9 AND #10 AND #11	0
Concept	Search No.	Free Text and MeSH Heading Search	Results
Merged Concepts	#13	#6 or #12	1,138
	#14	Applied Language (English) limit	1,112

Web of Science Database Search			
Concept	Search No.	Free Text terms	Output
Child	#1	child* or teen* or newborn or toddler* or adolescen* or baby or babies or infan*	1,827,911
Parent	#2	mother* or father* or parent*	586,318
Health	#3	Health or Health outcome* or Health care or Physical health or Health knowledge* or illness* or Health Behavior* or Health Behaviour* or Health Attitude* or Sickness* or Public health* or Health Inequalities or Health Disparities	1,508,575
Health Intervention	#4	planning or behaviour change or behavior N1 change* or program* or intervention* or strateg* or training* or support or group N1 based or community N2 health or promotion* or evaluation* or trial* or education* or prevention* or improvement or home N1 visit* or communication or phone N1 support* or home N1 training or tailor* or personalised or personalized or individualised or individualized or face N1 face	8,956,509
Lay Health Worker	#5	community worker* or community volunteer* or Para professional* or Community Health Worker* or Support Worker* or Social Assistant* or Community Health Advisor* or link Worker* or Health Trainer* or Health Worker* or Health Advisor* or Home Visitor* or Lay Educator* or Community Health Agent* or Trainee Health Educator* or Lay Health Worker* or Lay Health Advisor* or Health Educator*	99,703
Merged Concepts	#6	#1 AND #2 AND #3 AND #4 AND #5	2,773
	#7	Applied Language (English) limit	2,662

Concept	Search No.	MeSH Heading Search	Output
		Not available option within this database	

Cochrane Database Search			
Concept	Search No.	Free Text terms	Output
Child	#1	child$ or teen$ or newborn or toddler or adolescen$ or baby or babies or infan$	93,067
Parent	#2	mother$ or father$ or parent$	12,074
Health	#3	Health or Health outcome$ or Health care or Physical health or Health knowledge$ or illness$ or Health Behavior$ or Health Behaviour$ or Health Attitude$ or Sickness$ or Public health$ or Health Inequalities or Health Disparities	179,889
Health Intervention	#4	planning or behaviour change or behavior adj1 change$ or program$ or intervention$ or strateg$ or training$ or support or group adj1 based or community adj2 health or promotion$ or evaluation$ or trial$ or education$ or prevention$ or improvement or home adj1 visit$ or communication or phone adj1 support$ or counselling or counselling or home adj1 training or tailor$ or personalised or personalized or individualised or individualized or face adj1 face	4,857
Lay Health Worker	#5	community worker$ or community volunteer$ or Para professional$ or Community Health Worker$ or Support Worker$ or Social Assistant$ or Community Health Advisor$ or link Worker$ or Health Trainer$ or Health Worker$ or Health Advisor$ or Home Visitor$ or Lay Educator$ or Community Health Agent$ or Trainee Health Educator$ or Lay Health Worker$ or Parent Aide$ or Lay Health Advisor$ or Lay Community Worker$ or Health Educator$	18,305
Merged Concepts	#6	#1 AND #2 AND #3 AND #4 AND #5	656
Concept	Search No.	MeSH Heading Search	Output
Child	#7	Child or Adolescent or pregnancy or infant	93,938
Parent	#8	Mothers or fathers	1,085
Health	#9	Health or health knowledge, attitudes, practice OR health behavior OR public health	359,132

Health Intervention	#10	Health promotion OR health education or health communication	13,605
Lay Health Worker	#11	Community health worker OR health educator	256
Merged Concepts	**#12**	**#7 AND #8 AND #9 AND #10 AND #11**	**1**
Concept	**Search No.**	**Free Text and MeSH Heading Search**	**Results**
Merged Concepts	#13	#6 or #12	656

CINAHL Database Search			
Concept	**Search No.**	**Free Text terms**	**Output**
Child	#1	child$ or teen$ or newborn or toddler or adolescen$ or baby or babies or infan$	345,456
Parent	#2	mother$ or father$ or parent$	39,263
Health	#3	Health or Health outcome$ or Health care or Physical health or Health knowledge$ or illness$ or Health Behavior$ or Health Behaviour$ or Health Attitude$ or Sickness$ or Public health$ or Health Inequalities or Health Disparities	915,891
Health Intervention	#4	planning or behaviour change or behavior adj1 change$ or program$ or intervention$ or strateg$ or training$ or support or group adj1 based or community adj2 health or promotion$ or evaluation$ or trial$ or education$ or prevention$ or improvement or home adj1 visit$ or communication or phone adj1 support$ or counselling or counselling or home adj1 training or tailor$ or personalised or personalized or individualised or individualized or face adj1 face	1,268,520
Lay Health Worker	#5	community worker$ or community volunteer$ or Para professional$ or Community Health Worker$ or Support Worker$ or Social Assistant$ or Community Health Advisor$ or link Worker$ or Health Trainer$ or Health Worker$ or Health Advisor$ or Home Visitor$ or Lay Educator$ or Community Health Agent$ or Trainee Health Educator$ or Lay Health Worker$ or Parent Aide$ or Lay Health Advisor$ or Lay Community Worker$ or Health Educator$	2,777
Merged Concepts	**#6**	**#1 AND #2 AND #3 AND #4 AND #5**	**48**

Concept	Search No.	MeSH Heading Search	Output
Child	#7	Child or adolescence or pregnancy or infant	465,793
Parent	#8	Mothers or fathers or parents	36,202
Health	#9	Health care outcomes or health or health knowledge or health behavior or attitudes to health or public health	109,916
Health Intervention	#10	Health promotion	32,305
Lay Health Worker	#11	Community health workers or health educator	2,073
Merged Concepts	**#12**	**#7 AND #8 AND #9 AND #10 AND #11**	**1**
Concept	**Search No.**	**Free Text and MeSH Heading Search**	**Results**
Merged Concepts	#13	#6 or #12	49
	#14	Applied Language (English) limit	46

Appendix 34. Realist Review Sets

Set No.	Authors & Year	Title of the original source	Companion Papers
1	Abbot, Renfrew & McFadden (2006)	'Informal' learning to support breastfeeding: local problems and opportunities	None
2	Anderson, Adeney, Shinn, Safranek, Buckner-Brown & Krause(2015)	Community coalition-driven interventions to reduce health disparities among racial and ethnic minority populations (review)	Belsky, Melhuish, Barnes, Leyland, Romaniuk & National Evaluation of Sure Start Research Team (2006) Latham, Kapoor, Myers & Barnes (2006) Melhuish, Belsky, Leyland, Barnes & National Evaluation of Sure Start Research Team (2008) National Evaluation of Sure Start Research Team (2010)
3	Beake, McCourt, Rowan & Taylor (2005)	Evaluation of the use of health care assistants to support disadvantaged women breastfeeding in the community	Dykes (2005)
4.	Brookes, Summers, Thornburg, Ispa & Lane (2006)	Building successful home visitor-mother relationships and reaching program goals in two Early Head Start programs: A qualitative look at contributing factors	Raikes, Green, Atwater, Kisker & Constantine (2006)
5.	Colver, Hutchinson & Judson (1982)	Promoting children's home safety	Colder (1984)
6.	Cowley (2011)	Home visitors and child health in England: advances and challenges	None
7.	Fitzpatrick, Molloy & Johnson (1997)	Community mothers' programme: extension to the travelling community in Ireland	Johnson, Howell & Molloy (1993)
8.	Ingram, Rosser & Jackson (2005)	Breastfeeding peer supporters and a	None

		community support group: evaluating their effectiveness	
9.	Jolly, Ingram, Freemantle, Khan, Chambers, Hamburger, Brown, Dennis & Macarthur (2012)	Effect of a peer support service on breast-feeding continuation in the UK: a randomised controlled trial	Macarthur, Jolly, Ingram, Freemantle, Dennis, Hamburger, Brown , Chambers & Khan (2009)
10	Jones (2012)	Breastfeeding in Brighton and Hove: a success story	Department of Health (2009)
11	Kenyon, Jolly, Hemming, Ingram, Gale, Dann, Chambers & Macarthur (2012)	Evaluation of lay support in pregnant women with social risk (ELSIPS): a randomised controlled trial	None
12	Kowash, Pinfield, Smith &* Curzon (2000)	Effectiveness on oral health of a long-term health education programme for mothers with young children	Levine & Stillman-Lowe (1985) Kowash, Toumba & Curzon (2006)
13	Macdonald, Bennett, Higgins & Dennis (2010)	Home visiting for socially disadvantaged mothers (protocol)	None
14	Mackenzie (2006)	Benefit or burden: introducing paraprofessional support staff to health visiting teams: the case of Starting Well	Mackenzie, Shute, Berzins & Judge (2004) Mackenzie (2008) McIntosh & Shute (2006) Sanders & Wooley (2005) The Scottish Office Dept. of Health (1999) Shute & Judge (2005)
15	Manketelow (2003)	Delivering family support services in rural Ireland	None
16	McInness & Stone (2001)	The process of implementing a community-based peer breast-feeding support programme: the Glasgow experience	McInness, Love & Stone (2000) McInness, Love & Stone (2001)
17	Mcintosh, Barlow, Davis & Stewart-Brown (2009)	Economic evaluation of an intensive home visiting programme for vulnerable families: a cost effectiveness analysis of	Davis & Meltzer (2002) Barlow, Davis, McIntosh, Jarrett, Mockford & Stewart-Brown (2007)

		public health intervention	Barlow, Stewart-Brown, Calaghan, Tucker, Brocklehurst, Davis & Burns (2003)
18	Morrell, Spiby, Stewart, Walters & Morgan (2000)	Cost and benefits of community postnatal support workers: a randomised controlled trial	Morrell, Spiby, Stewart, Walters & Morgan (2000)
19	Mytton, Ingram, Manns, Stevens, Mulvaney, Powell, Potter, Towner, Emond, Deave, Thomas, Kendrick & Stewart-Brown (2014)	The feasibility of using a parenting programme for the prevention of unintentional home injuries in the under-fives: a cluster randomised controlled trial	None
20	Oakley, Rajan & Turner (1998)	Evaluating parent support initiatives: lessons from two case studies	Cox, Pound, Mills, Puckering & Owen (1991)
21	Raine (2003)	Promoting breastfeeding in a deprived area: the influence of a peer support intiaitive	None
22	Renfrew, McCormick, Wade, Quinn & Dowswell (2012)[38]	Support for health breastfeeding mothers with healthy term babies (Review)	Muirhead, Butcher, Rankin & Munley (2006)
23	Renfrew, McCormick, Wade, Quinn & Dowswell (2012)	Support for health breastfeeding mothers with healthy term babies (Review)	Graffy, Taylor, Williams & Eldridge (2004) Graffy & Taylor (2005)
24	Renfrew, McCormick, Wade, Quinn & Dowswell (2012)	Support for health breastfeeding mothers with healthy term babies (Review)	Jenner (1988)
25	Scheiwe, Hardy & Watt (2010)	Four-year follow-up of a randomised controlled trial of a social support intervention on infant feeding practices	Watt, Tull, Hardy, Wiggins, Kelly, Molloy, Dowler, Apps & McGlone (2009) Watt, McGlone, Russell & Dowlder (2006)
26	Smith & Randhawa (2006)	Embracing diversity in community	None

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[38] This review produced 3 sets of papers (Muirhead et al, Graffy et al, and Jenner et al) hence why Renfrew review is listed 3 times as the original source

		healthcare settings: developing client-centred approach to weaning support	
27	Thomson, Dykes, Hurley & Hoddinott (2012)	Incentives as connectors: insights into a breastfeeding incentive intervnetio in a disadvantaged areas of North West England	Thomson, Crossland & Dykes (2012)
28	Wiggins, Oakley, Roberts, Turner, Rajan, Austerberry, Mujica, Mugford & Barker (2004)	Postnatal support for mothers living in disadvantaged inner city areas: a randomised controlled trial	Wiggins, Oakley, Roberts, Turner, Rajan, Austerberry, Mujica & Mugford (2004) Watt, Tull, Hardy, Wiggins, Kelly, Molloy, Dowler, Apps & McGlone (2008)

Appendix 35. Realist Review Appraisal Tool for Content and Relevance Screening

Set No.	Authors/Year	Screening Categories	Level of Information				Outcome
			High	Moderate	Minimal	None	
	Abbot et al (2006)	Setting		X			Exclude.
		Content & strategies			X		Cannot distinguish between
		Outcomes		X			LHWs & health professional
	Anderson et al (2015)	Setting				X	Exclude.
		Content & strategies				X	Cannot distinguish between
		Outcomes			X		individual interventions.
	Beake et al (2005)	Setting	X				Include.
		Content & strategies	X				
		Outcomes		X			
	Brookes et al (2006)	Setting	X				Exclude.
		Content & strategies		X			Not delivered by LHW
		Outcomes	X				
	Colver et al (1982)	Setting		X			Exclude.
		Content & strategies			X		
		Outcomes		X			
	Cowley (2011)	Setting				X	Exclude.
		Content & strategies				X	Cannot distinguish between
		Outcomes				X	individual interventions.
	Fitzpatrick et al (1997)	Setting	X				Exclude.

		Content & strategies		X			Not delivered within the UK
		Outcomes	X				
	Ingram et al (2005)	Setting	X				Include.
		Content & strategies		X			
		Outcomes	X				
	Jolly et al (2012)	Setting	X				Include.
		Content & strategies		X			
		Outcomes	X				
	Jones (2012)	Setting	X				Exclude.
		Content & strategies				X	
		Outcomes		X			
	Kenyon et al (2012)	Setting				X	Exclude.
		Content & strategies				X	Protocol & review not yet
		Outcomes				X	published.
	Kowash et al (2000)	Setting	X				Exclude.
		Content & strategies	X				Delivered by Health
		Outcomes	X				professional and not LHW.
	Macdonald et al (2010)	Setting					Exclude.
		Content & strategies					Paper has been withdrawn.
		Outcomes					
	Mackenzie (2006)	Setting	X				Include.
		Content & strategies	X				

		Outcomes	X				
	Manketelow (2003)	Setting	X				Exclude.
		Content & strategies			X		
		Outcomes		X			
	McInnes & Stone (2001)	Setting		X			Include.
		Content & strategies	X				
		Outcomes	X				
	McIntosh et al (2009)	Setting	X				Exclude.
		Content & strategies		X			Not focused on child's
		Outcomes	X				physical health
	Morrell et al (2000)	Setting	X				Include.
		Content & strategies	X				
		Outcomes	X				
	Mytton et al (2014)	Setting	X				Exclude.
		Content & strategies		X			LHW does not deliver the
		Outcomes	X				intervention.
	Oakley et al (1998)	Setting	X				Exclude.
		Content & strategies				X	Does not aim to change
		Outcomes	X				physical health behaviours.
	Raine (2003)	Setting	X				Exclude.
		Content & strategies			X		
		Outcomes		X			

Renfrew et al (2012) / Graffy et al (2004)	Setting	X				Exclude.
	Content & strategies			X		
	Outcomes		X			
Renfrew et al (2012) / Jenner (1998)	Setting	X				Exclude.
	Content & strategies			X		
	Outcomes	X				
Renfrew et al (2012) /Muirhead et al (2006)	Setting		X			Include.
	Content & strategies		X			
	Outcomes	X				
Scheiwe et al (2010)	Setting	X				Include.
	Content & strategies		X			
	Outcomes	X				
Smith & Randhawa (2006)	Setting	X				Include.
	Content & strategies	X				
	Outcomes	X				
Thomson et al (2012)	Setting	X				Include.
	Content & strategies		X			
	Outcomes	X				
Wiggins et al (2004)	Setting	X				Exclude.
	Content & strategies			X		
	Outcomes	X				

Appendix 36. Realist Review Characteristics of Final Sets

Characteristics of Included Sets							
Set No.	Authors/Year	Set Name	Location	Target Health	Target Population	Lay Health Worker	Type of Study
	Beake et al (2005)	Infant Feeding Initiative	London, UK	Breastfeeding	Women from 32wks gestation.	Infant Feeding Support Worker (IFSW)	Evaluation
	Ingram et al (2005)	Bristol Breastfeeding Support	Bristol, UK	Breastfeeding	Women from socio-economic deprived area of South Bristol.	Babes	Intervention
	Jolly et al (2012)	Birmingham Breastfeeding Peer Support	Birmingham, UK	Breastfeeding	Pregnant women estimated delivery date: 1st Feb – 31st July 2007	Peer Support Workers (PSWs)	RCT
	Mackenzie (2006)	Starting Well	Glasgow, UK	Child health	Families of new born children in two socio-economic deprived communities	Health Support Workers (HSWs)	Evaluation
	McInness et al (2001)	Glasgow Experience	Glasgow, UK	Breastfeeding	Pregnant women from 12weeks pregnancy residing in area high socio-economic deprivation	Volunteer Peer Counsellors (VPCs)	RCT
	Morrell et al (2000)	Community Postnatal Support Workers	Sheffield, UK	Infant and maternal health	Pregnant women delivering a baby in recruiting hospital between Oct 1996 – Nov 1997	Community Postnatal Support Worker (CPSW)	Economic evaluation
	Renfrew et al (2012) / Muirhead et al (2006)	Ayrshire Breastfeeding Peer Support	Ayrshire, UK	Breastfeeding	Women at 28wks pregnant between July 1997 – March 2002 attending recruiting GP clinic	Peer Supporters	RCT

	Scheiwe et al (2010)	Infant Feeding Peer Support	London, UK	Infant feeding practices	New mothers given birth between Sept 2002 – Nov 2003 in two socio-economic deprived London boroughs	Volunteers	Evaluation
	Smith et al (2006)	Infant Feeding Advisors	Unspecified UK town	Infant feeding practices	British Bangladeshi families with child aged three months.	Infant Feeding Advisors (IFAs)	Intervention
	Thomson et al (2012)	Star Buddies	Unspecified town in North West England, UK	Breastfeeding	Mothers who initiated breastfeeding	Star Buddy	Evaluation

Appendix 37. Realist Review Example Data Extraction Table

Set	Set 1. Department of Health Infant Feeding Initiative. Beake et al 2005. Single Paper
Context	Pilot programme set up in 2001 as collaboration between Sure Start & maternity services in disadvantaged area of London. Funded by Department of Health Infant Feeding Initiative. Programme aims: (1) meet national health targets for breastfeeding (BF) (2) increase rates of women making informed choice to BF. (3) Enhance general levels of support to new mothers in areas of social deprivation. (4) Develop communication & interdisciplinary work. (5) Explore how far the IFSW role in maternity could be developed with a community base. (6) Supplement rather than substitute existing midwife and PHN/HV support, providing different kind of support.
	Evaluation strategy aimed to explore & assess how far these aims could be met in practice, explore & develop the evidence on forms of support likely to be effective in helping women to BF. Gathered Quan & Qual data on planning & implementation of project, views & experiences of stakeholders and rates of breast/formula feeding before & after programme. Although the primary aim of the researchers was to evaluate the project, the nature and stage of the work meant that this was approached very much in the manner of action research (Elliot 1991) with researchers contributing to the project initially by raising questions and then by providing feedback and the project group contributed considerably to the research process.
	Sure Start project provided drop in facilitates for local families, psychology service, PHN/HV service for additional home support however further support was seen as required. Key Sure Start targets include: reducing infant emergency hospital admissions, reducing smoking & giving guidance on BF. Local BF data was not available. Recent project in area found: 1994-95 39% of mothers were fully BF & 26% were partly BF at 2 weeks. These rates feel to 19% & 24% respectively. In 1997-98 41% were fully BF & 21% partly BF at 4 weeks. At time of study, Local Trust was working towards achieving Baby Friendly Initiative status & received certificate of achievement previous year. Audit figures didn't show improvement in BF rates. Location: area of London identified as being part of Gov't's Sure Start scheme. Diverse. High level of temporary accommodation, refugees & high levels of relevant indicators: teen pregnancies, low birthweight, childhood accidents, health problems, low literacy / numeracy. Sure Start indicated around 174 births pa in the area.
	Local women tend to book for maternity care in nearby NHS trust, which is main partner for this project, large

obstetric-led teaching hospital with local midwifery care from group practices. Women receive postnatal care from midwives who provided antenatal care so high level of continuity. Midwives can vary pattern of home visiting and focus care where needed. Earlier research shows visits are longer and more varied than conventional community midwifery services.

Literature: Gaps & problems in support for BF. Little evidence additional professional midwifery support is superior to peer /community support. Most of literature is based in US where there is no community Midwifery service & PHN/HV visiting is not the norm. Lit Search = little info on effects of non-prof support for BF in community in UK. Various peer-support initiatives established but we don't know the extent to which they share similar features. Very little experience of use of health care assistants in the community to support breastfeeding in the UK, there are some other models of community- or home-based practice that might be drawn on. There was little evidence, apart from the Glasgow study, of how such a role, with a high level of independence and a relatively open remit, might work in practice (McInnes and Stone 2001) or of what its effects might be.

Estimates of births in the Sure Start area were available but levels of support and number of women requiring additional support had not been precisely estimated so it was difficult to plan for LHW work patterns, boundaries and inclusion or exclusion criteria.

Interagency Working Group included midwives, health visitors and managers, a consumer representative (J.T.) who had previous experience of breastfeeding research and eventually the Infant Feeding Support Worker and Researchers. The working group met at regular intervals first to develop and then to co-ordinate and monitor the project.

The Support Worker needed to work across two organizations with different structures and ways of working, where traditionally women had been passed on from midwifery to health visiting, with little contact or overlap. Once a clear job description, specification and criteria had been developed, the next important step was to refine and review supervision and management arrangements, role definition and boundaries.

Day-to-day management was by a midwife co-ordinator with a specific interest and expertise in breastfeeding and line management by the Trust's Community Midwifery Manager. Although clinical supervision was by midwives, the Support Worker was expected to liaise closely with the Sure Start health visitors, as part of the Sure Start team

	using the Sure Start programme as a work base. These arrangements were formally planned but also required refinement in practice once the project started. During the study period, community services were overhauled with caseload midwifery extended to the whole community service, approximately doubling the number of caseload midwives. With such a major reorganization of the community midwifery services, priorities of the midwives were with settling into a new way of working and level of awareness of the project was extremely low, despite frequent reminders. Because of bureaucratic delays, an existing member of staff in a health care assistant post was seconded to the project for approximately 2 months. This allowed a person with experience of working with midwives locally to establish the position, and provided researchers with two individual perspectives on the role (interviews were conducted with both). Initially, it was planned midwives would refer women for support, using a simple pro-forma, either ante-natally or postnatally. This did not prove effective in practice, as we discuss below, and a form of Support Worker/maternal self-referral was developed.
Population Group	A provisional framework was drawn up by an interagency working group with very broad criteria: any woman who felt she needed additional support, covering the period from 32 weeks of pregnancy to 4 months postnatally. Data were completed for all women receiving care as part of the project in the initial study period (total $n= 25$ post implementation) with 55 in the first 10 months of implementation. From all cases included in the study, only 23/84 midwife record sheets were returned, and only 2/25 of these were post implementation.
Targeted Health	Breastfeeding.
LHWs attributes	2-week induction programme was planned shared between the two organizations, with 1 week spent at Sure Start and 1 week in the hospital. The only formal training given was a 2-day workshop that is offered to midwives as part of the hospitals ongoing Baby Friendly Initiative training programme. Despite the lack of prior collaboration, the philosophy and understanding of the qualities sought for the post were shared and there was a strong commitment to working together around the needs of women and families. The Support Worker role was seen as additional to and different from those of professionals so specific 'expertise' on

	infant feeding was not required. However, a candidate with personal experience of breastfeeding and some relevant experience – such as working with community groups, working with mothers/babies – was sought by the service employing the candidate. Qualities specified were: (1) ability to listen; (2) ability to understand and work with women's and families' needs; (3) interpersonal and communication skills; (4) maturity and life experience; (5) ability to manage autonomy and boundaries; and (6) ability to 'engage' rather than 'teach'.The role carried a high level of autonomy and responsibility although supervised
Intervention & Strategies	Post would function with a community base. Role involves: visiting women in their own homes & hospital and working closely with Sure Start workers, across professional and agency boundaries. Independent home visits would be conducted. Healthcare assistant appointed in the community as an Infant Feeding Support Worker (IFSW). Literature: practical role-modelling forms of support are most likely to have positive impact on socially disadvantaged mothers intentions & success in BF. Peer counselling support ought to include non-judgemental listening, reassurance & encouragement. SWs in areas of deprivation is beneficial for promoting & encouraging mothers to BF. Early hospital discharge home does not affect breastfeeding rates perhaps due to low level support in postnatal wards already. Disadvantaged women who may benefit more from extra support with breastfeeding. A prospective, RCT of effectiveness of community postnatal support workers in the UK concluded no health improvements this study offered women general practical and emotional support, did not focus on infant feeding, nor did it target women living in an area of deprivation or lacking social support. It was not clear at the outset what support needs would be identified or prioritized but the aim of working with women antenatally recognized the potential need for information and encouragement for some women in making decisions around how to feed their baby. The title of 'Infant Feeding Support Worker' was chosen primarily not to alienate women who might initially consider bottle feeding and it was accepted that she would support women however they chose to feed their baby, even though her primary aim was to support breastfeeding. the Support Worker would visit women independently at home and plan support with them. Although clearly focused on infant feeding the support was intended to be different from that offered traditionally by professionals, it was thought likely to be somewhat broader. It was important, but difficult, for all those involved

to define what forms of support would be included and what the limits to this were or should be – when should the Support Worker refer on to others.

In the early weeks of the project, with busy midwives unfamiliar with this way of working, there were few referrals. Therefore, the Support Worker made an introductory visit to all new mothers in the area where the Sure Start facilities were introduced and the mother's needs around feeding assessed informally. If the woman wanted additional support, further visits would be arranged, taking the woman's desire for support as the cue. The contact started antenatal if a woman was referred by a midwife; for example, if the woman expressed concerns about feeding difficulties with a previous baby or uncertainty about whether to breastfeed. Support Workers felt it was beneficial to have made contact with women before birth. Women also commented on the value of having met someone previously who they could call on if problems arose.To contact women postnatally, the Support Worker checked the birth register regularly, although it was hoped that this time-consuming approach would be replaced by regular listings from the hospital's computer records. She then made a brief visit to women in hospital, or at home, in the early postnatal period. If women wanted more support, further visits would then be arranged.

In the initial visit she introduced the Sure Start services and generally enquired about how the woman was 'getting on' before discussing feeding – partly to avoid feelings of defensiveness in women who might otherwise feel pressured about BF.In general the Support Worker saw the need to listen to women, sit with them and encourage them as central to the role. She also noted that many women had broader problems that related to or impacted on their ability to breastfeed: if the woman was stressed or anxious for other reasons, feeding would become more difficult. This was taken into account in her approach, but where more complex general needs for support arose, these were referred to the Sure Start health visitor.

Many women were attempting to feed in an unrelaxed position and with poor posture that could cause pain and fatigue. She used a practical, trial and error approach to comfort and positioning. In additional to seating and posture, this approach would include measures such as 'making sure you have a drink by your side' or sitting a potentially fretful toddler beside you with a book to share and a drink. Many mothers, especially with first babies, expressed anxieties about whether the baby was getting enough milk – as they cannot measure or see breast milk as with bottled milk. She discussed other ways that women could 'see' or 'know' the baby was getting enough milk that would increase the mother's confidence, including her own observation and knowledge of her baby's patterns, development and contentment and her own 'embodied' knowledge such as feeling the let-down reflex and changes

in her breasts. Number of women expressed concerns about sufficiency of milk or a focus on measurement, and these tended to be women who introduced feeding by bottle. It appeared that for some women, external reassurance such as the ability to visualize and formally measure the amount of milk taken was important.

Many women were anxious and disappointed because their experiences seemed to differ from what was presented in books and magazines. She encouraged women to feel reassured that all experiences were different, not conforming to an ideal and that they would gain confidence with experience and practice.

Although most women were aware of key benefits of breastfeeding, she felt able to keep them informed about less well-known benefits. She kept a file of magazine and paper cuttings to share with women. She also informed women about the underlying workings of aspects of feeding they were less familiar with. This included the importance of latching on effectively, different qualities of breast milk during the feed, the relationship between suckling and supply and how 'top-ups' with formula could interfere with this, reinforcing problems with sufficiency of milk.

Many women leave hospital very early, the initial few days of establishing BF are usually undertaken at home, when women may previously have been in hospital with staff constantly present, even if very busy. She was also aware from women's reports that many found care in hospital in the early period inadequate, confusing or unhelpful. Many women did not have family around to help and that many had no, or very limited, experience of young babies. Consequently they often lacked confidence and basic practical knowledge such as how to change a nappy or bath a baby. This was increasingly important with very early hospital discharge. However, rather than trying to provide all support herself, after the very early days she encouraged women to attend community groups and took opportunities to put women in touch with others, for mutual support.

Where she felt women might be depressed or have more long-term or complex needs, she put them in touch with health visitors or other appropriate local services (e.g. Babytalk, Weaning Group, Parents To Be Group). This might include referral back to midwives, a breastfeeding specialist or general practitioner where the breastfeeding problems might require this, for example, mastitis or suspected infections.

Support Worker role can be divided into three main areas: practical/ technical support, information and general or social support. General or social support was more highly valued and emphasized by the women. In contrast, women's accounts of midwives' roles tended to describe mainly technical/practical support and information that tended to be didactic. While some women received good midwifery support, others were highly critical of the nature

of the support offered. Practical/technical support involved activities such as help with 'positioning' and 'latching on'. The fact that the Support Worker had time to sit with women and observe them was seen as particularly valuable in this respect. For example:

"She offered me very practical advice, she was watching me do the breastfeeding and trying to give me pointers on how to improve. She was encouraging, positive and supportive. She said it was fine to do what you are doing but try it this way and try that. (Miranda

A number of women identified this, before implementation, as a gap in the provision of care. For example:

"home visit from person specialising in breastfeeding and with time just for that would have been really welcome, and beyond the initial two weeks. (Preimplementation questionnaire – open question)"

Information fell into two main types: 'tips' (such as suggestions on how to prevent and deal with problems such as soreness) and underpinning information, for example, on the mechanisms of breastfeeding, sufficiency of milk and so on. From women's accounts the type of information needed was quite different from that found in health promotional literature and antenatal visits or classes. All were aware of the main health benefits of breastfeeding but their knowledge of the practical aspects and their underlying physiology – such as the relationship between frequency of suckling and supply of milk – was sometimes less full and women appreciated more detailed information about this.

General or social support was highly valued by the women. They emphasized the importance of general encouragement, gaining confidence and knowing there was someone available to help and to talk to.

"but there is a thing in your mind thinking OK there is support already there and I'm not on my own. (Miranda – talking about the value of meeting the Support Worker antenatally)"

Some specifically felt this made a difference to ability to continue breastfeeding.

"it just encouraged me, because I was planning to mixed feed as well ... so it just encouraged me really to just keep it on the breast and it was just nice for me to see that, you know, you have people that comes round to talk to about things like that because that has never been." (Ola)

The importance of a friendly, encouraging, no dogmatic and non-didactic approach was evident.

"Because she's a friendly person I found it useful. Let me say that because I enjoy her coming round because she's

	nice, you know, when she comes round she feels at home and you're comfortable around her kind of thing, so I love her coming round. (Ola) The continuity of antenatal and postnatal visits by one person and the relationship that could be formed was valued. "That made a big difference because you don't often see, when people come round like that they just do what they need to do and go. There's no relationship or anything, but her coming round is also relationship-based, She's not coming round just to do her duty, she comes to build a relationship and that actually makes you feel comfortable around her, to actually talk to her and open up to her." (Ola) While some women received this kind of support from a caseload midwife, where this was not available the approach was sometimes contrasted with that of professionals, who were seen by some women as too dogmatic, or unrealistic. "it's all very well saying you must breastfeed, yes, you must do this, but they don't know, they haven't done it." (Miranda – twins) "my gut feeling is that sadly the vast majority of professionals offering advice to new mothers on breastfeeding have no experience of breastfeeding themselves and this creates a confusing discrepancy between advice offered and the realities of the experience. I put the reason why so many people stop breastfeeding relatively early on down to this fact. (Pre implementation questionnaire – open question) "I feel that pressure to breastfeed *exclusively* of 'NCT style' breastfeeding Nazis approach actually puts lots of women off – surely some feeding is better than none. (Pre implementation questionnaire - open question, referring to midwives) Clearly, a proportion of women felt pressurized by the approaches to support taken by some professionals, and this appears to have an alienating rather than supportive effect, where women would simply tend to dismiss their advice as unrealistic, lacking a basis in personal experience and not really tuned in to how women feel postnatally when faced with feeding problems.
Outcomes	This project was also seen as a chance to re-establish communication and collaboration between hospital- and community-based services and between midwives and health visitors that had been undermined by the way services

were organized from the 1970s to 1990s.

Interim: Initially, it was planned that midwives would refer women for support, using a simple pro-forma, either antenatal or postnatally. This did not prove effective in practice and a form of Support Worker/maternal self-referral was developed. In the early weeks of the project, with busy midwives Unfamiliar with this way of working, there were few referrals. These referrals were only beginning to be established at the end of the study period it was not possible to form any view on the potential benefits of antenatal contact. The project was highly centred on the women's own definition of need, but did not depend on women having the confidence or knowledge to seek this out independently.

As initial evaluation took place very early in the scheme, and owing to delays in implementation, it was only possible to obtain very limited figures on outcomes during the study period. The figures given here should therefore be treated with great caution. Figures from the routine hospital maternity data system, which records feeding pattern at birth, can be seen in Table 1.

Table I. Routine maternity data – feeding at birth

Feeding at birth	Before IFSW input 1 September–2 April (%)	With IFSW 2 May–2 August (%)
Exclusive breastfeeding	60 (59)	43 (67)
Mixed – breast/formula	0	0
Standard formula	4 (4)	3 (5)
Special formula	9 (9)	3 (5)
Missing	29 (28)	15 (23)

IFSW, Infant Feeding Support Worker.

This compares with women's self-reported feeding patterns as seen in Table 2.

Table 2. Women's questionnaire reports of feeding, 6 weeks postnatally

	Before IFSW (%)	With IFSW (%)
Exclusive breastfeeding	18 (55)	7 (64)
Mixed – breast/formula	8 (24)	4 (36)
Formula	7 (21)	0

IFSW, Infant Feeding Support Worker.

These initial figures were extremely small, so must be viewed particularly cautiously. However, the Support Worker records give slightly larger numbers for feeding patterns post implementation (see Table 3).

Table 3. Infant Feeding Support Worker/Sure Start feeding records

	At birth (%)	At 6 weeks (%)	At 4 months
Exclusive breastfeeding	45 (81)	41 (74)	32 (58)
Mixed – breast/formula	4 (7)	8 (15)	12 (22)
Formula	4 (7)	4 (7)	5 (9)
Missing	2 (4)	2 (4)	6 (11)

This table only includes those women for whom records could be completed through to 4 months postnatally during the first 10 months of the Infant Feeding Support Worker.

Outcome data suggest rates of initiation and continuation of breastfeeding, particularly at the later stage between 6 weeks and 4 months when many women introduce formula or mixed feeding, may be increasing in association with the implementation of the project. This was very early in the life of the project and the figures at this stage should not be considered reliable, nonetheless the initial findings are encouraging and suggest that further research would be worthwhile.

The experience of the implementation of this scheme was encouraging: two quite different organizations concerned

with maternal and infant health were able to work together effectively to establish a Support Worker role. At the end of the pilot period, the post was continued and the closer communication between the agencies and professions continued to develop. As an innovative role, working across organizational and professional boundaries, and providing support that could potentially be quite diffuse, the need to develop appropriate boundaries was seen as important. The professionals involved expressed initial concerns about the need to define the boundaries of the role, in terms of type of support to be provided, when and how to refer to them, and avoiding attempts to provide a 'professional' type role.

The intention of the scheme was to provide a different, complementary form of support to that provided by midwives or health visitors, as well as additional time and this appears to have been achieved. Support Worker's understanding of her role reflected this and women's comments suggest that they saw this support as helpful rather than undermining.

Women valued knowing she was readily available to them. They liked the way she was knowledgeable, reassuring, encouraging and that she had time for them whether this be in their home, hospital or a community setting. Some contrasted it with the approach of midwives, who they felt were trying to tell them what to do.

The value of facilitating the women's own sources of support, encouraging participation in community activities and making links with other mothers was also recognized and was reflected in the Support Worker's approach and activities.

Traditionally, health education has tended to use didactic approaches, based on the assumption of a knowledge deficit or gap that needs to be filled. Information may be provided in a theoretical, rather than person-centred or experiential form and professionals may assume that their clients lack information about the benefits of certain health behaviours (Jones *et al.* 2002). The responses of both the Support Worker and the women in this study suggest that women are generally knowledgeable about the benefits of breastfeeding, but may lack some practical and theoretical information that will help them to cope with breastfeeding in practice and have confidence in it. A practical approach to offering this is appreciated as well as adding to their theoretical knowledge, particularly where this is based on observing and responding to the woman's own situation.

The degree of concern expressed by the women and reported by the Support Worker about sufficiency of milk was

	an important issue, and again, an Experiential approach appeared to be more effective than a didactic one where professionals' information, although useful, simply told women they will have enough milk. This experiential approach was then reinforced by more 'theoretical' information, offered in the form of tips and ideas, in a way that appeared to be more empowering for women than the more partial information that women often report being offered. It was too early to say whether the project made a measurable impact on rates of breastfeeding. Apart from limited figures available, comparison would be extremely difficult without the option of conducting a randomized controlled trial. However, we suggest that the findings were sufficiently encouraging to warrant the conduct of further research.

Appendix 38. Realist Review Demi-regularities and MRTs for Each Set

Set No.	Demi-regularity 1: Strategies of LHW support
5, 1, 2, 6,	MRT 1: Signposting parents to community initiatives for long term support enhances parental self-efficacy and ensures lay health workers do not provide support out with their capacity
2, 10, 5,	MRT 2: Mobilising external resources sustains motivation and self-efficacy to engage with parenting behaviours.
1, 10,	MRT 3: Person centred support, tailored to the needs and circumstances of parents, improves uptake of positive parenting behaviours.
9, 10, 6,	MRT 4: Socio-emotional support activates parents' internal resources, such as confidence and motivation, to encourage engagement with the positive parenting behaviour.
6,	MRT 5: Reliance on LHW socio-emotional support can lead to parents failing to mobilise internal resources resulting in increased risk of physical morbidity and mental illness.
2, 10, 3, 9,	MRT 6: Face to face contact between LHW and parents, and delivering support within the family home, facilitates discussion of sensitive topics.
	DR 2 The peer-ness of the LHW role
8, 1, 2, 5,	MRT 7: LHWs with shared experiences to parents, are seen as 'one of them' which facilitates parental engagement with the programme and person centred care.
2, 4, 8, 5,	MRT 8: Recruiting LHWs from within the community bridged the gap between health services and families.
9,	MRT 9: Recruiting LHWs with shared linguistic and ethnic background improves ethnic communities' access to health information.
	DR 3 Preparing to deliver the LHW role
8, 5, 10, 2,	MRT 10: Practical-based training improves LHWs confidence and encourages LHWs to draw on personal experiences to support parents
2, 5, 8, 9,	MRT 11: Evaluating LHW training enables the programme to determine whether it is fit for purpose.
8, 6, 7,	MRT 12: Dedicated Coordinator or Mentor role identifies training needs and improves LHW confidence to deliver the role, and maintains enthusiasm and commitment to the role.
5,	MRT 13: Opportunities for peer support amongst LHWs facilitate shared learning and reinforces LHWs perception of value.
	DR 4 Motivated parents
1, 7, 10, 5, 2,	MRT 14: LHWs often find themselves supporting parents who are already motivated to engage with the child health parenting behaviour.
9, 10,	MRT 15: Relevant free resources incentivises parents to engage with the LHW and facilitates regular contact
1, 2,	MRT 16: Cultural norms, or perceived cultural norms, influence the extent to which parents engage with child health parenting behaviours.

4,	MRT 17: Proportionate Universalism removes perceived associated stigma of using LHW support
8, 5, 9, 10,	MRT 18: Early interventions address attitudes and motivations to child health parenting behaviours
	DR 5 Embedding of the programme
5, 1, 4, 8,	MRT 19. Positive stakeholder buy-in can bridge the gap between LHWs and community and produce a stable model of delivery
1, 4, 8, 2, 5,	MRT 20: Engagement between LHW-delivered programmes and existing agencies strengthens community resources and facilitates stakeholder buy-in

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