
**AN EVALUATION OF INITIATIVES TO IMPROVE
DENTAL ATTENDANCE AND OUTCOMES IN
YOUNG CHILDREN**

by

CANDY CECILIA SALOMON-IBARRA

A thesis submitted to the University of Birmingham for the degree of
DOCTOR OF PHILOSOPHY



Institute of Clinical Sciences
College of Medical and Dental Sciences
University of Birmingham
January 2021

UNIVERSITY OF
BIRMINGHAM

University of Birmingham Research Archive

e-theses repository

This unpublished thesis/dissertation is copyright of the author and/or third parties. The intellectual property rights of the author or third parties in respect of this work are as defined by The Copyright Designs and Patents Act 1988 or as modified by any successor legislation.

Any use made of information contained in this thesis/dissertation must be in accordance with that legislation and must be properly acknowledged. Further distribution or reproduction in any format is prohibited without the permission of the copyright holder.



ABSTRACT

This research explored dental attendance (DA) by young children in England. It showed that DA rates for young children were generally low with substantial variations across local authorities (LAs). Only a small proportion of children visited the dentist before their first birthday and, unexpectedly, more deprived LAs were more likely to report higher DA rates. DA was, however, only partially explained by deprivation; a further analysis in children aged 5 years and under showed a linear association between DA and LA deprivation, after being hypothesised that this relationship might be curvilinear. DA rates decreased with deprivation and the association was moderated by the effect of ethnicity, single parenthood and prevalence of dental caries. The low DA rates and variations observed suggest a complex causality. To explore the potential role of dental services in promoting DA and improving oral health outcomes, this work evaluated a new NHS England and NHS Improvement (NHSE&I) initiative “Starting Well” which aimed to improve both DA and preventive practice for young children. Qualitative research showed that there was potential in using dental practices to promote dental attendance and, with support and internal leadership, practices can adopt a more preventive focus. The creation of new roles such as practice-based prevention champions and tasks like promoting DA by children who are at a greater risk of dental disease, identified a particular need for support with training and development. LAs, local commissioners and Public Health England were identified as key to facilitate links between practices and other parts



of the local health system that had a potential role in supporting greater dental care uptake by young children. The programme was more complex to commission than routine dental services, requiring considerable facilitation and monitoring to ensure delivery and challenges with commissioning capacity were reported. Localities where the commitment to the programme was shared across the health and social care system seemed to have greater chance of successful implementation.



To My Husband
And My Daughter

To My Family



Acknowledgments

I would like to thank my supervisors for their encouragement and support throughout my PhD and making this a very enjoyable experience. I would like to thank my main supervisor Dr Kirsty Hill for taking me as a student and for her enthusiasm and continuous motivation. I am very grateful to my supervisor Dr Vahid Ravaghi for his guidance and for sharing his knowledge, especially on Stata, and for constantly encouraging me to keep learning. I cannot overstate my gratitude to my supervisor Dr John Morris who I met during my Master studies and whose lectures inspired me to pursue a PhD. My involvement in the Starting Well would not have happened without him. His guidance, support and advice will always be appreciated.

I would like to acknowledge my sponsor CONACyT, without whose financial support this work would not have been possible.

I am fully grateful to the NHS Starting Well Central team, especially to Nick Barkworth, Kate Jones, Carol Reece, Melanie Catleugh, Deema Marzouq, Grace Harding, Alison Johnson and everyone in the team. Thank you for welcoming me and allowing me to be part of the evaluation. It was a very interesting and invaluable experience. Thank you to the NHS local commissioners, PHE consultants in dental public health, LDN chairs, dental practices, national BDA, PHE and HEE representatives, and all those who gave their time to be interviewed, thank you for sharing your experiences.

I am very grateful to the dental school administrative staff, especially Carinna and Tracey for their kind help, especially booking trains when I was travelling to do qualitative research.

A big thank you goes to my lovely new friends and people that I met in the dental school, especially to Nina, Arwa, Zinab, Soher, Ruba, Nessma, and everyone in the postgraduate room. I treasure all the good memories. A big thanks also goes to my friend Mary for her friendship and support throughout these years. A special thanks also goes to my friends in Mexico.

Thank you to my family for their love, encouragement, and support. Many thanks go to my mother and sister, for their prayers, for always listening to me and giving a kind word of encouragement. A special thanks goes to my aunt Sofia for being an example to me, I admire her strength and courage. Heartfelt thanks to my family-in law for their support and kindness.

Finally, I am immensely grateful to my husband Luis for his unconditional support and love. I could simply not have got this far without him. Thank you to my little daughter Luna Victoria for being my motivation and giving me the strength that I needed to complete this thesis.

Above all, thank you God for guiding me in this journey.



Contents

1	CONTEXT OF THE STUDY	1
1.1	INTRODUCTION.....	1
1.2	HIERARCHY OF EVIDENCE OF STUDY DESIGNS	3
1.3	INEQUALITIES IN DENTAL HEALTH.....	5
1.4	IMPACT OF DENTAL SERVICES INEQUALITIES IN ORAL HEALTH.....	8
1.5	APPROACHES TO DISEASE PREVENTION	11
1.6	PROBLEMS ACCESSING HEALTH CARE	13
1.7	DENTAL CARE IN ENGLAND	18
1.8	THE BENEFITS OF DENTAL ATTENDANCE.....	19
1.9	GUIDANCE ON DENTAL RECALL.....	22
1.10	PATTERNS AND INEQUALITIES IN DENTAL ATTENDANCE IN ENGLAND	23
1.10.1	<i>First dental visit.....</i>	24
1.11	FACTORS INFLUENCING CHILD DENTAL ATTENDANCE IN THE UK.....	25
1.11.1	<i>Geographical, deprivation and ethnic related inequalities in dental attendance</i>	25
1.11.2	<i>Barriers to child dental attendance.....</i>	26
1.11.3	<i>Organisational level barriers</i>	28
1.11.4	<i>Individual barriers</i>	31
1.12	INTERVENTIONS AND POLICIES TO IMPROVE DENTAL ATTENDANCE.....	33
1.12.1	<i>Approaches and local interventions.....</i>	33
1.12.2	<i>National interventions and policies.....</i>	48
1.13	RESEARCH AIMS	51
2	INITIAL EXPLORATORY RESEARCH.....	53
2.1	INTRODUCTION.....	53
2.1.1	<i>Aims and objectives.....</i>	54



2.2	METHODOLOGY.....	56
2.2.1	<i>Analysis of child oral health inequalities in England, Wales and Northern Ireland.</i>	56
2.2.2	<i>Analysis of the variations in child dental attendance and its association with deprivation 60</i>	
2.2.3	<i>Analysis on deprivation and child dental attendance in England: exploring the shape of the association and moderators.....</i>	67
2.3	RESULTS	71
2.3.1	<i>Greater child oral health inequality in England compared to Wales and Northern Ireland, despite lower disease level.....</i>	71
2.3.2	<i>Variations in dental attendance in England and its association with local area deprivation.....</i>	78
2.3.3	<i>Complementary analysis</i>	92
2.3.4	<i>Deprivation and child dental attendance in England: exploring the shape of the association and moderators.....</i>	93
2.4	DISCUSSION.....	101
2.4.1	<i>Limitations.....</i>	111
2.5	CONCLUSIONS	113
3	METHODOLOGY	115
3.1	BACKGROUND ON PROGRAMME EVALUATION	115
3.1.1	<i>Types of evaluation</i>	116
3.1.2	<i>Evaluation design.....</i>	119
3.1.3	<i>Methods used in evaluation</i>	120
3.1.4	<i>Evaluation in health care.....</i>	121
3.2	BACKGROUND ON QUALITATIVE RESEARCH.....	123
3.2.1	<i>Definition and uses.....</i>	123
3.2.2	<i>Approaches for data collection</i>	125
3.2.3	<i>Approaches for data analysis.....</i>	133



3.3	BACKGROUND ON THE USE OF MIXED METHODS	140
3.3.1	<i>Integrating data</i>	142
3.3.2	<i>Mixed methods in healthcare evaluation</i>	142
3.4	THE STARTING WELL PROGRAMME.....	143
3.4.1	<i>Introduction</i>	143
3.4.2	<i>Selection of the 13 areas</i>	144
3.4.3	<i>Modes of delivery</i>	146
3.4.4	<i>Contracting and monitoring</i>	146
3.5	EVALUATION OF THE STARTING WELL 13 PROGRAMME	148
3.5.1	<i>Aim of the evaluation</i>	148
3.5.2	<i>Evaluation design</i>	148
3.5.3	<i>Data</i>	149
3.6	QUALITATIVE STUDY FOR THE EVALUATION OF THE SW13 PROGRAMME	152
3.6.1	<i>Aim</i>	152
3.6.2	<i>Ethical approval</i>	152
3.6.3	<i>Participants and recruitment</i>	152
3.6.4	<i>Data collection</i>	156
3.6.5	<i>Data analysis</i>	157
3.7	QUANTITATIVE STUDY FOR THE EVALUATION OF THE SW 13 PROGRAMME	161
3.7.1	<i>Data management</i>	161
4	RESULTS.....	167
4.1	INTRODUCTION.....	167
4.2	ESTABLISHING THE PROGRAMME	168
4.2.1	<i>Programme Design</i>	168
4.2.2	<i>Anticipated strengths and weaknesses at the point of initiation</i>	170
4.2.3	<i>Local fitting and suitability of the programme with local priorities</i>	173
4.2.4	<i>Establishing the programme in the 13 localities</i>	175



4.2.5	<i>Introducing the programme to dental practices</i>	176
4.2.6	<i>Process for recruitment</i>	178
4.2.7	<i>Facilitators for the recruitment of practices</i>	180
4.2.8	<i>Funding and contracting</i>	181
4.3	PROGRAMME IMPLEMENTATION.....	183
4.3.1	<i>Extent of the programme</i>	183
4.3.2	<i>Supporting initial delivery</i>	185
4.3.3	<i>Training of practices (PPC and dental providers)</i>	188
4.3.4	<i>Developing networks and partnership working</i>	190
4.4	DELIVERY OF THE INITIATIVE IN DENTAL PRACTICES.....	195
4.4.1	<i>Increasing preventive focus</i>	201
4.4.2	<i>Indicators of a change for a preventive focus in practices</i>	208
4.4.3	<i>Improving uptake of dental care among priority groups</i>	209
4.4.4	<i>Patient questionnaire</i>	221
4.4.5	<i>Challenges improving prevention</i>	225
4.5	ENGAGING WITH LOCAL HEALTH AND SOCIAL CARE SYSTEMS.....	227
4.5.1	<i>Challenges approaching local settings</i>	233
4.6	ROLE OF PPCs, SKILLS AND LEADERSHIP.....	235
4.7	MONITORING DELIVERY AND PROGRESS.....	240
4.8	PERCEIVED BENEFITS TOWARDS THE END OF YEAR 1.....	243
4.9	ROBUSTNESS OF THE PROGRAMME AND CHALLENGES TOWARDS THE END OF YEAR 1.....	247
4.10	GENERALISABILITY OF FINDINGS.....	249
4.11	KEY LESSONS AND SUMMARY OF MAIN PROCESS.....	251
5	DISCUSSION.....	255
5.1	LIMITATIONS.....	284
6	CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH.....	291
6.1	SUGGESTIONS FOR FUTURE RESEARCH.....	295



7	BIBLIOGRAPHY	297
8	APPENDICES	319
	APPENDIX I: EXAMPLE OF VALUES CONSIDERED FOR THE CALCULATION OF RII AND SII.....	319
	APPENDIX II: INTERVIEW GUIDE.....	320
	APPENDIX III: STARTING WELL 13 EVALUATION REPORTS	340
	<i>A. Baseline Report</i>	340
	<i>B. Final Report</i>	364
	APPENDIX IV: OVERVIEW OF ONLINE SW13 DATA CAPTURE TOOL	394
	APPENDIX V: COMMUNICATIONS	402
	<i>A. Journal Publications</i>	402
	<i>B. Poster Presentations</i>	403



List of tables

TABLE 1.1. EXPLANATORY MODELS FOR SOCIOECONOMIC INEQUALITIES IN HEALTH	9
TABLE 1.2. SUMMARY TABLE OF ADVANTAGES AND DISADVANTAGES OF INTERVENTIONS TO IMPROVE CHILD DENTAL ATTENDANCE IN THE UK	35
TABLE 1.3. SELECTED EXAMPLES OF RECENT INTERVENTIONS DEVELOPED AT LOCAL LEVEL TO IMPROVE CHILD DENTAL ATTENDANCE IN ENGLAND	37
TABLE 2.1. CHARACTERISTICS OF THE POPULATION STUDY	73
TABLE 2.2. PREVALENCE OF DENTAL CARIES EXPERIENCE (% OF CHILDREN AFFECTED) WITH 95% CI ACCORDING TO DEPRIVATION, BY COUNTRY	74
TABLE 2.3. SEVERITY OF DENTAL CARIES EXPERIENCE (MEAN NUMBER OF TEETH AFFECTED, WITH 95% CI) ACCORDING TO DEPRIVATION, BY COUNTRY	75
TABLE 2.4. PREVALENCE RATIO (PR) (PERCENTAGE OF CHILDREN AFFECTED) AND RELATIVE INDEX OF INEQUALITIES (RII) FOR DENTAL CARIES EXPERIENCE, WITH 95% CI	76
TABLE 2.5. RATE RATIO (RR) FOR MEAN NUMBER OF AFFECTED TEETH AND RELATIVE INDEX OF INEQUALITIES (RII) FOR DENTAL CARIES EXPERIENCE, WITH 95% CI	77
TABLE 2.6. THE TEN LOCAL AUTHORITIES WITH THE HIGHEST AND LOWEST RATES OF DENTAL ATTENDANCE (2017) IN CHILDREN	80
TABLE 2.7. RATES OF DENTAL ATTENDANCE IN ENGLAND (2017), BY IMD QUINTILE	89
TABLE 2.8. ASSOCIATION BETWEEN CHILD DENTAL ATTENDANCE (2017/2018) AND DEPRIVATION (IMD 2015)	91
TABLE 2.9. ASSOCIATION BETWEEN DENTAL EXTRACTIONS (NUMBER OF FINISHED CONSULTANT EPISODES FOR DENTAL EXTRACTIONS) AND DEPRIVATION (IMD 2015)	92
TABLE 2.10. FRACTIONAL POLYNOMIAL MODELS COMPARISONS FOR THE SHAPE OF THE ASSOCIATION BETWEEN DENTAL ATTENDANCE AND DEPRIVATION	94
TABLE 2.11. COVARIATES OF THE REGRESSION MODEL FOR THE ASSOCIATION OF DEPRIVATION AND DENTAL ATTENDANCE IN 0 TO 5-YEAR-OLD CHILDREN	96



TABLE 2.12. REGRESSION ANALYSIS FOR THE ASSOCIATION OF DEPRIVATION (IMD 2015) AND DENTAL ATTENDANCE IN 0 TO 5-YEAR-OLD CHILDREN	97
TABLE 2.13. MODELS WITH INTERACTION TERMS FOR THE ASSOCIATION OF DEPRIVATION (IMD 2015) AND DENTAL ATTENDANCE IN 0 TO 5-YEAR-OLD CHILDREN	98
TABLE 2.14. MARGINAL EFFECT OF DENTAL ATTENDANCE RATE (95% CONFIDENCE INTERVALS) FOR THE INTERACTION OF DEPRIVATION AND WHITE ETHNICITY, SINGLE PARENTHOOD AND CARIES PREVALENCE AT 1%, 25%, 50% AND 75TH PERCENTILES	99
TABLE 2.15. THE FIVE LOCAL AUTHORITIES WITH THE HIGHEST AND LOWEST RATES OF DENTAL ATTENDANCE (2017) IN CHILDREN AGED 1 YEAR AND UNDER COMPARED TO THEIR NEAREST STATISTICAL NEIGHBOUR	103
TABLE 3.1. MAIN TYPES OF EVALUATION	118
TABLE 3.2. MAIN METHODS FOR DATA COLLECTION	127
TABLE 3.3. ADVANTAGES AND DISADVANTAGES OF FACE-TO-FACE AND VIRTUAL/TELEPHONE INTERVIEWS	131
TABLE 3.4. MAIN METHODS OF QUALITATIVE DATA ANALYSIS	135
TABLE 3.5. DIFFERENCES BETWEEN QUANTITATIVE AND QUALITATIVE RESEARCH	141
TABLE 3.6. DETAILS OF LOCAL AREAS PARTICIPATING IN THE SW13	145
TABLE 3.7. EVALUATION PLAN FOR THE SW13 PROGRAMME	151
TABLE 3.8. PARTICIPANTS AND MAIN TOPICS FOR EACH STAGE OF QUALITATIVE RESEARCH	155
TABLE 3.9. QUANTITATIVE DATA INDICATORS FOR THE SW13	163
TABLE 4.1. OVERVIEW OF STARTING WELL 13 INITIATIVE	184
TABLE 4.2. OVERVIEW OF STARTING WELL 13 RETURNS: MONTHLY SUBMISSIONS FROM FEBRUARY 2018 TO MARCH 2020, BY LOCALITY	199
TABLE 4.3. SUBMISSION OF QUARTERLY RETURNS AND PATIENT QUESTIONNAIRES FROM FEBRUARY 2018 TO MARCH 2020, BY LOCALITY	200
TABLE 4.4. PRACTICE ACTIONS REPORTED VIA SW13 PRACTICE MONTHLY SUBMISSIONS FROM FEBRUARY 2018 TO MARCH 2020	202
TABLE 4.5. PRACTICE ACTIONS REPORTED VIA SW13 PRACTICE MONTHLY SUBMISSIONS FROM FEBRUARY 2018 TO MARCH	203
TABLE 4.6. PREVENTION ADVICE AND TREATMENT GIVEN TO ALL 0 TO 2-YEAR OLDS	206



TABLE 4.7. PREVENTION ADVICE AND TREATMENT GIVEN TO ALL 3 TO 4-YEAR OLDS	207
TABLE 4.8. CHILDREN AGED UNDER 5 ACCESSING NHS DENTAL CARE IN SW13 PRACTICES, BY LOCALITY	216
TABLE 4.9. RATES OF FLUORIDE VARNISH IN CHILDREN AGED UNDER 5 IN SW13 PRACTICES, BY LOCALITY	220
TABLE 4.10. INDICATORS FROM PATIENT QUESTIONNAIRE REGARDING ORAL HEALTH PROMOTION IN THE DENTAL VISIT..	223
TABLE 4.11. INDICATORS FROM PATIENT QUESTIONNAIRE REGARDING THE DENTAL VISIT (FEBRUARY 2018 TO MARCH 2020).....	224
TABLE 4.12. NUMBER OF CONTRACTS WHO HAVE REPORTED AT LEAST ONE ENGAGEMENT WITH HEALTH AND SOCIAL CARE STAFF	228
TABLE 4.13. MAIN KEY LESSONS IDENTIFIED FROM THE STARTING WELL 13 INITIATIVE	252
TABLE 4.14. PROCESS, OUTCOMES AND BARRIERS IDENTIFIED FROM THE DELIVERY OF SW13 INITIATIVE IN DENTAL PRACTICES	253



List of figures

FIGURE 1.1. TYPES OF RESEARCH STUDIES	4
FIGURE 1.2. SOCIAL DETERMINANTS OF ORAL HEALTH	7
FIGURE 1.3. DIMENSIONS OF ACCESS ACCORDING TO PENCHANSKY AND THOMAS	16
FIGURE 1.4. BARRIERS TO DENTAL CARE. ADAPTED FROM FREEMAN	17
FIGURE 1.5. FACTORS CONTRIBUTING TO INEQUALITIES IN PREVENTIVE DENTAL VISITING	17
FIGURE 1.6. IMPORTANCE OF DENTAL ATTENDANCE	20
FIGURE 1.7. CHANGES IN DA IN CHILDREN IN THE UK	25
FIGURE 1.8. AIMS AND OBJECTIVES OF THE RESEARCH STUDY	51
FIGURE 2.1. CHILD DENTAL ATTENDANCE RATES (%) IN ENGLAND (2017), BY REGION	81
FIGURE 2.2. RATES OF DENTAL ATTENDANCE (A) 2017; (B) 2018 IN CHILDREN AGED 5 YEARS AND UNDER	82
FIGURE 2.3. RATES OF DENTAL ATTENDANCE (A) 2017; (B) 2018 IN CHILDREN AGED 1 YEAR AND UNDER	83
FIGURE 2.4. RATES OF DENTAL ATTENDANCE (A) 2017; (B) 2018 IN CHILDREN UNDER ONE YEAR	84
FIGURE 2.5. SCATTER DIAGRAM SHOWING THE ASSOCIATION BETWEEN DENTAL ATTENDANCE (2017) AND DEPRIVATION (IMD 2015) IN EVERY LOCAL AUTHORITY	87
FIGURE 2.6. RATES OF DENTAL ATTENDANCE (2017) IN CHILDREN AGED 5 YEAR AND UNDER, BY LOWER TIER LOCAL AUTHORITY	93
FIGURE 2.7. FRACTIONAL POLYNOMIAL MODEL FOR THE ASSOCIATION BETWEEN DENTAL ATTENDANCE AND DEPRIVATION.	95
FIGURE 2.8. PREDICTED ESTIMATES FOR DENTAL ATTENDANCE ACCORDING TO DEPRIVATION BY ETHNICITY, SINGLE PARENTHOOD AND CARIES PREVALENCE	100
FIGURE 3.1. THE BASIC LOGIC MODEL	120
FIGURE 3.2. THE DONABEDIAN MODEL	122
FIGURE 3.3. THEMATIC ANALYSIS PHASES	137
FIGURE 3.4. LOCAL AUTHORITIES IN WHICH SW13 WAS COMMISSIONED	144
FIGURE 3.5. STEPS TAKEN FOR DATA ANALYSIS OF QUALITATIVE INTERVIEWS	159



FIGURE 3.6. MAIN OVERARCHING THEMES, THEMES AND SUBTHEMES DERIVED FROM ANALYSIS OF QUALITATIVE DATA.	160
FIGURE 4.1. MAIN EMERGING THEMES FROM QUALITATIVE INTERVIEWS	167
FIGURE 4.2. PROPORTION OF CONTRACTS (DENTAL PRACTICES) THAT SUBMITTED SW13 MONTHLY RETURNS FROM FEBRUARY 2018 TO MARCH 2020	197
FIGURE 4.3. PROPORTION AND NUMBER OF CONTRACTS (DENTAL PRACTICES) THAT SUBMITTED SW13 RETURNS (MONTHLY SUBMISSION, AUDIT AND PATIENT QUESTIONNAIRE) FROM FEBRUARY 2018 TO MARCH 2020	198
FIGURE 4.4. PRACTICE ACTIONS REPORTED VIA SW13 PRACTICE MONTHLY SUBMISSIONS, BY PERIODS	204
FIGURE 4.5. CHILDREN AGED UNDER 5 ACCESSING NHS DENTAL CARE IN SW13 AREAS	214
FIGURE 4.6. CHILDREN AGED UNDER 5 YEARS ACCESSING NHS DENTAL CARE IN SW13 PRACTICES, BY LOCALITY	215
FIGURE 4.7. RATES OF FLUORIDE VARNISH IN CHILDREN AGED UNDER 5 IN SW13 AREAS	218
FIGURE 4.8. RATES OF FLUORIDE VARNISH IN CHILDREN AGED UNDER 5 IN SW13 PRACTICES, BY LOCALITY	219
FIGURE 5.1. UPSTREAM AND DOWNSTREAM ACTIONS FOR ORAL DISEASE PREVENTION	257



List of Acronyms

- BDA:** British Dental Association
- NHSBSA:** NHS Business Services Authority
- CCG:** Clinical Commissioning Groups
- CDHS:** Child Dental Health Survey
- CDS:** Community Dental Services
- CI:** Confidence Intervals
- DA:** Dental Attendance
- DBOH:** Delivering Better Oral Health
- DCO:** District Commissioning Office
- DE:** Dental Extractions
- DMFT/dmft:** Decay, Missing and Filled Teeth
- FP:** Fractional Polynomial
- GA:** General Anaesthetic
- GDS:** General Dental Services
- HEE:** Health Education England
- IDACI:** Income of Deprivation Affecting Children Index
- IMD:** Index of Multiple Deprivation
- LA:** Local Authority
- LDN:** Local Dental Network
- LSOA:** Lower-layer Super Output Area
- NHSE&I:** National Health Services England and National Health Services Improvement
- PHE:** Public Health England
- PPC:** Practice Prevention Champion
- PR:** Prevalence Ratio
- RII:** Relative Index of Inequalities
- RR:** Rate Ratio
- SII:** Slope Index of Inequalities
- SW:** Starting Well
- UDAs:** Units of Dental Activity



Glossary

Anticipatory guidance: Information/counselling given to parents or carers in order to assist and prepare them for anticipated concerns or changes that will occur during children's development (e.g. prevention of dental caries in children).

Bias: A systematic difference or deviation from the truth (a source of error) in the collection of data, analysis, interpretation and/or publication of results.

Claw back: The recovery, due to special circumstances, of a certain amount of money already paid to an employee.

Coding: In qualitative research, an analytical process in which concepts and ideas are identified and systematically categorized to facilitate the analysis of data.

Epistemology: A branch of philosophy which studies the nature of knowledge.

Health visitor: A professional individual such as a trained nurse who usually visits families with young children in their homes in order to assist them and provide children's healthcare advice.

Local Authority: An administrative body (local government) responsible for public services and facilities in an area. In some areas in England, local government is divided in upper-tier (county council) and lower-tier (district council), in other areas there is a single unitary authority. Upper-tier local authorities include county councils, London boroughs, unitary authorities and metropolitan districts. Local authority districts include lower-tier non-metropolitan districts, London boroughs, unitary authorities and metropolitan districts.

Local Commissioner (NHS): A person in charge of commissioning (i.e. deciding which services are needed based on local needs and ensure their provision) primary care services such as general practices, dental services and some specialised hospital services.

Local Dental Network (NHS): An organization formed of a group of dental providers. The Chair of a Local Dental Network is employed by NHS to provide clinical advice and clinical leadership to support local dental commissioning and service improvement.

Lower-Layer Super Output Areas: Small areas or neighbourhoods of similar population size produced by the Office for National Statistics for the purpose of reporting



small area statistics. These areas have an average of 1,500 residents or 650 households.

P-value: A measure of the probability that an estimated association or observed value from a sample could have occurred only by chance and does not exist in the population from which the sample was selected. The lower the p-value, the greater the statistical significance.

Regression model: A statistical process used to investigate the association between a dependant variable and one or more independent variables, and to predict the value of the dependant variable.

Ontology: A branch of metaphysics which studies the nature of being.

Randomised-controlled trial: An intervention research study in which subjects are randomly assigned to either an intervention (experimental) group or to a control (comparison) group to assess the effectiveness of a specific drug, treatment or intervention.

Relative Index of Inequality: A measure of health inequality to quantify to what extent the occurrence of an outcome (e.g. dental caries) varies with socioeconomic status.

Statistical significance: The probability that a result did not happen by chance.

Slope index of inequality: A measure of inequality representing the absolute difference in estimated values of a health indicator (e.g. dental attendance) between the most advantaged and least advantaged while considering all other subgroups.

Spearman's test: A non-parametric test to measure the strength and direction of the association between two variables.

Sample size: The number of study units such as individuals, groups or observations that are under study.

Systematic review: A review which aims to identify, appraise, and synthesize all research evidence (following an eligibility criteria) in order to answer a specific research question.

CHAPTER ONE

1 CONTEXT OF THE STUDY

1.1 Introduction

Good oral health is necessary for general health and well-being. Pain and infection as a consequence of poor oral health can limit the capacity to eat, speak, sleep, socialise and learn (Petersen *et al.*, 2005), as well as causing economic impacts for both parents and the health system (Tsakos *et al.*, 2015; Watt *et al.*, 2015). Dental decay, one of the most prevalent diseases, affects 60% to 90% of school children worldwide (WHO, 2017). In 2010, untreated dental caries was the 10th most prevalent disease worldwide in children, affecting 9% of the total population (Kassebaum *et al.*, 2015).

In the UK, despite improvements in child oral health in the latter decades of the 20th Century (Murray *et al.*, 2015), dental caries represents a major public health problem and inequalities still remain, apparently in both oral health status and use of dental health services. Dental caries among children remains commonplace; the 2013 decennial Children's Dental Health Survey (CDHS) in England, Wales and Northern Ireland reported that 34% and 46% of 12- and 15-year olds respectively had obvious dental caries in permanent teeth. In younger children, 31% of 5 years old and 46% of 8-year-old children were reported to have experienced obvious dental decay (Pitts *et al.*, 2015). National surveys in



CONTEXT OF THE STUDY

England have reported that 12% of 3 year olds and around 23% of 5 year olds have experienced dental decay (PHE, 2019; 2020a) with a slowing rate of reduction.

The National Health Service (NHS) in England, makes considerable investment in dental services, spending approximately £3.4 billion per annum on primary and secondary care and £2.3 billion on private dental care (NHS England, 2014). Concern has been expressed in recent years at the number and cost of child hospital admissions. In the financial year 2018/19, £41.5 million was spent on dental extractions in children under 18, the majority due to tooth decay (NHS, 2020a). Tooth extraction has been reported as the main reason for hospital admission by 5 to 9-year olds with 25,702 hospital admissions due to dental decay in the same year (Royal College of Surgeons of England, 2019). The expenditure on such care was £20m in the financial year 2017/18 (UCL, 2020b).

Oral diseases are largely preventable. A broad range of strategies and interventions, delivered at population and individual level are advocated to improve child dental health, including dental attendance (DA) to receive both preventive care and treatment of established disease. Despite surveys in the UK suggesting that the majority of children in England, Wales and Northern Ireland visit the dentist, there have not been substantial improvements during the last decade and only a small proportion of children are taken to the dentist in their early years (Tsakos *et al.*, 2015). National initiatives such as Starting Well and the Dental Check by One campaign aim to improve child DA and oral health. There is, however, little evidence on the effectiveness of interventions to promote



DA, nor evidence that increasing attendance improves oral health, which potentially undermines strategy development.

This chapter presents a literature review for inequalities in dental health, access to dental care and child DA, including trends and patterns of attendance in the UK. It also provides an overview of interventions and policies to improve child DA in England. The literature review was carried out through databases (Google Scholar, Web of Sciences, Medline) using the terms “oral health / dental attendance / dental check-ups / dental care / dental health services / access to dental care / interventions to increase dental attendance / oral health interventions / oral health policies”. The literature review included the earliest record until October 2020. To support the literature review, a brief overview of the hierarchy of evidence of study designs is given first.

1.2 Hierarchy of evidence of study designs

Research studies are divided in analytical and non-analytical (**Figure 1.1**). Analytical studies aim to quantify the association between the effect of an intervention on an outcome, which can be experimental or observational. Non-analytical studies describe a population at a particular time. For instance, cross-sectional (e.g. surveys) and qualitative studies. Analytical and non-analytical studies collect data by the researcher and are defined as primary research studies. Secondary research studies, on the other hand, use data from primary studies with the purpose of summarising and drawing conclusions from them. An example are systematic reviews which have been defined as a high-level

CONTEXT OF THE STUDY

overview of primary research on a specific research question (Daly *et al.*, 2013; CEBM, 2021).

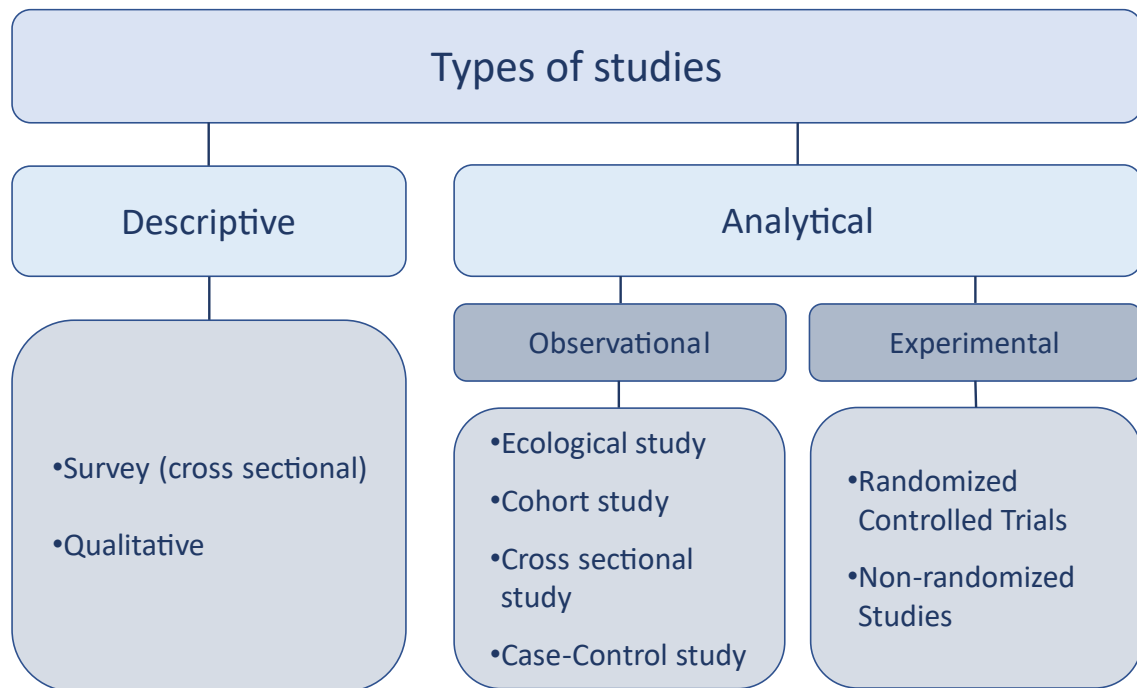


Figure 1.1. Types of research studies. Adapted from Carneiro and Howard (2011) and Daly *et al* (2013).

A hierarchy (levels of evidence) reflecting the rigour of methods applied in research studies has been used to assess good clinical research evidence. Studies at the top of this hierarchy are considered to be the most rigorous and least likely to be biased. Although a number of hierarchies have been proposed, systematic reviews and meta-analysis have been usually found on the top of the hierarchy evidence (Daly *et al.*, 2013; Murad *et al.*, 2016; CEBM, 2021).

In medical interventions, randomised controlled trials provide the highest level of evidence when assessing effectiveness and causality between the interventions and the outcomes (Sackett *et al.*, 1991). This experimental study assesses the



effect of an intervention or interventions by dividing the research population using a random allocation, into experimental and control groups. Systematic reviews of randomised controlled trials have been considered to provide the best evidence of health care and service interventions (Dickersin and Manheimer; Rychetnik *et al.*, 2002). It has been argued, however, that observational studies could provide similar findings; suggesting that these might be the most feasible and appropriate study design for evaluating health interventions (Concato *et al.*, 2000; Rychetnik *et al.*, 2002).

New approaches have been proposed which suggest removing systematic reviews from the top of evidence and the use of these and meta-analyses for appraising, synthesising and applying evidence (Murad *et al.*, 2016). Nevertheless, there has been a debate about the reliance on the study design as main criteria to determine the credibility of evidence (Black, 1996; Rychetnik *et al.*, 2002). Regardless, the use of qualitative studies to provide evidence in health research has attained greater recognition (Pope and Mays, 1995; Daly *et al.*, 2007).

1.3 Inequalities in dental health

Geographical, deprivation and ethnic related inequalities

National surveys (PHE, 2020a) have shown that whilst there has been a decline in the prevalence of tooth decay, the rate of decline has slowed and there are still inequalities in the distribution of disease. For instance, in 5-year-old children poorer dental health has been reported in the North of England and more



CONTEXT OF THE STUDY

deprived areas compared to the South of the country. There are also considerable variations across local authorities (LAs), for example, the prevalence of dental decay experience ranged from 1.1% in Hastings, East Sussex to 50.9% in Blackburn with Darwen. There are also inequalities by ethnicity, for instance, children from a White background are less likely to experience tooth decay (PHE, 2020a).

It has been widely reported that individuals from deprived communities tend to have poorer oral health and are more likely to suffer from high levels of disease compared to those living in more affluent areas (Marmot and Bell, 2011; Pitts *et al.*, 2015), but the relationship between oral health and deprivation is complex (Newton and Bower, 2005). Oral health is influenced by several factors such as individual characteristics, behaviours, social and environmental factors. **Figure 1.2** shows the social determinants of oral health (Dahlgren and Whitehead, 1991). This model recognises the influence of the environment, socioeconomic factors and cultural settings on health behaviour. Social conditions in early years can have a lasting negative effect in life (Watt *et al.*, 2015). For instance, life-course studies have shown that oral health status in childhood and socioeconomic status are predictors of oral health in adulthood (Thomson *et al.*, 2004; Lu *et al.*, 2011; Heilmann *et al.*, 2015).

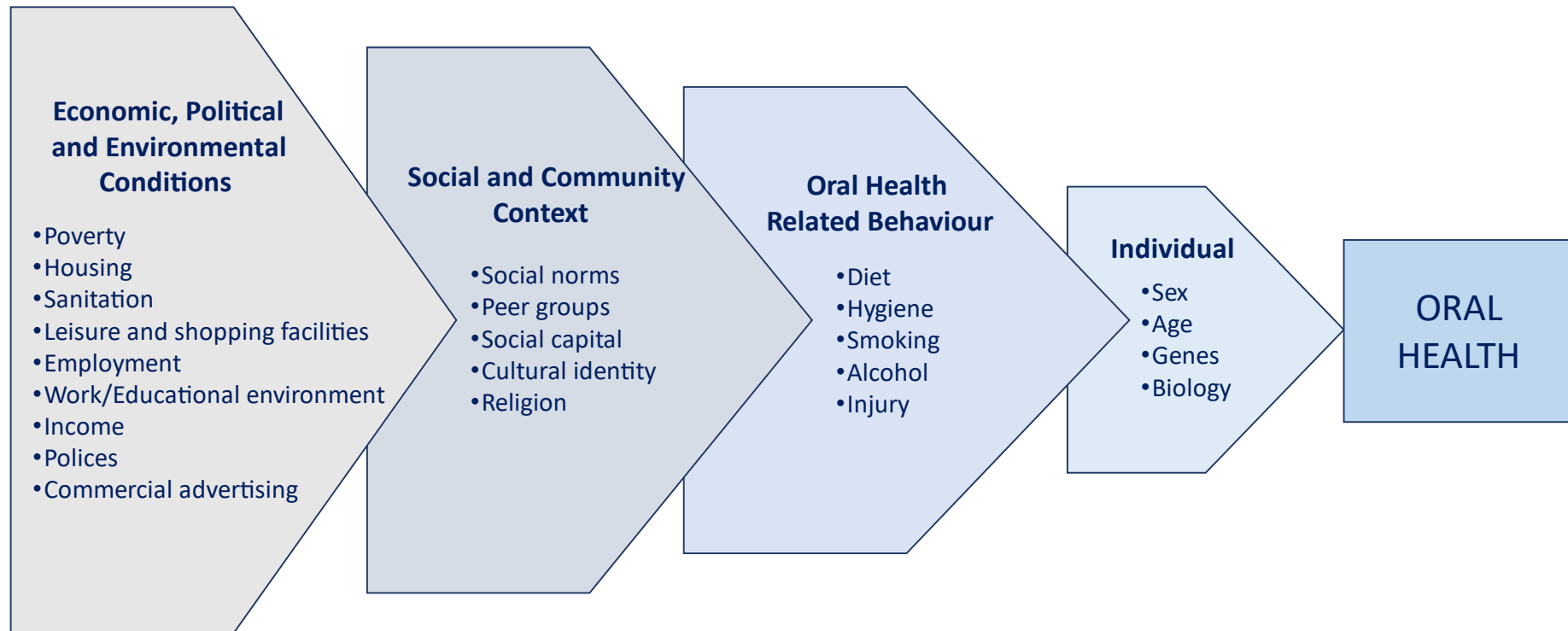


Figure 1.2. Social determinants of oral health. Adapted from Harris and Pine (2007).



1.4 Impact of dental services inequalities in oral health

A number of theories or models have sought to explain the relationship between social class and health. In 1980, the Black Report (Gray, 1982; Blane, 1985) identified four possible explanations for the relationship between social class and disease. First, the “artefact explanation” suggests that differences in health between social classes depend on how health and class are measured. Second, the “social selection” explanation suggests that people who suffer from disease will decrease in social status, on the other hand, a healthy person is more likely to escalate in social status. Third, the “cultural” explanation speculates that people from lower social class have less healthy lifestyles, which lead to disease, compared to people from middle and upper class. Finally, the “material” explanation suggests that people from lower social groups have materials constraints and poor living conditions that limit having a healthy lifestyle.

Five more modern explanatory models for socioeconomic inequalities in health have been proposed. These are shown in **Table 1.1**. It has been argued that the relationship between behaviours and social class is not completely explained in the behavioural model since studies have found that behaviours account only for a third of differences in health between social classes. It has been suggested that the materialistic and behavioural model cannot be separated when explaining the relationship between social class and health (Scambler *et al.*, 2016).



Table 1.1 Explanatory models for socioeconomic inequalities in health (Scambler *et al.*, 2016).

Model	Basis
Materialistic model	People from lower social classes are exposed to more hazards and have less material resources to protect themselves compared to those from higher social classes.
Behavioural model	Often referred as the cultural/behavioural model. Postulates that health-related behaviours (e.g. excessive alcohol, poor diet) lead to inequalities. Lower social class groups are more likely to engage in damaging behaviours which are shaped by social and economic culture.
Psychosocial model	Lower socioeconomic status directly affects psychosocial well-being which has a direct biological effect on health. People from lower socioeconomic status are more likely to experience negative life effects that can have an impact on their psychological well-being and consequently on health.
Life-course model	The model suggests that in order to identify the impact of material, behavioural or psychosocial factors and their effects it is necessary to have studies following cohorts through their life-course. Changes on individual behaviour within a life-course are the key to improve health and reduce inequalities.
The Wilkinson and Pickett Thesis	Differences in income are responsible for inequalities within a country or a population. However, inequalities are not important between countries. Inequalities affect not only those who are at the bottom of the society but almost all individuals. This theory is in agreement with the material explanation from the Black Report.

It has been suggested that barriers to access and use of dental services contribute to inequalities in oral health (Newton and Bower, 2005; Watt *et al.*, 2015), but the relationship is complex and findings from research have been inconclusive. A national study in Sweden found that 60% of the socioeconomic inequalities in oral health in adults were caused by a lack of access to dental care (Wamala *et al.*, 2006). Similarly, a study in 14 European countries reported that the use of dental services contributed to oral health inequalities in older adults; richer countries had greater inequalities (Shen and Listl, 2018). A study in the



CONTEXT OF THE STUDY

UK, suggested that DA explained some of the relationship between socioeconomic status and the number of sound teeth in adults (Donaldson *et al.*, 2008).

The extent and distribution of oral health inequalities varies across countries (Listl, 2011; Guarnizo-Herreño *et al.*, 2014) as might reasons for non-dental attendance (Listl *et al.*, 2014). Evidence supporting a causal link between inequalities in DA and inequalities in oral health is lacking and it remains unclear whether a universal approach can tackle oral health inequalities (Shen and Listl, 2018). Moreover, there is a lack of evidence of the effectiveness of interventions aiming to reduce socio-economic inequalities in the use of dental services in adults (Raison and Harris, 2019). Regardless, having access to dental care in children at early years is important as a great proportion of inequalities in the use of dental services is established at childhood and remains through later in adulthood (Listl, 2012).

It has been asserted that in order to tackle oral health inequalities, there need to be the appropriate interventions and effective policies in oral health promotion (Watt and Sheiham, 1999) which consider the social determinants of oral health (Watt, 2012). However, it has been argued that interventions and policies on health promotion do not often consider the social determinants of health suggesting that they might not be the best option to address social inequalities in health (Baum and Fisher, 2014). On the other hand, it has been claimed that measures that can be applied to the whole population such as water fluoridation can reduce caries prevalence and therefore oral health inequalities (Young *et al.*, 2015; PHE, 2018d). Nonetheless, Alongside any population measures, dental



care will always be needed as there are aspects that require professional support (Ravaghi *et al.*, 2020).

1.5 Approaches to disease prevention

According to Rose (2008) there are two approaches or strategies to disease prevention, the “whole-population” approach and the “risk” approach. The first one is aimed at the entire population whereas the second one identifies certain groups or individuals from the population. The risk approach is divided into “targeted” (direct) and “high-risk” approach. It is the view of Rose (2008) that the whole-population approach is more effective when the disease is common or normally distributed in the population. However, a targeted approach is recommended when the disease is limited to a small number of people and can be controlled in isolation (Rose, 2008). It can be feasible when it is the only way to address the needs of disadvantaged populations (McLaren and Petit, 2018) as long as the high-risk population is accurately identified (Rose, 2008).

A study by Batchelor and Sheiham (2006) suggested that having a whole-population approach can prevent more disease cases. This approach depends, however, on the availability of resources (e.g. finances, staff) as they might not be enough to deliver the intervention in the whole population; usually the case of clinically based interventions (Daly *et al.*, 2013). Rose (2008) distinguished three main strengths of this approach, first, it is radical, as it looks to tackle the underlying barriers to healthy behaviours. Second, it is powerful, although it might have a small benefit to individuals, the benefit can be large for the population as a whole. A slight change in the distribution of risk factors can have a larger effect

CONTEXT OF THE STUDY

on those affected. Third, it is appropriate; individual life-style e.g. habits are conditioned by the society, therefore seeking a general change in behavioural norms and the conditions that facilitate adopting these norms can be more appropriate. Nevertheless, limitations of this approach are that changes might not be acceptable, for instance, unwillingness to make personal changes or support environmental changes; feasibility, as society pressure might make it difficult to effect change; cost, since it brings immediate cost but long-term benefits; and safety, since the small individual benefit offered in whole-population approaches might be lost by a small risk, moreover minimising the exposure to risk may adversely affect some individuals (Rose, 2008; Daly *et al.*, 2013).

The targeted-population approach identifies sub-groups of the population that are at greater risk compared with the whole population. In this approach the group is at higher risk as a whole rather than individually. In contrast, in the high-risk approach every individual is at risk. The targeted approach can be useful when there are limited resources or when one group is more disadvantaged than the other. An example of this approach might be a fluoride varnish scheme in schools in a small geographical area with high levels of tooth decay (Burt, 2005; Rose, 2008; Daly *et al.*, 2013).

The high-risk approach is used when a focus upon those individuals at higher risk is seen as the most appropriate. In order to produce a benefit, it requires the identification, by a screening programme, of individuals who are at higher risk of developing disease, as well as an effective way of preventing that disease. However, low risk patients are not included in this group which could be seen as unacceptable for decision makers and the public. Some of the strengths are that



this approach is appropriate to the individual, avoiding those that are not at greater risk; it can be a cost-effective way of using resources as it focuses on those who are most likely to benefit from it; and as the high-risk approach is selective, it improves the benefit-to-risk ratio. Limitations are that prevention can become medicalised, success is palliative and temporary, strategy is behavioural and temporary, and the future of individuals might not be predicted. Feasibility and cost (for instance to identify individuals at greater risk) may be a problem (Burt, 2005; Rose, 2008; Daly *et al.*, 2013).

Burt (2005) suggests that a geographical approach, an approach which he considers sitting between geographic targeting and the whole population approach where areas of social deprivation e.g. schools, can be identified at high risk, would supplement population measures. Nonetheless, all approaches have strengths and weakness and the potential role they can play would depend upon the context in which they are applied.

1.6 Problems accessing health care

According to Penchansky and Thomas (1981) access can be defined as a “measure of the fit between characteristics and expectations of patients and characteristics of providers and health services”. Access might be viewed as a sequence of phases and steps. The first phase is the *perception of a need* which will determine whether a person will contact health services. It implies the identification of a source of health care and consequently access to it. The second phase consist of *obtaining health care* and the achievement of a desirable outcome. These phases and steps are influenced by psychosocial factors, health

CONTEXT OF THE STUDY

care organisation, geographic distribution and cost (Daly *et al.*, 2013; Scambler *et al.*, 2016).

Andersen and Newman (1972) (cited in Daly *et al.*, 2013, p.241) suggest three important aspects in explaining access to health care: 1) predisposing factors, e.g. propensity to use services; 2) enabling factors, e.g. aids and barriers to service use; and 3) factors related to health needs. Penchansky and Thomas (1981) consider five interdependent dimensions of access: availability, accessibility, affordability, acceptability and accommodation (**Figure 1.3**). Problems in any dimension influence the utilisation of services (Penchansky and Thomas, 1981; Daly *et al.*, 2013; Scambler *et al.*, 2016).

Barriers to dental care can be categorised into three main groups: 1) individual barriers, 2) barriers related to dental professionals and 3) barriers at the societal level (Freeman, 1999a; b). These are shown in **Figure 1.4**. However, a more complex process explaining socioeconomic inequalities in early dental visits has recently been proposed, it suggests that seeking care is influenced at three levels, 1) individual and psychological factors, 2) social processes and community structures and 3) population-wide structures and policies (Harris *et al.*, 2017) as shown in **Figure 1.5**.

Two models need to be considered in accessing and accepting dental care. First, the psychosocial model which refers to factors related to dental care access such as cost, perception of need, lack of access e.g. physical difficulties, communication and language, socioeconomic status, gender and ethnicity. These barriers can be overcome through policies aiming to make dental services



more accessible. Second, the psychodynamic model. These barriers are related to the dentist-patient relationship. They are called resistances and are related to patient feelings, worries, anxiety and treatment desire. They can encourage or prevent the patient from accessing and accepting dental care (Freeman, 1999a; b).

However, access to dental care can be a complex issue as there are several influencing factors. The next sections will provide an overview of dental care and DA in England including the benefits of DA, guidance on dental recall intervals, patterns of dental attendance and inequalities, as well as factors influencing child DA, and interventions to improve this.

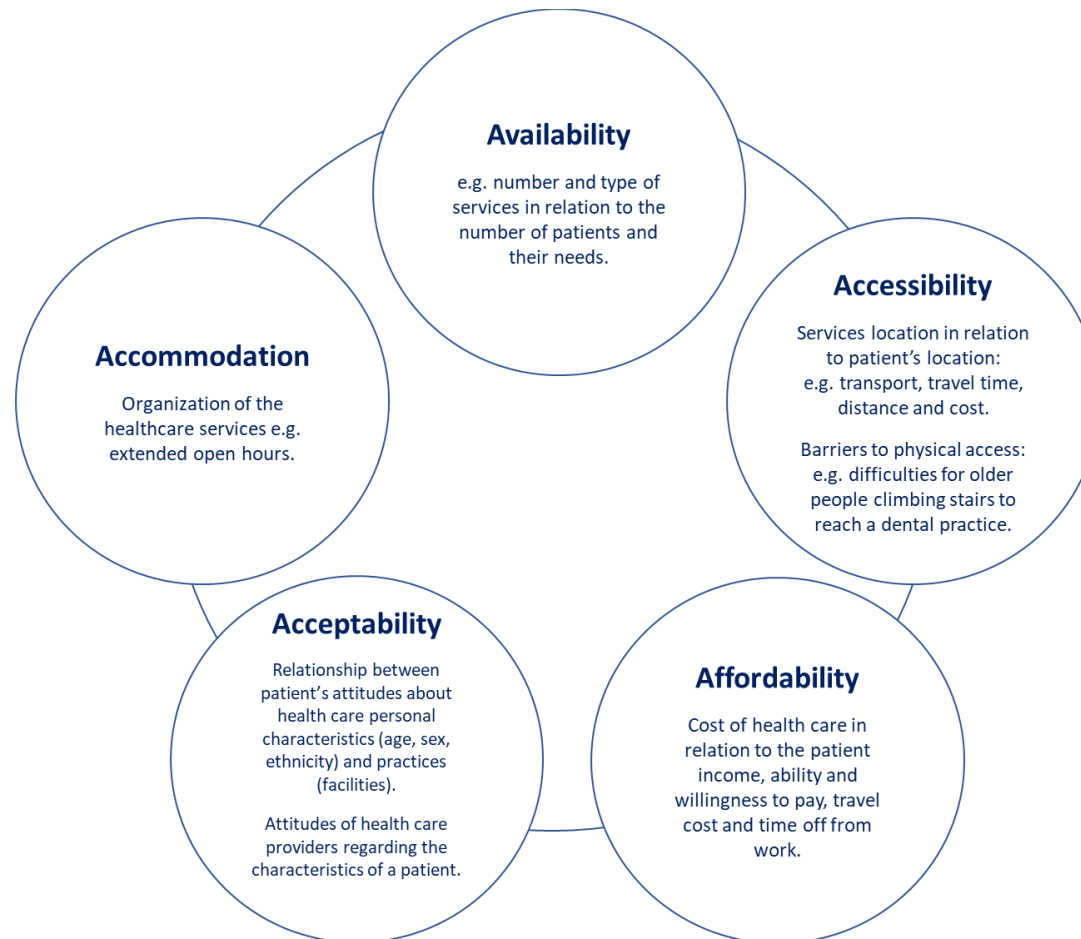


Figure 1.3. Dimensions of access according to Penchansky and Thomas (1981).

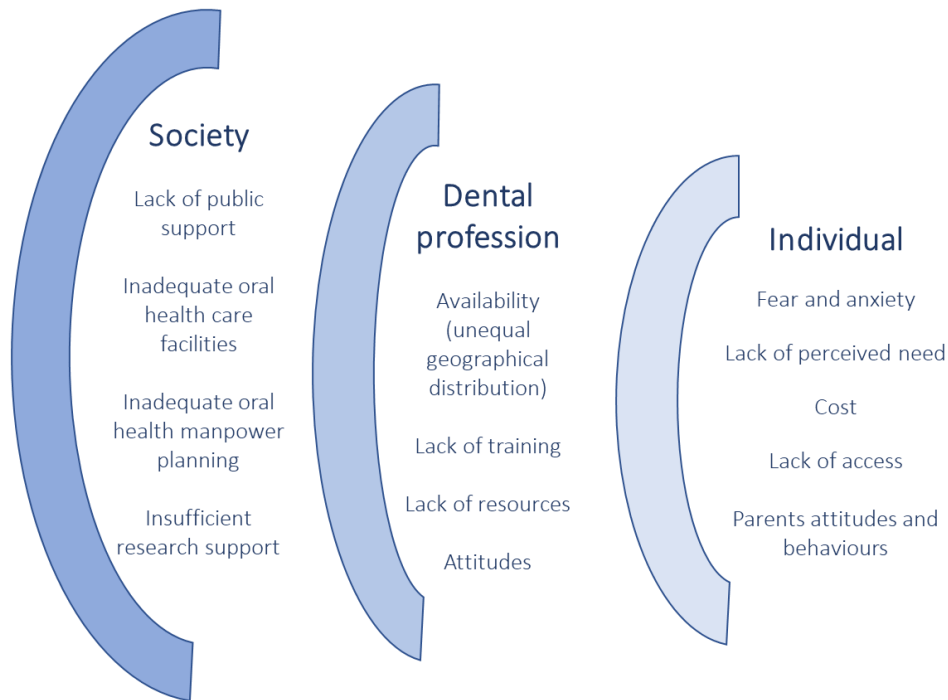


Figure 1.4. Barriers to dental care. Adapted from Freeman (1999a; b).

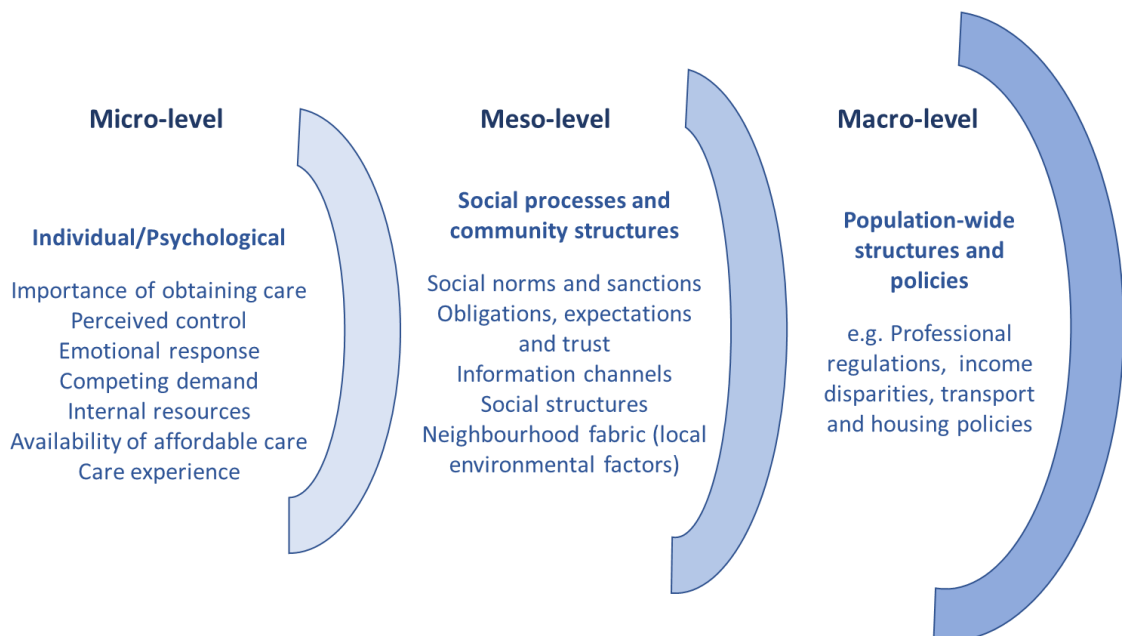


Figure 1.5. Factors contributing to inequalities in preventive dental visiting. Adapted from Harris *et al.* (2017).



1.7 Dental care in England

The NHS is a service primarily funded from general taxation, including National Insurance contributions. The provision of dental services in the UK is from both private and public sectors, the latter is mostly provided through the NHS General Dental Services (GDS). Some specific primary care-based services are also provided by Community Dental Services (CDS). In addition, there are specialised services provided by hospitals and primary care services for specific populations such as prisoners and members of the armed forces.

NHS dental care is free for children up to the age of 18, or under 19 if they are still in full-time education, pregnant women and mothers who have had a baby in the previous 12 months (NHS Choices, 2017). Most children in the UK receive dental care under NHS arrangements; the 2013 CDH survey reported that only 5% of child dental visits were privately paid (Tsakos *et al.*, 2015).

Following the coming into force of the 2012 Health and Social Care Act, NHS dental services in England are directly commissioned by a national commissioning body NHS England (The National Archives, 2012), later NHS England and NHS Improvement (NHSE&I). The same Act and associated regulations placed a responsibility upon upper-tier and unitary LAs in England for commissioning oral health promotion programmes appropriate to the needs of the population (PHE, 2014). Before this date both direct care and oral health promotion services were commissioned by NHS Primary Care Trusts. In



Scotland, Wales and Northern Ireland the commissioning function for both direct care and oral health promotion is carried out by NHS Health Boards.

1.8 The benefits of dental attendance

Regular DA is important for early detection and treatment of oral diseases, delivery of preventive treatment and oral health promotion. Although there is not enough evidence of a causal association between DA and dental caries reduction (Davenport *et al.*, 2003) and the benefits of operative dental care for primary teeth are uncertain (Innes *et al.*, 2019), regular use of dental services has been associated with a positive impact on oral health (Sanders *et al.*, 2006; Thomson *et al.*, 2010). Attendance for dental check-ups has been associated with better oral health, oral health perceptions, oral health related quality of life and lower prevalence of toothache and oral impacts (Tsakos *et al.*, 2015). The benefits of DA are shown in **Figure 1.6**.

The first dental visit at the appropriate time can provide parents with information they require to prevent early childhood caries (the development of tooth decay in children under 6 years) and dental health education to encourage long-term good oral health in children. It is believed that early dental visits can help familiarise children with the dental environment and reduce future dental anxiety (Poulsen, 2003). Although a dental examination may not always be possible at very young ages, it can identify dental plaque accumulation, a risk factor for dental caries (Poulsen, 2003; Mileva and Kondeva, 2010).

CONTEXT OF THE STUDY

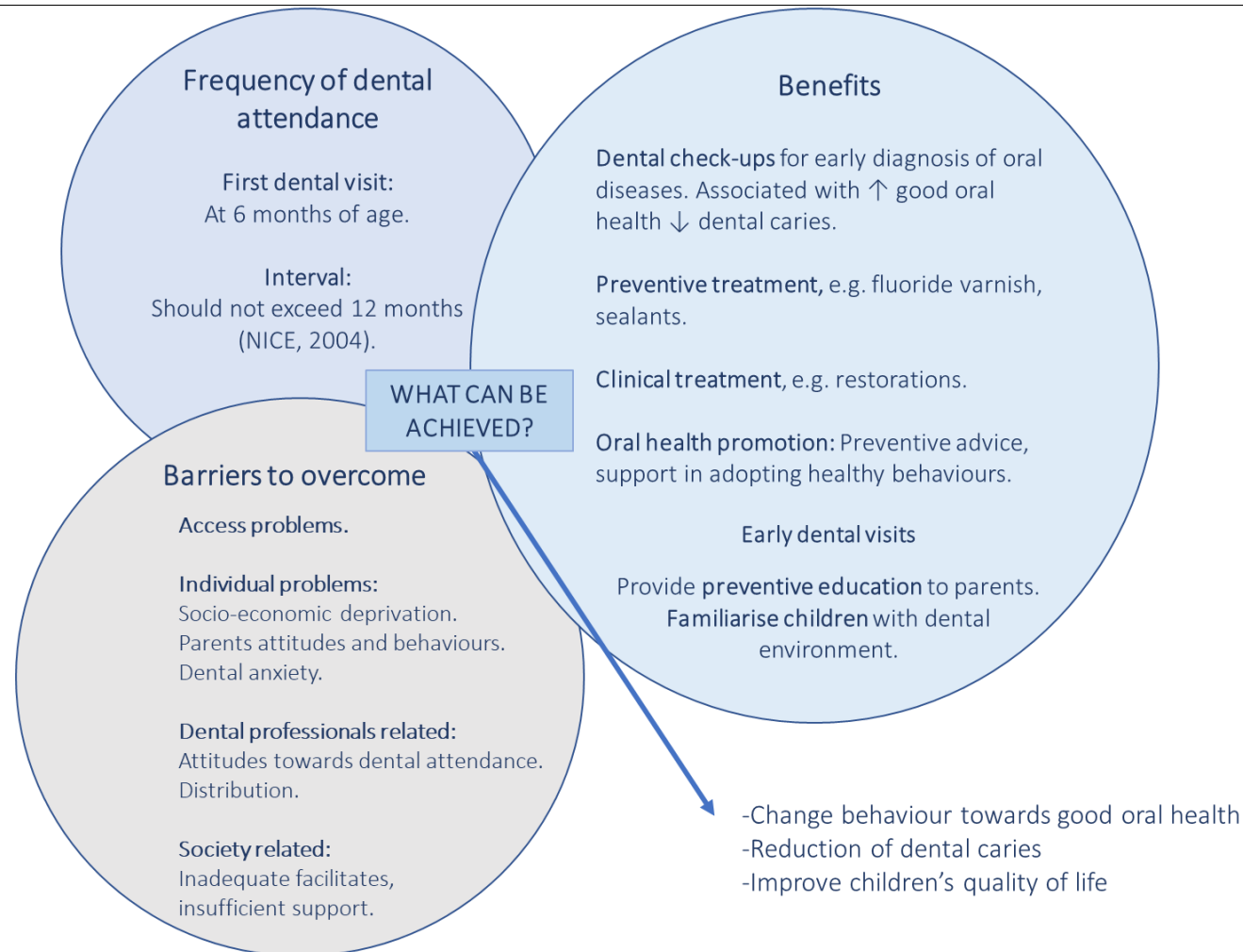


Figure 1.6. Importance of dental attendance (Figure based on the Literature Review).



Children who do not attend the dentist are missing the benefits it can bring. Treatment in the advanced stages of dental disease can be complex and usually requires more than one dental appointment which might create anxiety and can be painful and traumatic for the child (Passalacqua *et al.*, 2012). Dental diseases can also affect school readiness; a research in North West England hospitals found that 26% of children had missed school days due to dental problems (PHE, 2017b). In the UK, poor oral health caused the most disability among children from 5 to 9 years old, an average of 2.24 of healthy life hours are lost for every child, higher than for vision and hearing loss (PHE, 2017a). Moreover, failure to meet the oral health needs of a child is considered a form of neglect (National Institute for Health and Care Excellence, 2017; Harris *et al.*, 2018). These can be avoided if children attend the dentist at an early age and for preventive reasons.

Treating dental diseases can be expensive, for both the health system and the parents as it may involve the cost of transport and time off from work. In 2018, the expenditure on curative and rehabilitative dental care in the UK totalled £9.3 billion whereas expenditure on dental preventive care was £2.7 billion (Office for National Statistics, 2020). In the year 2018-19, £41.5 million were spent on multiple extractions in children (NHS, 2020a). Improving health by focusing on prevention in early years can be cost-effective and reduce the need for costly specialised care in later years. For instance, a study in the USA reported that children were more likely to access dental care for preventive reasons and to have lower dental treatment cost when they had previously received early preventive dental care (Savage *et al.*, 2004). In England, a study analysing the cost benefit of an oral health improvement programme, consisting of training of healthcare professionals in hospitals to improve oral health of patients, reported



that it would have a £2.66 cost savings for every £1 spent over a period of five years (Mann *et al.*, 2020).

1.9 Guidance on dental recall

It is recommended that children should have a dental examination as soon as the first teeth erupt and no later than the child's first birthday (American Academy of Pediatric Dentistry, 2016; British Society of Paediatric Dentistry, 2016). The National Institute for Health and Care Excellence in England (NICE, 2004) recommends that the interval between dental recall in children (aged under 18) should be no greater than 12 months. A campaign launched by the British Society of Paediatric Dentistry in 2017 in partnership with the Office of the Chief Dental Officer for England promotes children having a dental examination as soon as the first teeth erupt and no later than the child's first birthday (British Society of Paediatric Dentistry, 2016).

While it is widely recommended that children have a first dental visit before the age of 1 year, some parents might tend to visit the dentist for the first time once a dental problem has arisen. This is more likely among children from deprived areas (Eckersley and Blinkhorn, 2001). Perceptions about the first dental visit vary across the world (Murshid, 2016). In Argentina, some dentists recommend pregnant mothers to have a dental visit at 4 months of pregnancy to establish a first contact between parents and health professionals, provision of information and trust building. Then, a dental visit is recommended once the child reaches 6 months (Furze and Basso, 2003). A study in Brazil, reported that orientation/prevention was the main reason for a first dental visit in children from



0 to 30 months but for those from 30 to 36 months dental caries was the most prevalent reason. The mean age for a first dental visit was 14.9 months (Volpato *et al.*, 2013). In Australia it has been reported that some children do not visit the dentist until the age of 5 (Widmer, 2003). Studies in Saudi Arabia and Bulgaria, reported that the majority of children visited the dentist for the first time between 3-5 years old, pain was the main reason for attendance (Mileva and Kondeva, 2010; Murshid, 2016). A study in Northern Ireland reported that most children attended the dentist at the age of three (Kinirons and McCabe, 1995). In England, a study in three-year-olds in the North West found that children had a first dental visit by the age of one year; those from deprived areas were more likely to be symptomatic attenders (Eckersley and Blinkhorn, 2001).

1.10 Patterns and inequalities in dental attendance in England

A review of dental health in England reported that there has been an improvement in access to dental care but there are still socioeconomic inequalities (Appleby *et al.*, 2017). CDH surveys have informed that the number of children visiting a dentist in the UK has increased in the last decades (Murray *et al.*, 2015). The last survey (2013) informed that 89% of 5-year olds and 94% of 8-year olds were reported by their parents to have visited a dentist for a check-up in the previous year (Tsakos *et al.*, 2015). Among older children, 80% of 12- and 15-year olds reported to have had a dental check-up. Nevertheless, changes have been steady (**Figure 1.7**) and there is no evidence of improvement in the proportion of children visiting the dentist only when in trouble (Holmes *et al.*, 2016). As NHS England provides free dental care for children under the age of



18, it may explain relatively high level of attendance. However, there is a proportion of children that are not attending and who have never been to the dentist.

NHS dental statistics for England reported that during the period to June 2019-2020, 52.7% (6.3 million) of children visited an NHS dentist (NHS Digital, 2020). This figure was 59% (7 million) in the year to June 2018-2019 (NHS Digital, 2019), with little improvement from the previous years; 58.2% in 2016/17 (NHS Digital, 2016; 2017). However, most recent statistics have shown a considerable decline in DA during 2020, as consequence of the reduction in dental services through the COVID-pandemic. Only 29.8% of children were seen by an NHS dentist (NHS Digital, 2021). During the period to March 2014-16, only 38% of children from 0 to 4 years old visited a dentist (PHE, 2017a).

1.10.1 First dental visit

Despite high levels of DA reported in the CDH survey 2013, only a third of 5-year olds were reported to have first visited a dentist by the age of 2 (Tsakos *et al.*, 2015) with little improvement since the previous survey in 2003 (Holmes *et al.*, 2016). During 1983 to 2003 the number of children visiting the dentist by the age of two in the UK increased from 7 to 31% in 5 year olds and from 7 to 33% in 8 year olds (Murray *et al.*, 2015). The corresponding figure in the CDH survey 2013 was 30% in 5 year olds and 34% in 8 year olds (**Figure 1.7**) (Tsakos *et al.*, 2015).

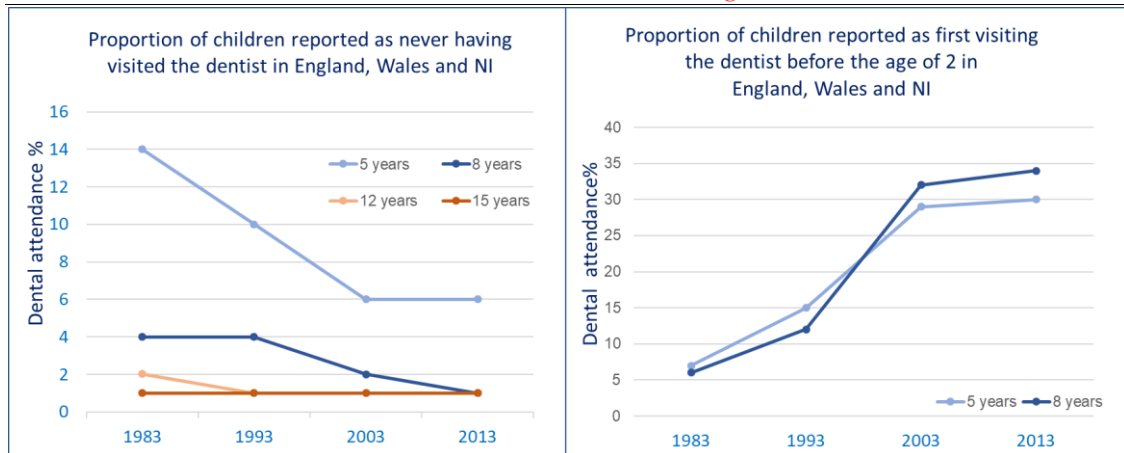


Figure 1.7. Changes in DA in children in the UK (Figure based on the CDH survey 1983, 1993, 2003 and 2013).

1.11 Factors influencing child dental attendance in the UK

1.11.1 Geographical, deprivation and ethnic related inequalities in dental attendance

Higher rates of DA have been reported in the North of the country compared to the London region (NHS Digital, 2018a; 2019; 2020). For instance, the most recent data from NHS England reported that during the period to June 2019-20, the North East and Yorkshire had the highest percentage of children seen by a dentist (57.5%) whereas the London region had the lowest rates (43.7%) (NHS Digital, 2020); these regions, respectively had also the highest and lowest rates in the previous year (NHS Digital, 2019).

It has been reported that children from poorer backgrounds are less likely to attend dental services. The 2013 CDH survey reported that 91% of 5-year-old



CONTEXT OF THE STUDY

children from non-deprived areas in England (measured by eligibility for free school meals) visited the dentist compared to 81% of children from deprived areas. Children from deprived areas were more likely to have never been to the dentist or only when in trouble (Holmes *et al.*, 2015a). However, 79% of children from urban areas reported attending dental check-ups compared to 91% in those living in rural areas; but 1% in rural areas have never been to the dentist compared to 3% in urban areas (Tsakos *et al.*, 2015).

Similarly, previous surveys have reported higher rates of DA in children whose parents are from managerial and professional class compared to intermediate and routine manual class (Morris *et al.*, 2004). Studies of NHS dental access by children in England have also shown higher DA in non-deprived areas (Jones, 2001; Maunder *et al.*, 2006; Gallagher *et al.*, 2009). A study in North West England found that children using GDS were more likely to be from more affluent areas compared to those unregistered children (Tickle *et al.*, 2000b).

There might be also variations by ethnicity. A study in adults in deprived areas in London reported that Asian people were more likely to visit the dentist compared to those from White and Black backgrounds (Al-Haboubi *et al.*, 2013). A study in South Birmingham found that children from Asian backgrounds were more likely to attend the CDS than GDS (Waplinton *et al.*, 1998). The association between child DA and ethnicity, however, has not been well documented.

1.11.2 Barriers to child dental attendance

Cost and anxiety have been identified as the main two barriers in adults (Finch, 1988; Hill *et al.*, 2013). However, barriers in children have been less reported. A



qualitative study in Scotland reported that main perceived barriers to early dental registration were attitudes of dental practitioners, e.g. not enough training in communication skills to treat children; attitudes of parents such fear of attending dental appointments; physical barriers such as difficulty with bringing prams; difficulty in attending for working mothers; and little awareness of the timing for a first dental visit (Morrison *et al.*, 2000).

A review of NHS dental services in England reported that the problem of access is not across the country but focused on certain areas. It pointed out that the lack of information in finding a dentist might make it difficult to access dental care suggesting that health care organisation is key in changing people's perceptions about accessing dental care. The review highlighted the importance of prevention and a high-quality provision of dental care (Steele, 2009).

The 2013 CDH survey informed that approximately one in ten parents reported having difficulty in finding NHS dental care for their children. There was an increase from 9% in 2003 to 12% in 2013 but this change was not significant in England. Parents from deprived backgrounds were more likely to report experiencing a difficulty. The most commonly reported barrier was the dentist not taking on NHS patients. Other parents reported that the dentist made taking on children for NHS dental care contingent upon the parents registering privately and a few reported the absence of a local school or CDS as barriers for having difficulty accessing NHS dental care (Tsakos *et al.*, 2015). The main identified organisational and individual barriers to child DA are described below.



1.11.3 Organisational level barriers

1.11.3.1 Availability of dental services

Research has shown that the distribution of NHS dentists in England is not uniform; deprived areas and communities with a low population are more likely to have a higher shortage of dentists. A study from 2004 reported that there were 0.3 dentists per 1,000 population, corresponding to only 24.1% of the total population; lower as compared to other countries (Boulos and Phillipps, 2004).

A study using data from the 1991 Census, estimated that on average a health authority without a dental school is expected to have 2,138 residents for every NHS dentist. Disadvantageous population-dentist ratios were registered in areas with a relatively high proportion of children (0-14) or elderly people and in households without a car. On the other hand, better ratios were found in areas with a higher female population, a South Asian population and health authorities with a dental school. In the same study, Kensington, Chelsea and Westminster had the most favourable dentist to population ratio with 1,212 residents per NHS dentist in contrast to Walsall which had the least favourable ratio with 3,359 residents per NHS dentist (Moles, 2001).

More recent research has reported a decline of 22% in new dentist registrations in the UK over the two years prior to 2019 and highlighted the difficulties to recruitment of dentists in some areas of the country specially in those with higher demand (British Dental Journal, 2019).



In 2015-16, the number of dentists per 100,000 population ranged from 43.7 in West Midlands to 54.2 in Cheshire and Merseyside (NHS Digital, 2016). Recent figures from NHS England reported higher availability of dentists in London with 51.1 dentists per 100,000 population compared to 43.2 in the Midlands (NHS Digital, 2020). It has been estimated that a substantial proportion of dental practices are not accepting NHS patients (Audit Commission, 2002). In the 2013 CDH survey, 69% of parents who experienced difficulties in finding an NHS dentist for their children reported local dentist not accepting NHS patients as the main reason (Tsakos *et al.*, 2015).

The inverse care law described by Tudor Hart (1971, p.405) states that “*the availability of good medical care tends to vary inversely with the need for it in the population served*”; in other words, individuals who need the most medical care are less likely to receive it. People from deprived areas usually have fewer doctors and dentists compared to wealthier areas where the health needs are less (Tudor Hart, 1971; Daly *et al.*, 2013). This inverse care law can have a significant impact on children: 1) children from poorer backgrounds are at a higher risk of disease, 2) there is a decrease in demand of services, and 3) a decrease in access to dental services.

Although it has been suggested that the location of a dental practice can improve the access in deprived areas (Mauder *et al.*, 2006), other authors concluded that it might be a more complex issue (Moles, 2001) and that the provision of dental services does not guarantee an increase in attendance. Even if local services are available, patients might not be willing to seek dental care (Holmes *et al.*, 2015b).



1.11.3.2 Social deprivation

Studies of NHS dental access have reported an association between DA and deprivation (Jones, 2001; Maunder *et al.*, 2006; Gallagher *et al.*, 2009; Holmes *et al.*, 2016). A study in the North-East of England found that the probability of child registration for dental care reduced as the level of deprivation increased (Maunder *et al.*, 2006). A study at area level, however, found no inequalities in DA during the past decade (Ravaghi *et al.*, 2019). The absence of a CDS might be a barrier for DA as children from lower social deprivation usually use CDS or local service, as suggested by studies (Waplinton *et al.*, 1998; Tickle *et al.*, 2000b). The 2013 CDH survey also reported the absence of a CDS as one of the barriers for parents in finding a NHS dentist for their children (Tsakos *et al.*, 2015).

1.11.3.3 Influence of dental practitioners

Friendliness, personal touch and inspiration of trust are perceived by patients to be some of the qualities of a good dentist (Hill *et al.*, 2003) which can increase patient's satisfaction and use of services (Scambler *et al.*, 2016). The lack of such qualities might reduce the use of health services. Children might also have perceptions regarding the appearance of their dentist and the dental clinic. A study in Istanbul found that children preferred a female dentist, dentists wearing a coloured coat and a decorated dental clinic (Münevveroğlu *et al.*, 2014). Another aspect is that dental practitioners and health care teams might not be familiar with the recommendations for DA and might not be advising and encouraging parents to take their children to the dentist at the recommended age and interval (Morrison *et al.*, 2000; Mileva and Kondeva, 2010; Wright, 2016).



1.11.4 Individual barriers

1.11.4.1 Parents' attitudes and behaviours

It has been well reported that parents' own experiences, behaviours and cultural influences can have an effect on child dental health (Amin and Harrison, 2008; Hooley *et al.*, 2012). These can also affect the uptake of dental services (Nayee *et al.*, 2018). Children are more likely to attend dental check-ups when parents, especially the mother, are regular attenders (Tsakos *et al.*, 2015).

Attendance before the age of 2 has been associated with mothers' attendance patterns; the 2003 CDH survey reported that 92% of 5-year olds whose mothers were regular attenders visited the dentist before the age of 5 compared to 55% whose mothers attended only when having symptoms (Morris *et al.*, 2004). Mothers are more likely to be in charge of their children dental appointments (Kinirons and McCabe, 1995) and those who are regular attenders might be more aware of the availability of dental services for their children (Williams and Gelbier, 2016). They might feel more comfortable about dental care and therefore more likely to take their children to the dentist (Kinirons and McCabe, 1995).

Nevertheless, children tend to receive late dental care when parents are not aware of the need for a dental visit until children are in pain or a problem has occurred (Murshid, 2016); and this is more likely among parents from poorer backgrounds (Eckersley and Blinkhorn, 2001). A survey by Brush-Baby, a paediatric oral health company, found that only 13% believe they should first take their baby to the dentist at 6 months (CISION, 2017). Furthermore, some parents in the UK might not be aware that dental treatment for children is free as shown



by a polling from the BDA (2017). Moreover, it has been suggested that low income families might have poor oral health expectations which can prevent the use of dental services (Amin and Harrison, 2008). Studies in the UK have identified a lack of knowledge in mothers towards child oral health and that parents do require more information and support (Blinkhorn *et al.*, 2001). New parents might need more support and guidance as they might not have the adequate information (Nayee *et al.*, 2018).

Parent's own past dental care experiences can also influence child DA. Memories about past frightening experiences might be recalled at their children's DA, influencing the delay of parents in taking them for treatment (Smith and Freeman, 2010).

1.11.4.2 Dental anxiety

Parents might avoid taking their child to the dentist because of the child's behavioural problems due to dental anxiety (Smith and Freeman, 2010). Studies have reported that approximately one in ten children and adolescents, especially girls, are affected by dental fear or anxiety (Klingberg and Broberg, 2007). The 2013 CDHS found that almost half of 5 and-8-year-olds had some levels of anxiety, as scored by parents on a scale of 1 (not at all anxious) to 10 (extremely anxious) (Tsakos *et al.*, 2015).

1.11.4.3 Cost

Although dental treatment in the UK is free for children, DA can be associated with indirect costs such as travel, time away from work and loss of earnings



(Donaldson and Kinirons, 2001). In large geographical areas patients are more likely to travel long distances to access NHS dental care, as reported in a study in the North of the country (Holmes *et al.*, 2015b).

This section has discussed main factors associated with child DA, however, uptake of dental services is influenced by several factors and in addition to the factors discussed, transport, language, cultural barriers and a lack of information can also influence the uptake of dental care, especially in deprived or low-income families (Finch, 1988).

1.12 Interventions and policies to improve dental attendance

1.12.1 Approaches and local interventions

A broad range of interventions, delivered at population and individual level, are advocated to improve child dental health, including DA to receive both treatment of disease and preventive interventions. A review by the BDA (Fox, 2010b) aiming to assess the effectiveness of approaches to improve DA in families from deprived areas identified a mobile dental unit at school as the most effective approach in children. Other approaches included school dental screening, health visitors and GPs collaborative, and a dental health promotion display in a shopping centre. These approaches will be discussed in the next sections. The review however, identified a low quality of evidence within the studies.



CONTEXT OF THE STUDY

NICE recommendations to local authorities on oral health improvement in the community, include increasing access to dental services especially for high risk groups to ensure these groups can easily access dental services, for instance, by providing them with the adequate information on how to access dental care; and encouraging and supporting families in dental registration (NICE, 2014). PHE (2014) also provides evidence-based guidance for local authorities to support commissioning of child oral health improvement programmes. In their guidance, PHE assessed interventions focussed on community-based programmes, concluding that evidence on the effectiveness of facilitating dental access and social marketing programmes to promote oral health and uptake of dental services by children had been weak and inconclusive.

Some examples of approaches and interventions that have been tried in order to improve DA in the UK are described in the following sections. **Table 1.2** provides a summary of the advantages and disadvantages of these approaches. **Table 1.3** shows some examples of interventions that have been recently developed at local level in England with the aim of improving both oral health and DA. Nevertheless, little attention has been paid to the evaluation of these initiatives, therefore evidence on their impact is limited.

Table 1.2. Summary table of advantages and disadvantages of interventions to improve child dental attendance in the UK (based on findings from literature review).

Intervention	Advantages	Disadvantages/Weakness	References
Facilitating dental access	-Can target high risk groups. An intervention in Greater Manchester (focusing on a re-orientation of dental services towards prevention and dental attendance) helped to attract families who had not previously been to a dentist. As part of the intervention, contact details of dental practices were distributed in local settings (PHE, 2014).	-Evidence on the effectiveness of interventions targeting preschool and school children has been weak and inconclusive. -Uncertain impact on inequalities and cost. It can increase inequalities if groups are not appropriately targeted or there is a different response to the intervention. -Monitoring and evaluation can be difficult and expensive.	PHE (2014).
Health visitors	-Health visitors can reach parents that might be difficult to access, provide advice and encourage them to adopt healthy behaviours. -Dental visits can have an effect in mothers of very young children who might be more responsive to health interventions. A community-based intervention in Northern Ireland (Yuan <i>et al.</i> , 2007) reported that it helped to improve dental attendance in young children (0 to 2 years old).	-Might be only effective in encouraging mothers of younger children. -Requires training for health visitors.	Bentley and Holloway (1993); Yuan <i>et al.</i> (2007); Weston-Price <i>et al.</i> (2020).
Mobile unit at primary school	-Can increase uptake and completion of dental treatment, as suggested by a study in a deprived area in Birmingham (Clarke <i>et al.</i> , 1992). -Can overcome transport barriers and missed appointments. -Might be more convenient and accessible for parents. -A study in East London (Simons <i>et al.</i> , 2015) suggested that it can be a cost-effective approach to overcome dental access barriers.	-Their implementation and management can be difficult. -Factors such as cost, location, sustainability, and target population have to be considered.	Clarke <i>et al.</i> (1992); Douglass (2005); Vashishtha <i>et al.</i> (2014); Simons <i>et al.</i> (2015); Doughty (2016).

Table 1.2 continuation.

Intervention	Advantages	Disadvantages/Weakness	References
Dental screening	<ul style="list-style-type: none">-Provides an opportunity for early detection and treatment of oral diseases.-Can put children with dental needs into contact with dental services.-Can alert parents of a need of dental treatment in children.	<ul style="list-style-type: none">-Consent has to be obtained.-Recent studies have not found it effective at stimulating dental attendance.-The UK National Screening Committee (2014) does not recommend population screening in 6 to 9-year-old children as there is not enough evidence to support it.	Donaldson and Kinirons (2001); Joury <i>et al.</i> (2017); Arora <i>et al.</i> (2019); Milsom <i>et al.</i> (2006); Cunningham <i>et al.</i> (2009).
Social marketing programmes	<ul style="list-style-type: none">-Can help to increase awareness of the availability of dental services and dental attendance.-Can address inequalities by targeting specific groups.	<ul style="list-style-type: none">-Evidence of their effectiveness is weak and inconclusive, especially in the long-term impact.-Social marketing programmes might not be sustainable.-The cost must be considered when carrying out extensive consumer research.-Online interventions might be less expensive and reach a greater population.	NSMC (2010); Ashford and Blinkhorn (1999); PHE (2014); NSMC (2010).
Dental health education	<ul style="list-style-type: none">-Provides an opportunity to increase oral health knowledge in the population.-Can have a positive impact on oral health knowledge.	<ul style="list-style-type: none">-Successful oral health programmes can be time-consuming and hard to develop.-Requires funding and support.-Might have a minimal impact on dental attendance, especially in the long-term.	PHE (2014); Worthington <i>et al.</i> (2001); Rayner (1992); Qadri <i>et al.</i> (2018).
Health promotion	<ul style="list-style-type: none">-Can support parents to improve good oral health habits in children.-Can help to increase awareness on the importance of dental attendance. A systematic review of interventions on the integration of oral health promotion into nursery and midwifery practices suggested that it can help to increase dental access in young children (Fadl <i>et al.</i>, 2016).	<ul style="list-style-type: none">-Interventions might not be effective at changing behaviour.	Passalacqua <i>et al.</i> (2012); Whittle <i>et al.</i> (1994); Ramsdale and Landes (2014); Fadl <i>et al.</i> (2016).



Table 1.3. Selected examples of recent interventions developed at local level to improve child dental attendance in England.

Programme	Local Authority	Aims	Main activities/Interventions
Building Brighter Smiles (PHE, 2014; Bradford District Care NHS, n.d.).	Bradford and Airedale (Local Authority's initiative)	Improve oral health of young children.	Brushing for life programme, led by health visitors involving fluoride toothpaste distribution, tooth brushing and oral health information to carers of children 6-9 months. Fluoride varnish programme in children age 2 to 4. "First steps to healthy teeth" dental health awards to promote good oral health in early year settings. Supporting dental practices to re-orientate services towards prevention. Practices were encouraged to deliver evidence based prevention and promote regular dental attendance for fluoride varnish application.
Smile4Life Lancashire and Cumbria (Lancashire Children and Young People's Trust, 2017).	Lancashire (Developed in partnership with Local Authorities)	Reduce dental caries in children and to establish the foundations of good oral health.	Facilitate healthy diet. Support toothbrushing. Promote a healthy lifestyle. Promote regular dental attendance and ensure children have access to NHS dental services by providing consistent messages to parents and carers.
Startwell, Birmingham Public Health (Birmingham Community Healthcare, 2020).	Birmingham (NHS initiative)	Obesity prevention programme in early years settings.	Provide support and training to early years settings. Advice on oral health includes tooth brushing, diet and regular dental check-up.

Table 1.3 continuation

Programme	Local Authority	Aims	Main activities/Interventions
Brighter smiles campaign-Increasing access to dental services (NSMC, 2010).	Kensington and Chelsea (NHS initiative)	Increase self-referral rates to NHS dental services and improve oral health in children and adults.	Financial incentives for quality improvements, e.g. meeting friendly dentist criteria, relaxation technique for anxious patients. Online resources for dental practices. Multimedia registration campaign. Child oral health program including offering dental appointments and follow up (Bigger Smiles Campaign).
Baby teeth Do Matter (PHE, 2014).	Manchester (Local Dental Network initiative)	To improve the oral health of preschool children.	Re-orientation of dental services to encourage prevention and dental attendance through collaborative commissioning. Promotional materials with key messages provided by Local Dental Network. Toothpaste and toothbrush packs for families (with two to five years old) who reported that had not seen a dentist before.
Healthy Teeth, Happy Smiles! (Murphy and Moore, 2018; Murphy <i>et al.</i> , 2018).	Leicester (NHS and Local Authority's initiative)	Improve oral health in preschool children.	Integrating oral health into wider health and care services: among the activities, health visitors promote oral health including the recommendation of a first dental visit by the first year of age. Building personal skills of children, parents and carers. Oral health promoting in early years settings. Engagement with the local dental profession to promote prevention. Raising awareness.



1.12.1.1 Facilitating dental access

Facilitating dental access implies the identification of groups with low DA rates, contacting them and arranging a dental appointment. For instance, contacting early years' parents, encouraging them to bring their child to a dental appointment and arranging it at a local dental practice (PHE, 2014). An example is an intervention in Greater Manchester ("Baby teeth Do matter") initiated by the Local Dental Network which involved a reorientation of dental services to focus on prevention and encourage DA in young children. GPs and NHS England commissioners worked together to agree a contract variation that encourage NHS dental practices to attract preschool children who were not accessing dental services. Among the interventions, contact details of dental practices participating in the project were distributed in libraries, nurseries, medical practices and children's centres (PHE, 2014). It was reported that at the start of the programme, 3,453 children who had not been previously to the dentist accessed dental care in a period of two months (Brocklehurst *et al.*, 2013); the increase rate in dental access was not reported. The initiative demonstrated the importance of clinically led and clinically owned interventions, and the importance of empowering dental professionals. However, one of the criticisms to the intervention was the use of financial incentives for dental practices to adopt the programme (Brocklehurst *et al.*, 2013).

Nevertheless, facilitating dental access can also increase inequalities if groups are not appropriately targeted since uptake might not increase for people who need it. It can have a limited value if healthcare services are not preventive-



orientated. Also, its monitoring and evaluation can be difficult and expensive (PHE, 2014).

1.12.1.2 Health visitors and community nurses

Health visitors can provide advice to mothers of young babies on the importance of first DA. Health visitors can reach families that might be difficult to access such as those from deprived areas (Weston-Price *et al.*, 2020). An example is a community-based intervention in Northern Ireland (Yuan *et al.*, 2007) aiming to promote dental registration and access to dental services in deprived children. Health visitors provided mothers in the intervention group with oral health education, materials, a registration voucher (to exchange for motivational materials at the dental practice) and a list of local dentists. At registering the mother was given preventive advice and a “gift” at the first and at 15 months’ re-registration. The percentage of children registered in the intervention group was 26% compared to 22% in the control group. Registration rates in children from 0 to 2 years significantly increased in the control group from 17% at 6 months before the intervention to 26% at 5 months after the intervention; but it was not reported whether registration rates were maintained in a longer term. The intervention, however, did not have any significantly effect in older pre-school children (3-5 years old).

Another example is a campaign in North West England aimed to increase dental registrations, it involved health visitors to encourage DA and refer young children (0 to 2 years) to general dental services. Health visitors worked along with GDPs to ensure children were attending dental services. Although there were difficulties



identifying the number of registered patients, health visitors were of the view that the campaign might have contributed to the increase in the number of registrations (Bentley and Holloway, 1993).

Nevertheless, promoting oral health through health visitors requires the necessary training (Weston-Price *et al.*, 2020).

1.12.1.3 Mobile dental units

A mobile dental unit can be more convenient and accessible for parents (Simons *et al.*, 2015). It has been recommended in areas of low uptake and completion of dental care by children (Clarke *et al.*, 1992; Simons *et al.*, 2013). A pilot on the use of mobile dental units to provide oral care for Travellers reported it was successful but not a viable solution due to its cost (Doughty, 2016).

A study (Simons *et al.*, 2013) in East London reported that it can be a cost-effective approach to overcome dental access barriers. Mobile dental units were used as pilots to assess their use in delivering health care to vulnerable children. The percentage of children receiving dental care through a mobile dental unit almost doubled that of those registered with a GDP (43% compared to 22% respectively); only 13% had seen previously a dentist. It also had positive feedback from parents.

A study (Clarke *et al.*, 1992) in children from 4 to 11 years in a socially deprived and multi-ethnic area in Birmingham reported that it increased both initial uptake and completion of treatment. Factors that contributed to the success were reported by the authors to be 1) the increased acceptance for treatment, probably



CONTEXT OF THE STUDY

due to the availability of treatment at school making it accessible and without waiting for an appointment, 2) no need to travel to the clinic for treatment, 3) no need to remember the appointment and 4) family factors were removed. As parents did not need to accompany their children since treatment was provided at school, which might be difficult in large families, avoiding also English language problems. Moreover, children did not refuse treatment and were more likely to comply with treatment when their parents were absent. However, it has to be considered that these findings are based upon a study almost 30 years ago and it is unclear whether the described factors would still be applicable nowadays due to differences in dental health services arrangements, local environment and parental consent for dental treatment.

A systematic review concluded that mobile dental units can be effective at overcoming accessibility barriers (Vashishtha *et al.*, 2014). Nevertheless, implementing and managing a mobile dental unit can be difficult as factors such as funding, location and sustainability have to be considered (Douglass, 2005; Simons *et al.*, 2013).

1.12.1.4 School dental screening

Dental screening provides an opportunity for early detection and treatment of oral diseases. Screening at schools can put children with dental needs into contact with dental services and inform parents of a need of dental treatment in their children (Donaldson and Kinirons, 2001). Although some studies had suggested that school dental screening can encourage DA for both dental check-up and treatment uptake, especially in children from deprived areas (Zarod and Lennon,



1992; Harding M, 1993; Donaldson and Kinirons, 2001), more recent studies have concluded that there is not enough evidence on its effect on DA (Milsom *et al.*, 2006; Cunningham *et al.*, 2009; Joury *et al.*, 2017; Arora *et al.*, 2019).

A randomised control trial (Milsom *et al.*, 2006) in the North-West England in school children from 6 to 9 years old reported it was not effective at improving DA, no statistical difference was found between the intervention and control group whereas in a study (Cunningham *et al.*, 2009) in Scotland in 12 and 13 year olds neither dental inspections nor a letter home to unregistered children led to a significant increase in registration rates. Moreover, dental screening might not be welcomed by some parents and may not be supported by potential facilitators such as school nurses who may feel that this is a parental responsibility into which they should not intrude (Tickle *et al.*, 2006).

The (UK National Screening Committee, 2019) does not recommend population screening in 6 to 9-year-old children as there is not enough evidence to support its effectiveness in improving DA or reducing levels of dental caries. Nonetheless, the programme continues to be commissioned in some priority areas for targeted schools (Community Dental Services, n.d.).

1.12.1.5 Social marketing programmes

This type of intervention uses commercial marketing techniques with the aim of influencing specific groups of populations who are targeted to promote health behaviours; e.g. a media campaign aiming to promote the importance of oral health and increase awareness of the availability of dental services (PHE, 2014).



CONTEXT OF THE STUDY

This can be illustrated by a project in Kensington and Chelsea (NSMC, 2010) developed in collaboration with a social market consultant with the aim of increasing self-referrals to NHS dental care and oral health improvement in children and adults. Among other interventions, it used a multimedia advertising campaign to encourage registration. Free post cards were distributed e.g. in pharmacies, community groups and GP surgeries, to invite people to provide their contact details; promotional materials were used for advertising in local settings and an online and free phone line were established. The results showed an increase of 4.4% in children accessing NHS dental services in Kensington and Chelsea from the first year to the second year of the implementation (2008-09 to 2009-10); and an increase in fluoride varnish rates. However, the statistical significance of the results was not reported.

Another example is a campaign that used advertising posters to increase dental treatment uptake in young adults at work and young mothers and their children (11 years and under). The campaign managed to raise awareness but there was little improvement in DA (Fuller (1992) cited in Ashford, 1999). Other studies in adults have not been successful in encouraging DA in non-regular attenders (Ashford and Blinkhorn, 1999).

Although social marketing programs might increase awareness of DA and address inequalities by targeting specific groups of populations, there is not enough evidence of their effectiveness on behavioural change towards DA, especially in the long-term. Social marketing programmes might not be sustainable, also the cost must be considered. It is suggested that online



interventions might be less expensive and can reach a greater population (PHE, 2014).

1.12.1.6 Dental health education

Dental health education provides an opportunity to increase oral health knowledge in the population, for instance through organising health fairs by dental teams, school visits and provision of oral health education to new mothers (PHE, 2014). An example is a randomised controlled trial in primary schools in the North West of England with the purpose of improving knowledge on oral hygiene through dental health education lessons in 10-year-olds (Worthington *et al.*, 2001). Although the programme improved knowledge on oral hygiene and sugar consumption, the impact on DA was minimal since 97% of children were already visiting a dentist before the intervention and this percentage did not change. A preventive programme where dental hygienists delivered dental health education in parents of nursery and young children at their home reported a minimal impact on dental care uptake (Rayner, 1992).

A study reported that dental health education can be effective in improving dental health but might not have an effect in reducing oral health inequalities (Qadri *et al.*, 2018). Systematic reviews have concluded that dental health education can have a positive impact on oral health knowledge (Kay and Locker, 1996; Nakre and Harikiran, 2013). However, its effectiveness on increasing DA is not clear.



1.12.1.7 Oral health promotion

Oral health promotion programmes can provide information to help patients to improve good oral health habits, including DA (Passalacqua *et al.*, 2012). Unlike dental health education which looks to improve oral health through the acquisition of knowledge, oral health promotion looks to improve the conditions in which people live and which affect oral health so that sustainable improvements towards good oral health behaviours can be achieved. Oral health promotion can take different approaches including an educational approach (Watt *et al.*, 2006; Daly *et al.*, 2013).

An example is an intervention using a display at a shopping centre in Greater Manchester which reported that it had a positive effect on improving knowledge and encourage parents to take their children to the dentist. The intervention consisted of providing advice and leaflets about the advantages of dental care registration, importance of regular check-ups and registering babies as early as possible as well as preventive advice (Whittle *et al.*, 1994).

However, an intervention in the North-East of England (Ramsdale and Landes, 2014) promoting oral health and access to dental care in community settings, e.g. Children Centres and nurseries reported that it was not clear whether the intervention helped to improve dental access. This intervention used dental nurses from practices who were trained as oral health promoters. A systematic review of interventions involving the integration of oral health promotion into nursery and midwifery practices suggested that it can help to increase dental care access in young children, especially in children from poorer backgrounds (Fadl *et al.*, 2016).



Anticipatory guidance can be used in dental care to provide parents and caregivers with the necessary information to manage any aspects of their children's oral health (Nowak and Casamassimo, 2015). Doing so in pregnant mothers might be effective to encourage them to take their children to the dentist at early years (Savage *et al.*, 2004). It is suggested that pregnant mothers might be more receptive to suggestions regarding her child's health as they desire a healthy child (Furze and Basso, 2003).



1.12.2 National interventions and policies

The government in England has made a commitment to oral health and dental care to improve the population's oral health, especially in children (NHS England, 2014; PHE, 2014). The high degree of political interest can be gauged by the number of times the subject appears in parliamentary questions and debates. The NHS Healthy Child Programme aims that every child has a good start with the foundations of a healthy life, especially in disadvantaged families. "The Healthy Child Programme Pregnancy and the first five years" of life is locally led by health visitors who are in charge of delivering preventive programmes and health promotion, including advice on dental health and access to dental care (Department of Health, 2009). The promotion of oral health is included since 2020 within the Early Years Foundation Stage frameworks which is mandatory for all Early Years settings (Department for Education, 2020). PHE supports dental practices with a dental toolkit "Top Tips for Teeth" providing resources with key messages for parents, including advice on regular DA (PHE, 2020b).

In 2016, the Children's Oral Health Improvement Programme Board (COHIPB), headed by PHE, was launched with the aim of improving oral health in children and reducing inequalities. Its ambition is that "every child grow up free of tooth decay as part of getting the best start in life" and looks to support and empower local delivery of effective interventions to improve oral health. The programme involves organisations such as NHS England, Local Authorities, Health Education England, the Local Government Association, the BDA and the Institute of Health Visiting (UCL, 2020a; b). Also, in 2017, the British Society of Paediatric Dentistry (BSPD) in partnership with the Office of the Chief Dental Officer



England, launched a “Dental Check by One” campaign to promote the importance of child attendance by the age of one year (British Society of Paediatric Dentistry, 2017).

The Smile4life programme in England has a series of initiatives aiming to improve oral health and dental access (NHS, 2020b). As part of this, in 2017 NHS England started a new programme, “Starting Well” in 13 high priority areas targeting children under five, and aiming at encouraging DA and prevention of oral diseases. The programme focused particularly in children who are not visiting the dentist (NHS England, 2017b). An aligned initiative, “Starting Well Core”, commenced in 2018. It has been made available to all NHS England dental commissioning teams with the aim of increasing dental access in children zero to two years and promoting a greater focus on prevention.

In Wales, the “Designed to Smile” programme offers advice on oral care during the early ages including DA (Welsh Government, n.d.). In Northern Ireland, the “Happy Smile” programme aims to improve pre-school children’s oral health. It offers a tooth brushing programme, advice on nutrition and an education programme including advice on DA (Health and Social Care Board Northern Ireland *et al.*, 2016). In Scotland, the “Childsmile” programme aims to reduce oral health inequalities and ensure access to dental services in children 5 years and under. It involves schools, nurseries and dental practices (NHS Highland, n.d.).

There is, therefore, considerable investment in the model of children attending a dentist for early detection of dental disease and preventive interventions.



CONTEXT OF THE STUDY

However, there is not enough evidence on the effectiveness of interventions. Maynard (Maynard, 2012; 2013) is of the view that the persistence and worsening of inequalities is mainly due to a lack of evidence of cost-effective interventions. Having evidence of effective interventions is necessary to identify those that provide the greatest benefit in the population.

1.13 Research aims

Child dental health constitutes an area of significant policy interest and investment in England. A broad range of interventions have been tried to improve DA and oral health outcomes. There is, however, little evidence on the effectiveness of interventions to promote DA. This is important in order to create the adequate strategies and policies, especially in areas with lower rates, while making an effective use of resources.

Therefore, the purpose of this PhD research is first, to explore DA by young children in England; and second, to explore the potential role of dental services in promoting DA and improving oral health outcomes, through the evaluation of a new NHSE&I initiative “Starting Well” which aimed to improve both DA and preventive practice for young children. Detailed aims and objectives are summarised in **Figure 1.8**.

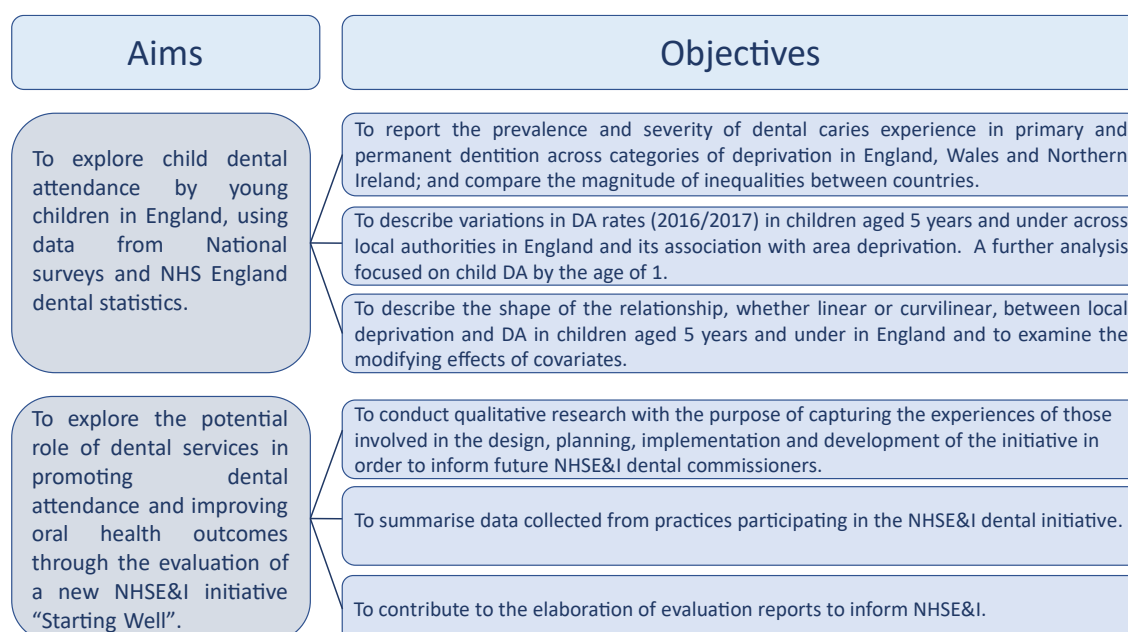


Figure 1.8. Aims and objectives of the research study.

CHAPTER TWO

2 INITIAL EXPLORATORY RESEARCH

2.1 Introduction

Despite improvements in children's oral health in England, there is still a proportion of children who are not visiting the dentist, especially at early years. Studies of NHS dental access by children in England have suggested that children from more deprived backgrounds, though at greater risk of disease, are less likely to attend dental services (Jones, 2001; Maunder *et al.*, 2006; Holmes *et al.*, 2016). A study by Jones (2001), found that there was a decrease in child dental registrations in more affluent areas; although it was reported to be unlikely statistically significant. The 2013 CDHS has also shown an inconsistent relationship between DA and deprivation at different ages (Holmes *et al.*, 2016). Whereas a study by Ravaghi *et al.* (2019) did not find inequalities in child DA over the past ten years.

It might be hypothesised that the association between DA and deprivation might be not linear but modified by the risk of disease and the outcome of attendance. For instance, low disease risk might be associated with attendance for preventive interventions whereas high disease risk might be linked to attendance for unscheduled care. Consequently, the shape of the relationship could be curvilinear with higher DA in the extreme ends of deprivation.



What is more, the relationship between deprivation and DA may be moderated by the effect of other factors such as ethnicity, as minority ethnic groups are less likely to access primary care services compared to the White majority (PHE, 2018a). Parental factors such as single parenthood might contribute to the development of tooth decay in children (Hooley *et al.*, 2012). There might be also variations in DA by the availability of dental services as indicated by lower dentist-to-population ratios (Boulos and Phillipps, 2004).

Therefore, the purpose of these preliminary studies was to explore variations in child DA across English LAs and its association with area deprivation. Some of these studies were collaborative work and have already been published. These publications can be found in [Appendix V](#).

This chapter is organised as follows, first, it states the aims and objectives of these statistical analyses, then the methodology and results for each study are described. Results of all analyses are discussed in one section, followed by stating the limitations and finally, conclusions are drawn in the last section.

2.1.1 Aims and objectives

Aim:

To explore child dental attendance by young children in England, using data from National surveys and NHS England dental statistics.



Objectives:

1. To report the prevalence and severity of dental caries experience in primary and permanent dentition across categories of deprivation in England, Wales and Northern Ireland; and to compare the magnitude of inequalities between countries (Paper 1).
2. To describe variations in DA rates (2016/2017) in children aged 5 years and under across local authorities in England and its association with area deprivation:
 - a. To calculate rates and assess variations in DA between LAs (upper-tier level) in children aged 5 years and under and its relationship with area deprivation.
 - b. To describe child DA by the age of one and its association with area deprivation (Paper 2).
 - c. Complementary analysis to assess the association of Finished Consultant Episodes (FCEs) for Dental Extractions with both deprivation and DA in children aged 4 years and under.
3. To describe the shape of the relationship (whether linear or non-linear) between local deprivation and DA in children aged 5 years and under in England, and to examine the modifying effect of covariates (Paper 3).
 - a. To calculate rates of DA and to assess whether the shape of the relationship between local deprivation (lower-tier level) and DA rates follows a linear or non-linear pattern.



- b. To examine the modifying effect of disease level (caries prevalence), ethnicity, family profile and dentist-to-population ratio on the relationship between deprivation and DA.

2.2 Methodology

Study 1

2.2.1 Analysis of child oral health inequalities in England, Wales and Northern Ireland.

2.2.1.1 Data

Dental caries

Data were from the 2013 CDH survey in England, Wales and Northern Ireland. It was a cross-sectional representative survey of children aged 5, 8, 12 and 15 attending state and independent schools (Anderson, 2015). For this study, dental caries was measured by:

- a. Prevalence (%dmft/DMFT>0) of 'obvious decay' and 'clinical decay' experience in primary and permanent teeth, indicated by the proportion of children with at least one affected tooth.
- b. Severity (dmft/DMFT) of 'obvious decay' and 'clinical decay' experience in primary and permanent dentition indicated by the mean number of teeth affected.



The CDH survey describes 'obvious decay experience' as caries into dentine, plus the number of teeth restored or extracted due to decay. In addition to these, 'clinical decay experience' also includes caries affecting enamel (Pitts *et al.*, 2015).

Deprivation

Deprivation was measured by the Index of Multiple Deprivation (IMD), reported for the first time in the 2013 CDH survey (2010 for England and Northern Ireland; 2011 for Wales). The survey allocated children to one of the quintiles of deprivation in their corresponding country based on their place of residence.

2.2.1.2 Study population

Children who participated in the 2013 CDH survey (a total of 9,866 children) aged 5 and 8 years old for the analysis of primary dentition; and children 8, 12 and 15 years old for the analysis in permanent dentition.

2.2.1.3 Statistical analysis

Descriptive analyses were carried out to report the distribution of dental caries experience across deprivation categories. First, prevalence ratios (PR) for dental caries were calculated using unadjusted Poisson regression models (Mitchell, 2012). PR indicate how likely a person in each category is to have experienced the outcome (i.e. dental decay) compared to the reference group (i.e. least deprived). For example, in this study a PR of 1.74 for the most deprived category



suggests that children in this category are 1.74 times more likely to have experienced dental decay compared to the least deprived group.

Second, negative binomial regression models were used to determine the number of times that the mean number of teeth affected was greater in each category compared to the reference group (i.e. least deprived). These could be interpreted as Rate Ratios (RR), in this study a ratio of the mean number of affected teeth. Negative binomial regression has the same structure as Poisson but is used when the outcome is over dispersed (UCLA Institute for Digital Research & Education, 2021). As an example, in this study a RR of 2.65 for the most deprived quintile suggests that the mean number of teeth affected in this category was 2.65 times greater than that of the least deprived group.

Third, the relative index of inequality (RII) was calculated in order to compare inequalities. The RII is a regression-based summary measure of inequality; its interpretation is similar to PR and RR but differs in that RII represents the relative difference between the hypothetical least deprived and most deprived group while considering all deprivation categories and population size in each category (WHO, 2013). The RII is calculated by ranking the population subgroups (categories) from the most disadvantaged (rank 0) to the least disadvantaged (rank 1). The ranking is then weighted accounting for the proportional distribution of population within each subgroup; next the cumulative population distribution and the midpoint of the range of the cumulative population distribution are calculated. An example of how these values are obtained is presented in **Appendix I**. The outcome is then regressed (employing a statistical model) against the midpoint of the range of the cumulative population distribution, for



each category, and the RII is generated by dividing the predicted values of the two extremes (rank 0 and rank 1) (WHO, 2013). For this analysis, the RII was calculated using the generalized linear model.

When categories are ranked from the most disadvantaged (rank 0) to the least disadvantaged (rank 1), a RII value higher than 1 represents greater prevalence of the outcome in the most deprived groups (WHO, 2013). For instance, in this study a RII of 2.18 suggests that those in the hypothetical top of deprivation distribution (most deprived) are 2.18 times more likely to experience the outcome (i.e. prevalence of dental caries) than those in the hypothetical bottom (least deprived). The RII has been widely used to evaluate inequalities in dental health (Blair *et al.*, 2013; Capurro *et al.*, 2015).

Calculations for these analyses considered the sample weight and 95% confidence intervals (CI) were reported for all estimates. Analyses were carried out using STATA version 13.



Study 2

2.2.2 Analysis of the variations in child dental attendance and its association with deprivation

2.2.2.1 Data

Dental attendance

Data was from the NHS Dental Statistics for England Annual Report 2016/17 (Annex 4: Child patients seen by age), available to the public domain on the NHS Digital website (NHS Digital, 2017). The report provides a series of datasets containing information on the number of patients seen by a NHS dentist, NHS dental activity, number of clinical treatments, number and type of dentist. The data is shown by geographic regions, NHS Regions, Clinical Commissioning Groups (CCG) and Local Authority (LA). It also provides an estimate of the overall population by both, age and area.

The dataset employed for this study contained the number of children seen for every year of age (0 to 17) broken down by geographic regions. Data was taken from the 12 months to June 2017 and by upper-tier LA. Child population data (mid-2015 population estimate provided by the Office for National Statistics) was also contained in the dataset. It was the first time that NHS Statistics provided the number of children seen for every year of age. The name of every LA was identified using “Annex 2 (Sub-national)”.



Socio-economic deprivation

Data was from the English Indices of Deprivation 2015 available on the Local Government website (Department for Communities and Local Government, 2015b). The index is a combination of measures of deprivation for small areas of similar size called Lower-layer Super Output Areas (LSOAs) produced by the Office for National Statistics with the purpose of facilitating the calculation of the indices. The index ranks LSOAs from 1 (most deprived) to (32,844 least deprived). The English Indices of Deprivation are available by LSOA level and higher-level geographies. The index is based on 37 indicators grouped in seven domains which are combined using the following weights:

- 1) Income deprivation (22.5%)
- 2) Employment Deprivation (22.5%)
- 3) Education, Skills and Training Deprivation (13.5%)
- 4) Health Deprivation and Disability (13.5%)
- 5) Crime (9.3%)
- 6) Barriers to Housing and Services (9.3%)
- 7) Living Environment Deprivation (9.3%)

“File 11: upper-tier local authority summaries” was used for this study. This dataset contains summary measures of Index of Multiple Deprivation (IMD) for every upper-tier LA which includes county councils, London Boroughs, unitary authorities and metropolitan districts summing up 152 upper-tier LAs. Every



measure is presented as score and rank. Data is ranked from 1 (most deprived) to 152 (least deprived) with higher scores corresponding to the most deprived areas. For this study, deprivation was measured by:

a. IMD Average Score which represents the average of LSOA scores in a larger area after weighting the population. It differs from the average rank (which averages the combined ranks for the LSOAs in a larger area) in that more deprived LSOAs will tend to have more extreme scores compared to ranks. Therefore, areas that are highly polarised will tend to have a higher average score than the average rank.

Additionally, two measures were considered:

b. IMD Proportion of LSOAs in most deprived 10% nationally. Contrary to the average score, it focuses only on the most deprived LSOAs. The measure shows the proportion of a larger area with LSOAs that are in the most deprived 10% of LSOAs nationally. Larger areas that have no LSOAs in the most deprived 10% have a score of 0.

c. Income of deprivation affecting Children Index (IDACI) Average Score. It is a component of the IMD (Income deprivation domain) for the proportion of children from 0 to 15 years living in income deprived households.

2.2.2.2 Study population

It included 0 to 5 year-old children (a total of 1,563,416 children) who attended NHS England dental services from July 2016 to June 2017, irrespective of whether this was for a check-up, treatment or unscheduled care. Data from



hospital and private dental services were not included. Individual children were included once only in the dataset, irrespective of the number of courses of treatment reported. Age was reported as the child's age at the last day of the 12-month period and residence was based on the location of the dental service.

There was a total of 151 LAs; the Isles of Scilly were not included as there was no data in the 2016/17 NHS Dental Statistics for England Annual Report.

2.2.2.3 Statistical analysis

First, rates of DA were obtained by age category, by dividing the number of children who attended dental services within a LA by the child population for that LA in the relevant age group, expressed as a percentage of the population for each LA. Pivot tables were created to group the number of children by age category and by regions. Calculations were carried out using MS Excel 2016.

Rates were calculated for the following groups of age:

- a. Children aged 5 years old and under (1,563,416 children). Recorded as age 0 to 5 in the dataset. These children had not reached their sixth birthday by June 2017.
- b. Children aged 1 year old and under (155,308 children). This group included children from the above category, recorded as age 0 and 1 in the dataset. It represented those who reached their first birthday but not their second birthday by June 2017. Some of these children, therefore, may have first attended a NHS dental practice only after their first birthday. This indicator is likely to produce a higher rate than the true rate of children visiting the dentist before that date.



c. Children under 1 year old (18,359 children). Recorded as age 0 in the NHS data, these children had not yet reached their first birthday by June 2017. All children in this category could be regarded as having attended a NHS dental practice before the age of 1 year but this indicator will produce a smaller rate than the true rate of children who have visited the dentist before this age, as it excludes those who both attended the dentist before their first birthday and subsequently reached this age in the year to June 2017.

Second, a Spearman's (r_s) or Spearman's ρ (ρ) assessed the strength of the association between LA deprivation and DA rates. The Spearman test is a non-parametric test which assesses the association between two variables. It calculates the rank correlation coefficient and is similar to the Pearson correlation coefficient r but it differs in that the Spearman's test can be used regardless of the distribution of the data and does not assess specifically linear association (Altman, 1991).

Third, two regression-based summary measures of inequalities, the Slope Index of Inequality (SII) and Relative Index of Inequality (RII) were used to examine and estimate the magnitude of inequalities. The values of SII and RII are interpreted as the hypothetical absolute and relative difference, respectively, between the least deprived and the most deprived groups, in this case between the least and most deprived LAs. The SII measures the difference between the most and the least deprived group, taking into account all other deprivation groups and the population size. The RII (described in [Section 2.2.1.3](#)) measures the probability of an outcome for the most disadvantaged group compared to the least disadvantaged taking into account all deprivation categories and the size of the



population (WHO, 2013). The SII and RII are methodologically appropriate for this study because they consider the sample size of each socioeconomic group, in this case LAs. The SII and RII measures have been commonly used in health research to measure absolute and relative inequalities, respectively (Hosseinpour *et al.*, 2016).

The calculation of the SII is similar to the RII (described in [Section 2.2.1.3](#)) but differs in that the SII is obtained from the difference between the predicted values of the two extreme ranks (rank 0 and rank 1), in other words, it represents the difference between the lowest and highest deprivation groups (i.e. LAs in this study) while taking into account the whole distribution of the population according to deprivation. An example of values considered for the calculation of RII and SII is shown in [Appendix I](#). When categories (i.e. LAs) are ranked from the most disadvantaged to the least disadvantaged, a positive value would suggest a greater prevalence of the outcome in the least disadvantaged group while a negative value would indicate a higher prevalence in the most deprived group (WHO, 2013). In this study, a SII of -0.02 suggests a two-percentage point difference in the outcome (DA rate) across the deprivation distribution; suggesting DA was higher in the most deprived LAs. Whereas a RII of 2.1 suggests that the outcome in the most deprived LA, was 2.1 higher than the least deprived LA.

Two additional analyses were carried out considering all children 0 to 17 and adults respectively, in order to have a comparison with rates in younger children. Data for adults was also from “Annex 4: Patients Seen” for the period to 30th of June 2017.



Statistical significance was set at 0.05. The analyses were carried out using Stata 14 (StataCorp., 2015).

2.2.2.4 Complementary analysis: association of DA and dental extractions

2.2.2.4.1 Data and statistical analysis

Data for dental extractions (DE) was from 2016/17 Hospital Episode Statistics (Dental Public Health Intelligence Programme, 2017) which reports FCEs (the period that a patient is under a single hospital consultant care) of children for DE in NHS hospitals across England. Data is broken down by lower-tier LA of child's residence and for age. Data for this study reported the number of FCEs (all diagnosis) presented as percentage of the population in 0 to 4-year-old children.

Data for DE was converted to upper-tier LA, this in order to match DA data which at the time was only available by upper-tier LA. Rates of DA were calculated for children aged 0 to 4 years old, using data from NHS Dental Statistics 2016-17 Annual report ("Annex 4: Child patients seen by age") (NHS Digital, 2017). Deprivation was measured by IMD Average score retrieved from the English Indices of Deprivation 2015 (Department for Communities and Local Government, 2015b).

A Spearman's test assessed the association of DE with both deprivation and DA. The SII and RII further examined the magnitude of inequalities.

Study 3

2.2.3 Analysis on deprivation and child dental attendance in England: exploring the shape of the association and moderators

2.2.3.1 Data

Dental attendance

Data was from NHS administrative data obtained through a Freedom of Information request. This contained the number of children aged 5 years and under, seen at least once by an NHS primary care dentist from April 2016 to March 2017 in each lower-tier LA as well as the child population for each LA as estimated by the Office for National Statistics.

Socio-economic deprivation data

Deprivation level of each lower-tier LA was determined by IMD Average Score from the English Indices of Deprivation 2015 (Department for Communities and Local Government, 2015b) (described in [Section 2.2.2.1](#)). The “File 10: Local Authority District Summaries” was used for this study. This dataset contains measures of IMD for every lower-tier LA which includes lower-tier non-metropolitan districts, London boroughs, unitary authorities and metropolitan districts summing up 317 LA districts.



Ethnicity

Data on ethnicity was from the 2011 Census ('Ethnic group local authorities in England and Wales'), reported by the Office for National Statistics (2011). Ethnicity was determined by the percentage of White population in each lower-tier LA. This group included English, Welsh, Scottish, Northern Irish, Irish, Gypsy or Irish Traveller, British and any other White group.

Family structure

Data on family structure was also from the 2011 Census ('Household composition') (Office for National Statistics, 2011). It was determined by the percentage of single parents taken from the average of the percentage of lone parents with one dependent child and lone parents with two or more dependent children.

Dental caries

Data was from the third National Dental Health Survey for 5-year-old children (PHE, 2016) undertaken in the academic year 2014-15 in children from mainstream and state-funded schools in England. Dental caries was indicated by the prevalence of dental caries (obviously decayed, missing or filled teeth (% $d_3mft > 0$) in 5 year olds.

Dentist-to-population ratio

Data was from NHS Digital data (NHS Digital, 2018b). This represented the number of primary care dentists with NHS activity, including General Dental



Service, Personal Dental Services, Mixed and Trust-Led Dental Services per 100,000 population during the period April 2017 to March 2018.

2.2.3.2 Population

It included children aged from 0 to 5 years OLD (a total of 1,525,146 children) who attended NHS England dental services for the 12 months to March 2017. Attendance was irrespective of whether this was for a check-up, treatment or unscheduled care. Data from hospitals and private dental services were not included. There were a total of 326 lower-tier and unitary local authorities.

2.2.3.3 Statistical analysis

First, DA rates were calculated for every LA. Child population data (mid-2015 population estimate) was obtained from the Office for National Statistics (2019). Second, fractional polynomial (FP) regression models were used to investigate the shape of the relationship (whether linear or curvilinear) between deprivation and DA. FP regression models evaluate whether the effect of a continuous variable (i.e. in this case deprivation) on the outcome (i.e. dental attendance) is better modelled by a linear function or by a non-linear member of the class of FP functions (Mitchell, 2012). The null hypothesis of linearity was tested against alternative regression functions and the best fitting model was selected.

Models with FP functions are conventionally fitted for a default set of power terms (-2 , -1 , -0.5 , 0 , 0.5 , 1 , 2 , and 3), with 0 representing the natural logarithm of the predictor variable. These power terms yield the possible shapes that the association between the outcome (dental attendance) and the predictor variable



(deprivation) can take. The analysis fitted 44 different models involving the power terms mentioned above (alone and in pairs), from which the statistical estimates of the linear model, best fitting first order model ($m=1$) and best fitting second-order model ($m=2$) were reported.

To identify the most appropriate model, the deviance of the best fitting second-order model ($m=2$) was compared with that of the linear model. The linear model would be selected if the best fitting second order model did not provide a statistically better fit ($p>0.05$) than the linear model. However, if the second order model would provide a better fit than the linear model and this was statistically significant ($p<0.05$), then this would be compared with the best fitting first order model ($m=1$). The best fitting second-order model ($m=2$) would be preferred to the first order model ($m=1$) if provided a statistically better fit. Otherwise, the first order model ($m=1$) is selected. STATA's 'fracpoly' command was used to fit the FP models and select the best fitting model. The local polynomial smoothing was used to visualise the linear and best fitting FP model.

Third, in order to examine the effect of possible variables, multivariable regression models were adjusted for covariates (ethnicity, single parenthood, dental caries prevalence and dentist-to-population ratio). To identify the moderators of the relationship between DA and deprivation, interaction terms for ethnicity, single parenthood, prevalence of dental caries and dentist-to-population ratio were added to the final regression model (Royston, 2017). Adjusted marginal effects were estimated after controlling for other covariates. Predicted average marginal effects were visualised using STATA command

'marginsplot'. Statistical significance was set at 0.05. The analysis was carried out using Stata 14 (StataCorp., 2015).

2.3 Results

Study 1

2.3.1 Greater child oral health inequality in England compared to Wales and Northern Ireland, despite lower disease level.

Table 2.1 describes the population of the study by age group, country and IMD. Almost 51% of the population were male. The majority of study children in England fall in the most deprived category.

Generally, children in more deprived categories were more likely to experience decay (**Table 2.2** and **2.3**). For example, 27.1% of children in the least deprived category in England experienced obvious decay in their primary teeth, increasing with deprivation to 47% in the most deprived quintile. Similarly, the mean number of primary teeth with obvious decay in England was 0.58 in the least deprived quintile compared to 1.49 in the most deprived quintiles. In permanent teeth, 17% of children in the least deprived category experienced obvious decay increasing to 38.9% in the most deprived category, whereas the mean number with obvious decay was 0.41 in the least deprived category increasing to 1.09 in the most deprived category. Overall, the prevalence and severity of dental caries was lower in England compared to Wales and Northern Ireland.



PR and RRs were generally higher in more deprived categories (**Table 2.4** and **2.5**). For example, children in the most deprived category in England were 2.3 times more likely to have experienced 'obvious' dental decay in permanent dentition compared to those from the least deprived category (PR=2.3, 95% CI=1.71, 3.09; $p<0.001$). The RR for mean number of affected teeth in this deprivation category was 2.65 times greater than that of the least deprived group (RR=2.65, 95% CI=1.79, 3.92; $p<0.001$).

Overall, the values of RIs were significant for most caries indicators, except for the absence of significant inequalities in Northern Ireland for the prevalence of 'obvious' and 'clinical' decay in permanent teeth, though the most deprived categories still had the highest prevalence of dental caries. The RIs for all caries indicators for England were larger than those reported for Wales or Northern Ireland. The smallest inequality for England was for the prevalence of 'clinical' decay in primary teeth the prevalence was 1.7 times higher compared to the least deprived group (RI=1.71, 95% CI=1.33, 2.22; $p<0.001$) while the largest was for the mean number of permanent teeth with 'obvious' decay which was 3.7 times greater compared to the least deprived groups. (RI=3.66, 95% CI=2.25, 5.95; $p<0.001$).

Table 2.1. Characteristics of the population study (Source: Child Dental Health Survey 2013, England, Wales and Northern Ireland).

	Number	Proportion %
Sex		
Male	4812	50.8
Female	5054	49.2
Age		
5-year olds	2549	26.3
8-year olds	2367	24.6
12-year olds	2532	23.8
15-year olds	2418	25.3
Country		
England	5642	91.4
Wales	2,151	5.1
Northern Ireland	2,073	3.5
IMD (England)		
Most deprived quintile	2,214	31.3
2nd Quintile	1,073	19.5
3rd Quintile	756	16.8
4th Quintile	724	17.1
Least deprived quintile	649	15.3
IMD (Wales)		
Most deprived quintile	627	21.5
2nd Quintile	496	25.5
3rd Quintile	358	18.6
4th Quintile	363	20
Least deprived quintile	167	14.3
IMD (Northern Ireland)		
Most deprived quintile	360	18.6
2nd Quintile	496	23.1
3rd Quintile	563	24.9
4th Quintile	395	21
Least deprived quintile	208	12.4

Proportions are weight adjusted

**Table 2.2. Prevalence of dental caries experience (% of children affected) with 95% CI according to deprivation, by country (Source: Child Dental Health Survey 2013, England, Wales and Northern Ireland).**

IMD	England	Wales	Northern Ireland
Obvious Decay (Primary dentition)			
Least deprived	27.1 (20.8-34.3)	33.2 (28.0-38.9)	35.9 (24.7-48.8)
2nd Quintile	28.7 (21.9-36.7)	43.8 (35.3-52.8)	44.8 (35.2-54.8)
3rd Quintile	35.3 (28.2-43.1)	44.9 (35.2-55.0)	46.9 (40.3-53.6)
4th Quintile	44.5 (39.1-50.0)	55.5 (41.4-68.7)	46.8 (38.6-55.3)
Most deprived	47 (42.5-51.5)	59.3 (46.4-71.0)	62.4 (53.3-70.7)
Clinical Decay (Primary dentition)			
Least deprived	44.9 (36.7-53.5)	54.7 (41.6-67.2)	48.8 (35.3-62.6)
2nd Quintile	45.8 (38.2-53.5)	58.9 (47.8-69.1)	49.9 (39.6-60.1)
3rd Quintile	48 (40.8-55.2)	59.6 (47.2-71)	55 (48.2-61.6)
4th Quintile	57.2 (50.7-63.3)	61.8 (49.4-72.9)	56.6 (47.4-65.4)
Most deprived	63.6 (57.2-69.6)	70.3 (55.5-81.8)	75.5 (64.4-84)
Obvious Decay (Permanent dentition)			
Least deprived	17 (12.8-22.1)	28 (12.1-52.4)	48.4 (32.4-64.7)
2nd Quintile	21.6 (17.8-26.0)	38.9 (29.2-49.5)	45 (37.8-52.4)
3rd Quintile	26.1 (20.6-32.6)	43.1 (32.3-54.6)	44.2 (36.6-52.2)
4th Quintile	32.4 (25.9-39.6)	51.7 (42.4-60.9)	50.4 (41.8-59)
Most deprived	38.9 (33.4-44.8)	56 (50.3-61.5)	63 (52-72.9)
Clinical Decay (Permanent dentition)			
Least deprived	36.3 (28.3-45.0)	48 (28-68.6)	60.9 (42.8-76.4)
2nd Quintile	41.7 (33.7-50.1)	61.8 (49.9-72.5)	55.8 (46.9-64.4)
3rd Quintile	48.8 (41.7-56)	68.6 (56-78.9)	56.1 (47.3-64.5)
4th Quintile	53.3 (46.4-60.1)	79.1 (69.2-86.4)	65 (57.4-71.8)
Most deprived	60.2 (51.8-68.0)	73.2 (65.1-80.0)	72.4 (64-79.5)

Table 2.3. Severity of dental caries experience (mean number of teeth affected, with 95% CI) according to deprivation, by country (Source: Child Dental Health Survey 2013, England, Wales and Northern Ireland).

IMD	England	Wales	Northern Ireland
Obvious Decay (Primary dentition)			
Least deprived	0.58 (0.74, 0.74)	1.16 (1.49, 0.74)	1.21 (1.82, 0.74)
2nd Quintile	0.87 (1.15, 1.15)	1.49 (1.94, 1.15)	1.29 (1.60, 1.15)
3rd Quintile	1.02 (1.26, 1.26)	1.73 (2.32, 1.26)	1.47 (1.71, 1.26)
4th Quintile	1.39 (1.59, 1.59)	2.27 (3.28, 1.59)	1.49 (1.87, 1.59)
Most deprived	1.49 (1.68, 1.68)	2.03 (2.73, 1.68)	2.14 (2.68, 1.68)
Clinical Decay (Primary dentition)			
Least deprived	1.21 (1.53, 0.74)	2.24 (3.06, 0.74)	1.69 (2.39, 0.74)
2nd Quintile	1.4 (1.81, 1.15)	2.07 (2.42, 1.15)	1.68 (2.18, 1.15)
3rd Quintile	1.58 (1.89, 1.26)	2.57 (3.39, 1.26)	1.97 (2.30, 1.26)
4th Quintile	2.13 (2.53, 1.59)	2.86 (3.98, 1.59)	2.08 (2.60, 1.59)
Most deprived	2.5 (2.93, 1.68)	2.86 (3.70, 1.68)	3.11 (3.61, 1.68)
Obvious Decay (Permanent dentition)			
Least deprived	0.41 (0.56, 0.74)	0.68 (1.27, 0.74)	1.45 (2.06, 0.74)
2nd Quintile	0.52 (0.70, 1.15)	1.02 (1.39, 1.15)	1.35 (1.71, 1.15)
3rd Quintile	0.64 (0.79, 1.26)	1.19 (1.65, 1.26)	1.45 (1.82, 1.26)
4th Quintile	0.87 (1.06, 1.59)	1.52 (1.93, 1.59)	1.82 (2.14, 1.59)
Most deprived	1.09 (1.29, 1.68)	1.76 (2.27, 1.68)	3.03 (3.85, 1.68)
Clinical Decay (Permanent dentition)			
Least deprived	1.18 (1.57, 1.15)	1.44 (2.34, 1.15)	2.6 (3.75, 1.15)
2nd Quintile	1.4 (1.88, 2.15)	2.35 (3.16, 2.15)	2.43 (3.24, 2.15)
3rd Quintile	1.49 (1.80, 3.15)	2.38 (2.82, 3.15)	2.12 (2.61, 3.15)
4th Quintile	1.8 (2.13, 4.15)	3.27 (4.26, 4.15)	2.83 (3.57, 4.15)
Most deprived	2.35 (2.79, 5.15)	3.09 (3.58, 5.15)	4.01 (4.84, 5.15)



INITIAL EXPLORATORY RESEARCH

Table 2.4. Prevalence Ratio (PR) (percentage of children affected) and Relative Index of Inequalities (RII) for dental caries experience, with 95% CI (Source: Child Dental Health Survey 2013, England, Wales and Northern Ireland).

Index of Multiple Deprivation	England		Wales		Northern Ireland	
	PR	P Value	PR	P Value	PR	P Value
Obvious Decay (Primary dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.06 (0.71, 1.58)	0.77	1.32 (1.01, 1.73)	0.05	1.25 (0.84, 1.86)	0.27
3rd Quintile	1.30 (0.97, 1.75)	0.07	1.35 (1.00, 1.82)	0.05	1.31 (0.94, 1.81)	0.11
4th Quintile	1.64 (1.27, 2.13)	<0.001	1.67 (1.26, 2.20)	0.001	1.31 (0.90, 1.89)	0.15
Most deprived quintile	1.74 (1.32, 2.29)	<0.001	1.78 (1.45, 2.20)	<0.001	1.74 (1.26, 2.39)	0.001
RII	2.18 (1.64, 2.88)		2.01 (1.52, 2.66)		1.64 (1.21, 2.22)	
P Value	<0.001		<0.001		0.002	
Clinical Decay (Primary dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.02 (0.81, 1.28)	0.88	1.08 (0.90, 1.29)	0.40	1.02 (0.76, 1.36)	0.89
3rd Quintile	1.07 (0.86, 1.32)	0.55	1.09 (0.76, 1.57)	0.63	1.13 (0.85, 1.48)	0.39
4th Quintile	1.27 (1.03, 1.57)	0.02	1.13 (0.92, 1.39)	0.24	1.16 (0.84, 1.60)	0.36
Most deprived quintile	1.42 (1.15, 1.75)	0.002	1.28 (1.14, 1.44)	<0.001	1.55 (1.17, 2.04)	0.003
RII	1.71 (1.33, 2.20)		1.34 (1.13, 1.60)		1.68 (1.23, 2.29)	
P Value	<0.001		0.002		0.001	
Obvious Decay (Permanent dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.27 (1.03, 1.59)	0.03	1.39 (0.63, 3.08)	0.40	0.93 (0.64, 1.36)	0.71
3rd Quintile	1.54 (1.10, 2.16)	0.13	1.54 (0.75, 3.15)	0.22	0.91 (0.64, 1.31)	0.62
4th Quintile	1.91 (1.37, 2.67)	<0.001	1.85 (0.84, 4.08)	0.12	1.04 (0.69, 1.56)	0.84
Most deprived quintile	2.30 (1.71, 3.09)	<0.001	2.00 (0.92, 4.33)	0.08	1.30 (0.90, 1.89)	0.16
RII	2.86 (2.02, 4.05)		2.04 (1.25, 3.32)		1.51 (1.00, 2.28)	
P Value	<0.001		0.006		0.05	
Clinical Decay (Permanent dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.15 (0.96, 1.38)	0.13	1.29 (0.81, 2.03)	0.26	0.92 (0.70, 1.20)	0.52
3rd Quintile	1.35 (1.08, 1.67)	0.008	1.43 (0.93, 2.19)	0.10	0.92 (0.70, 1.22)	0.56
4th Quintile	1.47 (1.16, 1.86)	0.002	1.65 (1.03, 2.63)	0.04	1.07 (0.78, 1.45)	0.68
Most deprived quintile	1.66 (1.28, 2.15)	<0.001	1.53 (1.01, 2.3)	0.04	1.19 (0.88, 1.60)	0.25
RII	1.89 (1.35, 2.64)		1.48 (1.16, 1.89)		1.38 (0.98, 1.94)	
P Value	<0.001		0.003		0.07	

Table 2.5. Rate Ratio (RR) for mean number of affected teeth and Relative Index of Inequalities (RII) for dental caries experience, with 95% CI (Source: Child Dental Health Survey 2013, England, Wales and Northern Ireland).

Index of Multiple Deprivation	England		Wales		Northern Ireland	
	RR	P Value	RR	P Value	RR	P Value
Obvious Decay (Primary dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.50 (0.94, 2.40)	0.09	1.29 (0.89, 1.86)	0.17	1.06 (0.62, 1.81)	0.83
3rd Quintile	1.75 (1.21, 2.54)	0.003	1.50 (0.92, 2.43)	0.10	1.21 (0.73, 2.01)	0.46
4th Quintile	2.39 (1.79, 3.21)	<0.001	1.96 (1.24, 3.09)	0.006	1.23 (0.71, 2.13)	0.46
Most deprived quintile	2.57 (1.86, 3.55)	<0.001	1.76 (1.20, 2.57)	0.006	1.76 (1.06, 2.91)	0.03
RII	3.05 (2.16, 4.32)		2.18 (1.21, 3.93)		1.85 (1.14, 2.98)	
P Value	<0.001		0.01		0.01	
Clinical Decay (Primary dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.16 (0.81, 1.65)	0.41	0.92 (0.68, 1.26)	0.60	0.99 (0.65, 1.53)	0.98
3rd Quintile	1.30 (0.95, 1.80)	0.10	1.15 (0.65, 2.03)	0.62	1.16 (0.78, 1.73)	0.45
4th Quintile	1.76 (1.27, 2.43)	0.001	1.28 (0.97, 1.69)	0.08	1.23 (0.76, 1.99)	0.40
Most deprived quintile	2.07 (1.51, 2.84)	<0.001	1.28 (1.02, 1.60)	0.36	1.84 (1.22, 2.77)	0.004
RII	2.76 (1.87, 4.08)		1.53 (1.15, 2.03)		2.05 (1.31, 3.20)	
P Value	<0.001		0.005		0.002	
Obvious Decay (Permanent dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.27 (0.91, 1.77)	0.16	1.49 (0.60, 3.75)	0.37	0.93 (0.59, 1.46)	0.75
3rd Quintile	1.54 (1.00, 2.37)	0.05	1.74 (0.71, 4.24)	0.21	1.00 (0.61, 1.65)	1.00
4th Quintile	2.1 (1.39, 3.18)	0.001	2.22 (0.90, 5.46)	0.08	1.25 (0.79, 1.98)	0.33
Most deprived quintile	2.65 (1.79, 3.92)	<0.001	2.57 (0.95, 6.93)	0.62	2.08 (1.28, 3.39)	0.004
RII	3.66 (2.25, 5.95)		2.77 (1.31, 5.85)		2.87 (1.63, 5.04)	
P Value	<0.001		0.01		<0.001	
Clinical Decay (Permanent dentition)						
Least deprived quintile	Reference		Reference		Reference	
2nd Quintile	1.19 (0.89, 1.58)	0.24	1.63 (0.83, 3.21)	0.15	0.94 (0.59, 1.49)	0.78
3rd Quintile	1.27 (0.91, 1.76)	0.15	1.65 (0.95, 2.86)	0.07	0.81 (0.52, 1.27)	0.36
4th Quintile	1.52 (1.08, 2.15)	0.017	2.27 (1.13, 4.55)	0.02	1.09 (0.66, 1.81)	0.74
Most deprived quintile	2.00 (1.37, 2.90)	<0.001	2.14 (1.09, 4.22)	0.03	1.54 (0.95, 2.50)	0.08
RII	2.56 (1.51, 4.36)		2.15 (1.28, 3.61)		1.9 (1.05, 3.43)	
P Value	0.001		0.006		0.03	



Study 2

2.3.2 Variations in dental attendance in England and its association with local area deprivation.

2.3.2.1 Variations by region and local area in England

The rate of DA (2017) in children aged 5 years old and under was 38.1%; rates ranged from 17% in Hackney to 67.5% in South Tyneside. In younger children, the rate was 11.7% in children aged 1 year old and under, ranging from 3.7% in Hackney to 37.6% in South Tyneside. In children under 1 year old, the rate was 2.8%, the corresponding range was 0 in the City of London to 12.3% in South Tyneside. The rate in children under 1 year old was higher than 10% in only two out of 151 LAs. **Table 2.6** presents the 10 local authorities with the highest and lowest DA rates in 2017.

Generally, rates were higher in the North of the country. In children aged 5 years old and under, rates varied from 29.1% in the region of London to 47.1% in the North East. In those aged 'one year old and under' rates ranged from 7.8% in London to 21.9% in the North East; and from 1.6% in London to 5.6% in the North West in those children 'under 1 year old' (**Figure 2.1**).

2.3.2.2 Comparing changes in DA rates from 2017 to 2018

Generally, DA rates remained steady. In children aged 5 years and under, the rate was 38.7% compared to 38.1% in the previous year. Rates ranged from 17.7% to 66.1% (compared to 17 to 67.5% from the previous year). In children aged one year and under, DA rates increased from 11.7% to 13%, ranging from



4.5 to 35.3% (compared to 3.7 to 37.6% from the previous year). Whereas the rate in children under one year increased from 2.8 to 3.1%; ranging from 0.8 to 11.4% to (compared to 0 to 12.3% in the previous year).

South Tyneside persisted with the highest rates of DA in the three age groups. Hackney still had the lowest rates in children aged 5 years and under and in children aged one year and under, whereas Suffolk had the lowest rate in children under one year.

In children aged 5 years and under, the highest increase in the DA rate was 6% in Islington, while the highest decrease was 4.1% in Camden. In younger children, the highest increase was 6% and 7% in children aged one year and under and children under one year, respectively; both in the City of London. Whereas the highest decrease was 2.2% in South Tyneside in children aged one year and under and; 1.9% in Tameside in children under one year old. **Figures 2.2-2.4** show a map of rates of DA across LAs. Maps were produced using Stata 14 (StataCorp., 2015).



INITIAL EXPLORATORY RESEARCH

Table 2.6. The ten local authorities with the highest and lowest rates of dental attendance (2017) in children (Source: NHS Dental Statistics for England, 2016-17).

Children aged 5 years and under		Children aged 1 year and under		Children under 1 year		
Local Authority	Rate %	Local Authority	Rate %	Local Authority	Rate %	
Highest rates	South Tyneside	67.5	South Tyneside	37.6	South Tyneside	12.3
	Rutland	57.7	Tameside	27.2	Tameside	10.6
	York	54.5	Rochdale	24.1	Oldham	9.0
	Cheshire West and Chester	54.0	Stockport	24.1	Stockport	8.3
	Cheshire East	51.4	Newcastle upon Tyne	23.9	Rotherham	8.0
	Trafford	51.3	Stockton-on-Tees	23.8	Rochdale	8.0
	Bath and North East Somerset	51.2	Rotherham	23.7	Bolton	7.4
	Stockton-on-Tees	50.7	Oldham	23.6	Cheshire West and Chester	7.2
	Newcastle upon Tyne	49.7	Cheshire West and Chester	23.3	Bury	6.9
	Rochdale	49.6	Northumberland	23.2	Northumberland	6.8
Lowest rates	Southampton	27.0	Southend-on-Sea	5.8	North East Lincolnshire	0.9
	Enfield	26.4	Tower Hamlets	5.6	Brighton and Hove	0.8
	Newham	25.6	Isle of Wight	5.6	Torbay	0.8
	Merton	23.5	Portsmouth	5.4	Hackney	0.7
	Waltham Forest	22.8	Suffolk	5.3	West Berkshire	0.7
	Kensington and Chelsea	22.4	Havering	4.8	Southampton	0.7
	City of London	21.4	Waltham Forest	4.7	Waltham Forest	0.7
	Westminster	21.0	North East Lincolnshire	4.3	Havering	0.6
	Tower Hamlets	20.9	Southampton	3.9	Isle of Wight	0.5
	Hackney	17.0	Hackney	3.7	City of London	0.0

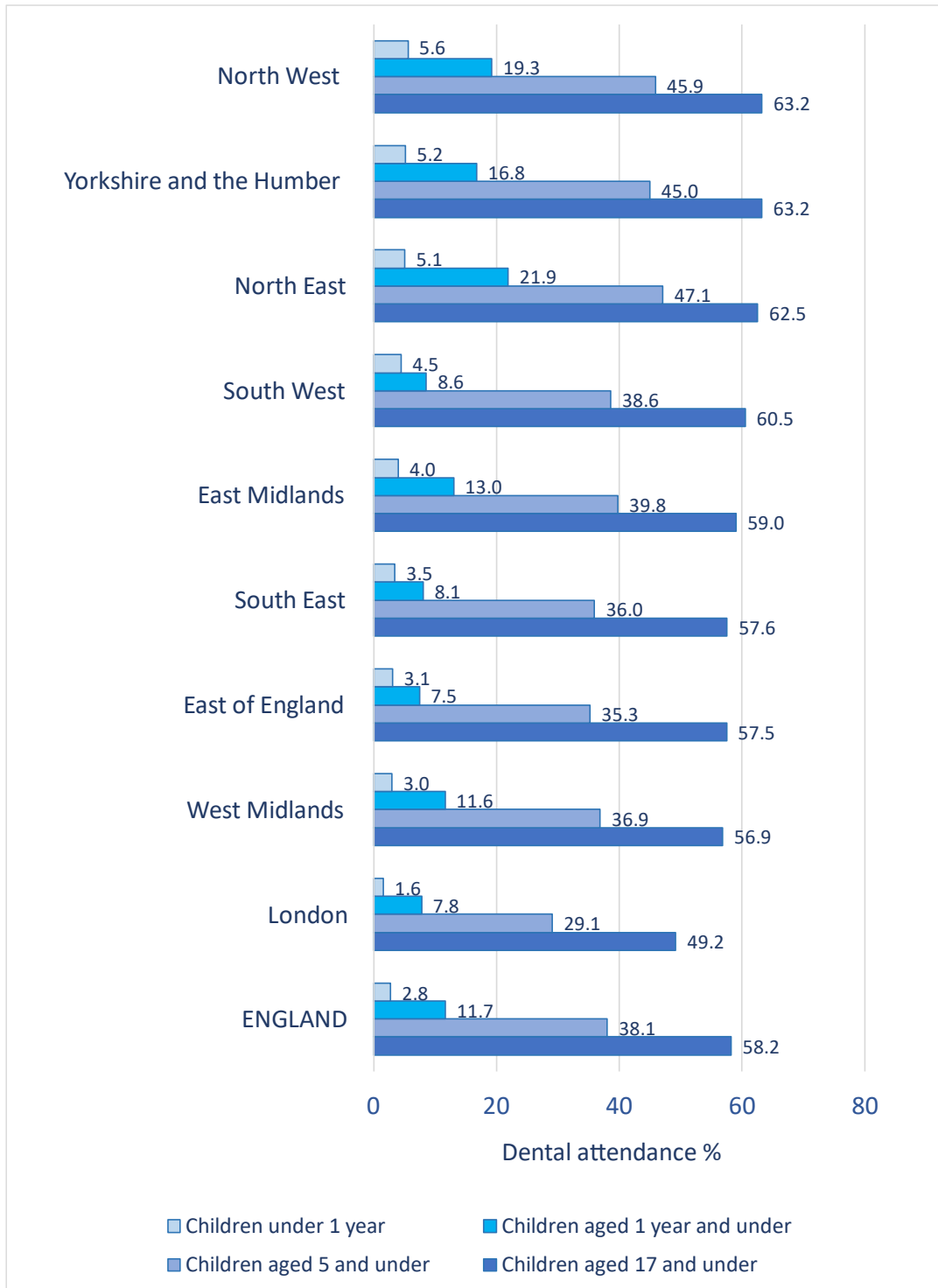


Figure 2.1. Child dental attendance rates (%) in England (2017), by region (Source: NHS Dental Statistics for England 2016-17).

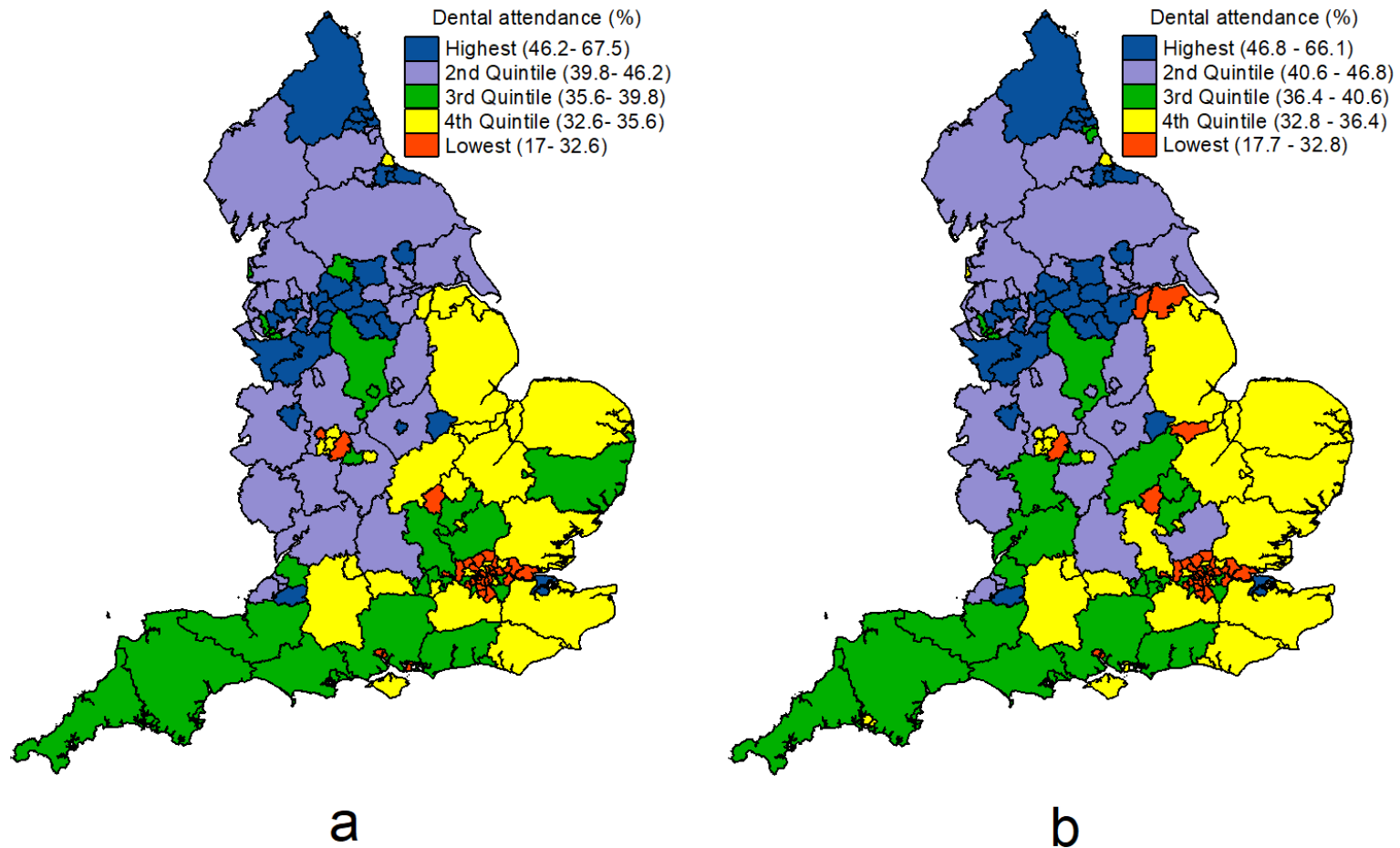


Figure 2.2. Rates of dental attendance (a) 2017; (b) 2018 in children aged 5 years and under (Source: NHS Dental Statistics for England 2016-17; 2017-18).

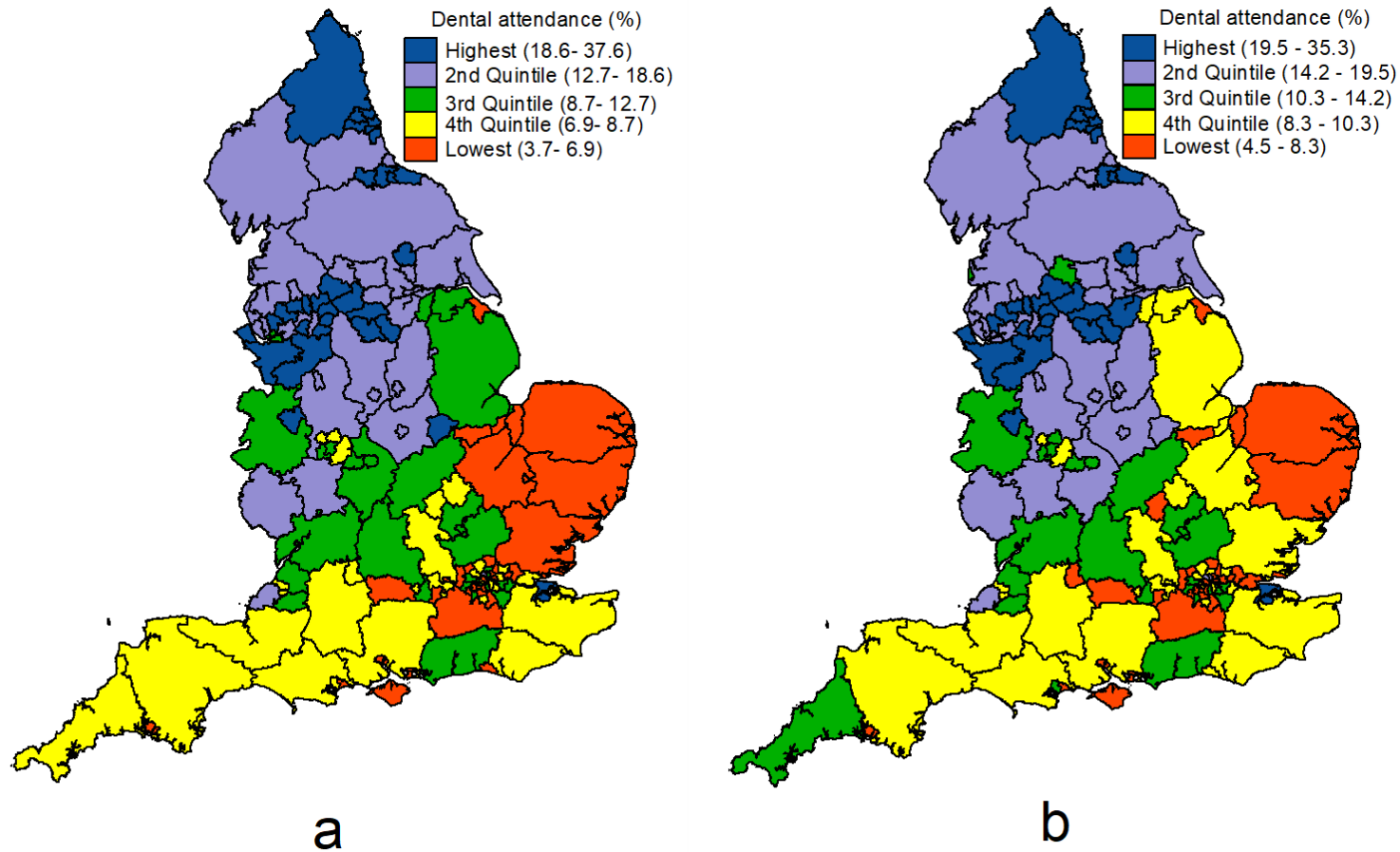


Figure 2.3. Rates of dental attendance (a) 2017; (b) 2018 in children aged 1 year and under (Source: NHS Dental Statistics for England 2016-17; 2017-18).

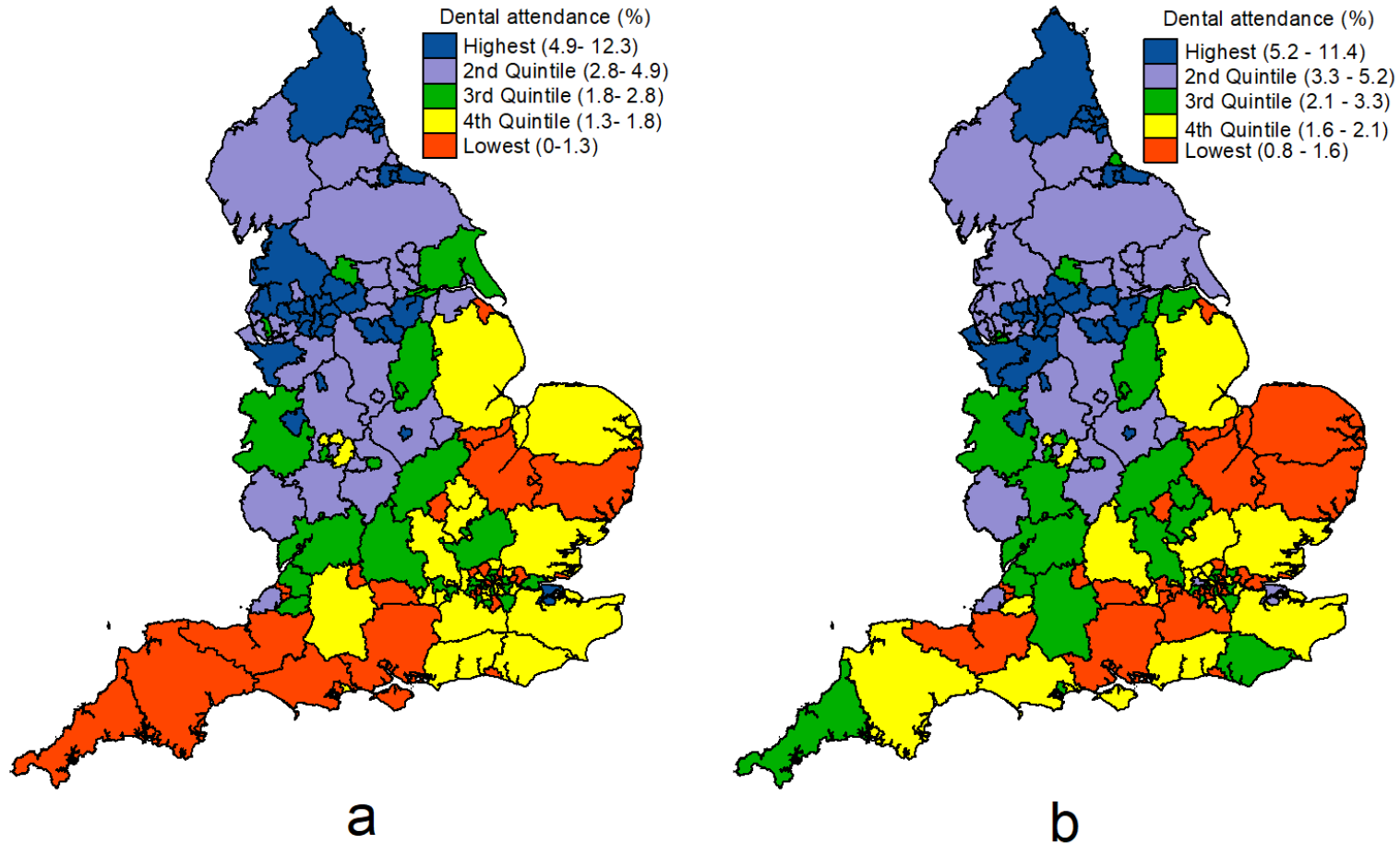


Figure 2.4. Rates of dental attendance (a) 2017; (b) 2018 in children under one year (Source: NHS Dental Statistics for England 2016-17; 2017-18).

2.3.2.3 DA and deprivation

2.3.2.3.1 Children aged 5 years and under

The Spearman test for the association between rates of DA for this group of age and deprivation (IMD Average score) was not statistically significant (Spearman=-0.02; $p=0.78$). There was, however, an inverse relationship between DA and the proportion of LSOAs in the most deprived 10% nationally, although it was weak (Spearman=-0.27; $p=0.001$). DA decreased as the proportion of LSOAs in the most deprived 10% nationally decreased. There was no statistically significant association with IDACI Average Score (Spearman=0.12; $p=0.14$).

2.3.2.3.2 Children aged one year and under

The values of Spearman correlation showed a negative association between rates of DA and deprivation (IMD Average score), although it was weak (Spearman=-0.21; $p=0.010$). The percentage of children seen by a NHS dentist decreased as the level of deprivation decreased (**Figure 2.5**). Similarly, there was also a moderate association with the Proportion of LSOAs in most deprived 10% nationally (Spearman=-0.39; $p<0.001$); DA decreased as the Proportion of LSOAs in most deprived 10% nationally decreased. The association with IDACI Average Score was not statistically significant (Spearman=0.11; $p=0.20$).

2.3.2.3.3 Children under one year

There was also a negative association between DA rates and deprivation (IMD Average score) as suggested by the Spearman test, although it was weak (Spearman=-0.25; $p=0.002$). DA decreased as deprivation decreased (**Figure 2.5**). There was also a moderate association with the Proportion of LSOAs in most deprived 10% nationally (Spearman=-0.42; $p<0.001$); DA decreased as the Proportion of LSOAs in most deprived 10% nationally decreased. The association with IDACI Average Score was not statistically significant (Spearman=-0.16; $p=0.051$).

Table 2.7 shows the percentage of DA by deprivation category. In younger children, rates were higher in the most deprived quintiles. Whereas in children aged 5 years and under and children of all ages the rates were similar across the deprivation groups.

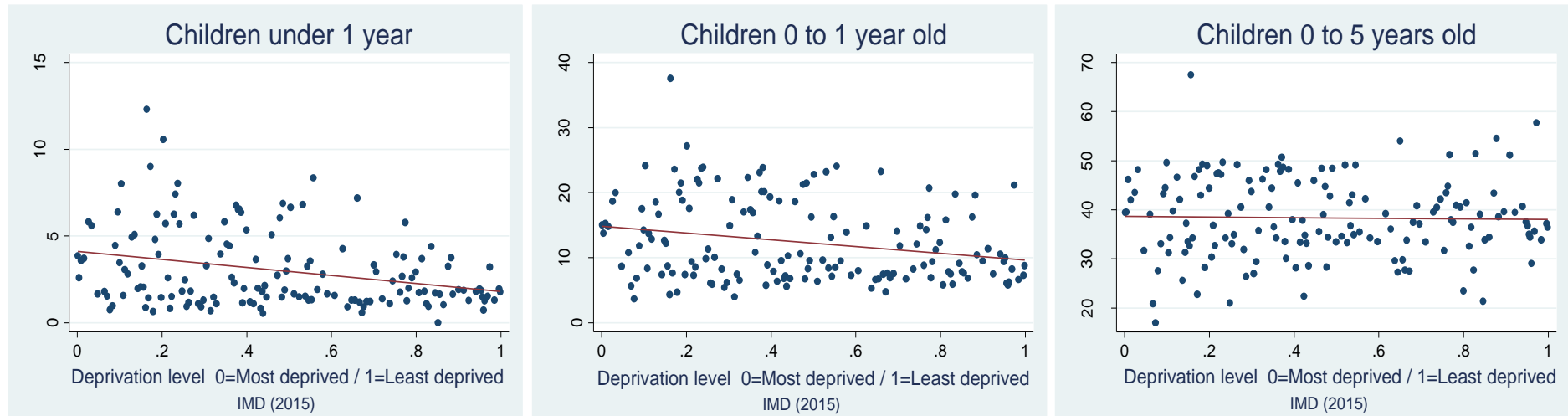


Figure 2.5. Scatter diagram showing the association between dental attendance (2017) and deprivation (IMD 2015) in every local authority (Source: NHS Dental Statistics for England 2016-17).



2.3.2.3.4 Children all ages and adults

Rates of DA in all children (0 to 17 years old) have been reported by NHS statistics (NHS Digital, 2017). Similar to the analysis in children aged 5 years and under, the Spearman correlation did not show a statistically significant association between rates of DA and deprivation. There was, however, an association with the Proportion of LSOAs in the most deprived 10% nationally (Spearman=-0.23; $p=0.0005$), although it was weak. There was not a significant association with IDACI Average Score (Spearman=-0.11; $p=0.18$).

DA rates in adults have been also reported by NHS Digital. In this study, there was a significant relationship between rates of attendance and deprivation (IMD Average score); this association was stronger than in children (Spearman=-0.44; $p<0.001$). There was also an association with IMD Proportion of LSOAs in most deprived 10% nationally (Spearman=-0.55; $p<0.001$). The percentage of adults seen by an NHS dentist decreased as deprivation decreased.

Table 2.7. Rates of dental attendance in England (2017), by IMD quintile (Source: NHS Dental Statistics for England 2016-17).

	Children aged 0 to 17 years old		Children aged 5 years and under		Children aged 1 year and under		Children under 1 year	
	DA %	95% CI	DA %	95% CI	DA %	95% CI	DA %	95% CI
Most deprived	57.4	(53.7, 61.1)	38.1	(34.6, 41.7)	13.9	(11.4, 16.4)	3.7	(2.8, 4.7)
2nd	58.8	(56.4, 61.3)	39.0	(36.0, 42.0)	13.6	(11.1, 16.1)	3.5	(2.6, 4.4)
3rd	58.4	(55.6, 61.2)	38.8	(35.9, 41.6)	13.2	(10.8, 15.6)	3.3	(2.5, 4.2)
4th	57.6	(55.2, 59.9)	37.9	(35.4, 40.3)	11.1	(9.2, 13.0)	2.5	(1.9, 3.2)
Least deprived	59.2	(56.4, 62.0)	38.1	(35.2, 41.0)	10.0	(8.5, 11.6)	1.9	(1.6, 2.3)



2.3.2.4 Variations in DA in younger children

The values of SII and RII for the analysis in children aged 5 years and under was not statistically significant. In younger children, however, the results suggested that DA rate for children under one was significantly higher in more deprived LAs. In children under one, the SII was -0.02 (95% CI=-0.01, -0.04) suggesting that the difference in DA rate between the bottom and top of deprivation distribution was 2 percentage points. The RII of 2.1 (95% CI=1.4, 3.2) suggested that DA rate in the most deprived LA was 2.1 times higher than that of the least deprived LA.

Similar findings were obtained for children aged 1 year and under; the SII was -0.05 (95% CI=-0.02, -0.09) suggesting that the difference in DA rate between the bottom and top of deprivation distribution was 5 percentage points. The RII of 1.5 (95% CI=1.2, 2) suggested that DA rate in the most deprived LA was 1.5 times higher than that of the least deprived LA. **Table 2.8** summarises these results.

The SII and RII analyses were also carried out using data from NHS statistics 2017/18 but it did not show a substantial difference (**Table 2.8**).

Table 2.8. Association between child dental attendance (2017/2018) and deprivation (IMD 2015) (Source: NHS Dental Statistics for England 2016-17; 2017-2018).

	Children aged 5 years and under		Children aged 1 year and under		Children under 1 year	
	2017	2018	2017	2018	2017	2018
	(n=1,563,416)	(n=1,592,452)	(n=155,308)	(n=173,863)	(n=18,359)	(n=20,799)
DA rates % (Range)	38.1 (17.0, 67.5)	38.7 (17.7, 66.1)	11.7 (3.7, 37.6)	13 (4.5, 35.3)	2.8 (0.0, 12.3)	3.1 (0.8, 11.4)
Median (IQR)*	37.7 (33.5, 42.9)	38.9 (33.7, 44.9)	10 (7.4, 17.0)	12 (8.7, 18.5)	2.0 (1.4, 3.9)	2.4 (1.6, 4.7)
r_s	-0.02	-0.008	-0.21	-0.18	-0.25	-0.23
P value	0.78	0.91	0.01	0.03	0.002	0.004
SII (CI)**	0.006 (-0.04, 0.05)	0.002 (-0.04, 0.05)	-0.05 (-0.02,-0.09)	-0.04 (-0.01,-0.08)	-0.02 (-0.01, -0.04)	-0.02 (-0.01, -0.03)
P value	0.80	0.93	0.003	0.009	<0.001	0.001
RII (CI)	1.02 (0.99, 1.14)	1 (0.9, 1.13)	1.5 (1.2,2)	1.4 (1.1, 1.7)	2.1 (1.4 - 3.2)	1.8 (1.3, 2.6)
P value	0.80	0.93	0.004	0.004	<0.001	0.001

*Interquartile range

**95% Confidence Interval

2.3.3 Complementary analysis

There was no association between DA rates and dental extractions (DE), as suggested by the Spearman test. As expected, there was a link between DE (children aged 4 year and under) and deprivation (Spearman=0.32; p=0.0001). Rates of dental extractions increased as local deprivation increased. Rates were significantly higher in more deprived LAs; the SII suggested a difference of 0.3-percentage point across the deprivation distribution. DE rates in the most deprived LAs were 2.7 times higher compared to the least deprived, as suggested by the RII. The analysis was also carried out considering children all ages, similar results were found (**Table 2.9**).

Table 2.9. Association between dental extractions (Number of finished consultant episodes for dental extractions) and deprivation (IMD 2015) (Source: Hospital Episode Statistics 2016-17).

	Children aged 4 years and under	Children aged 19 years and under
	2017	2018
	(n=9,001)	(n=61,301)
Average % (Range)	0.30 (0.02, 1.10)	0.50 (0.04, 1.60)
Median (IQR) ^a	0.28 (0.06, 0.40)	0.46 (0.21, 0.66)
r_s	-0.32	-0.24
<i>P</i> value	0.0001	0.003
SII (CI) ^b	-0.003	-0.003
<i>P</i> value	<0.0001	0.001
RII (CI)	2.7	2.0
<i>P</i> value	<0.0001	0.001

^aInterquartile range

^b95% Confidence interval

Study 3

2.3.4 Deprivation and child dental attendance in England:
exploring the shape of the association and moderators

The average rate of DA in children aged 5 years and under was 37%, for the year to March 2017. Rates ranged from 10.6 to 56.5%. **Figure 2.6** shows a map of DA across lower-tier local authorities.

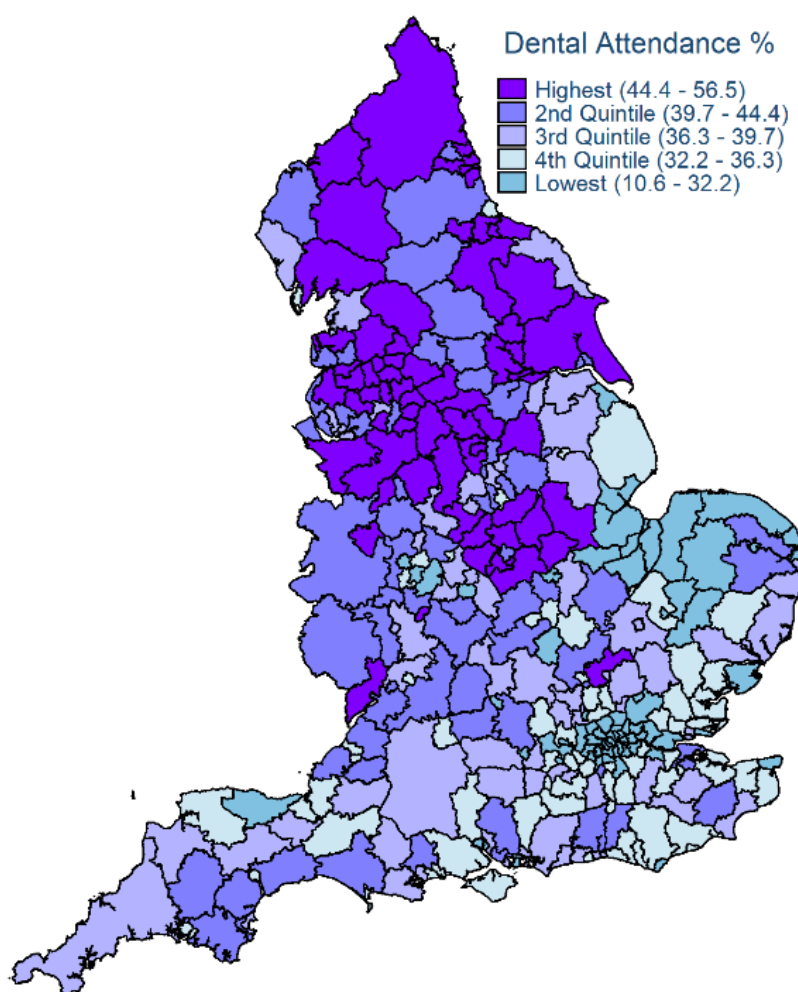


Figure 2.6. Rates of dental attendance (2017) in children aged 5 year and under, by lower tier local authority (Source: NHS dental statistics 2017).



Table 2.10 and **Figure 2.7** show the results of the fractional polynomial regression analysis which assessed the shape of the relationship between DA and deprivation. The second-order polynomial model (m=2) was compared to the linear model and first-order polynomial model (m=1). The best-fitting first-order model (m=1) had a power 0.5 implying a curve that gradually ascended whereas the best-fitting second-order polynomial (m=2) had powers (3 3) implying that this was a pattern with two curves, an inverted U-shaped curve followed by a U-shaped one. However, the second-order model was not statistically significantly better in terms of model fit to data than neither the linear ($p=0.582$) or the first order model ($p=0.403$). As FP models did not provide better fit than that of a simple linear model, the linear model was selected for final analyses and the association between DA and deprivation was treated as linear.

Table 2.10. Fractional polynomial models comparisons for the shape of the association between dental attendance and deprivation⁺ (Source: NHS dental statistics 2017).

IMD Models	df ^a	Deviance	Deviance difference	P Value ^b	Powers
Omitted	0	2209.57	8.34	0.08	
Linear	1	2203.19	1.96	0.58	1
m = 1	2	2203.06	1.84	0.40	0.5
m = 2	4	2201.23	—	—	3 3 *

^aDegress of freedom
^bP Value from deviance difference comparing reported models with m=2 Model
 *Best powers of IMD among 44 models fit: 3 3.
 +Best fitting second-order model (m=2) compared to linear model and best fitting first-order model (m=1).

m=2 Model			
	Coef.	95% CI	P Value
IMD 1	-0.52	(-0.96, -0.08)	0.02
IMD 2	0.35	(0.02, 0.68)	0.04

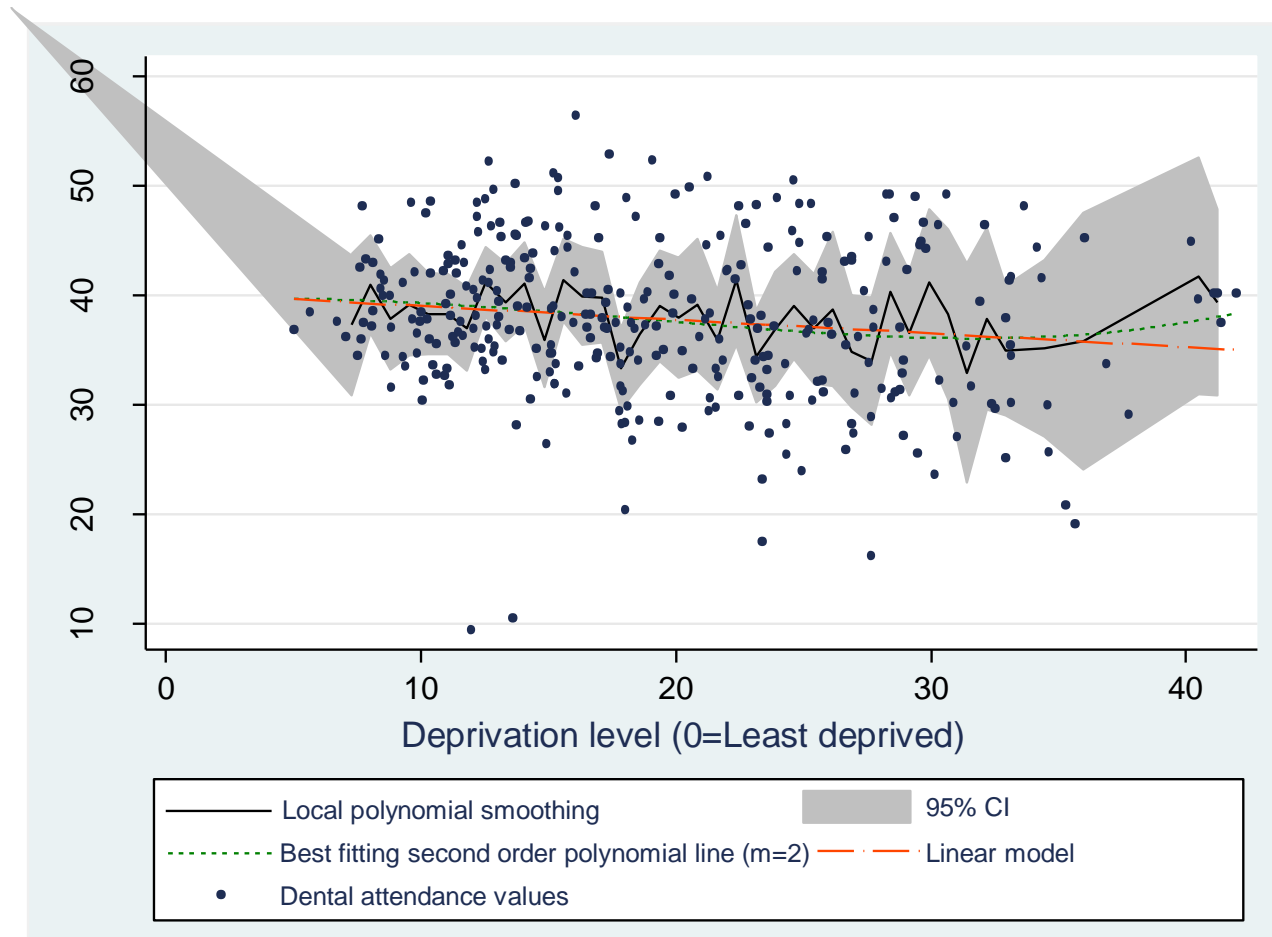


Figure 2.7. Fractional polynomial model for the association between dental attendance and deprivation (Source: NHS dental statistics 2017).



Table 2.11 describes the variables for the multivariable regression analysis for the association of deprivation and dental attendance. The results of this analysis are shown in **Table 2.12**. In this model, deprivation remained a significant predictor of DA after controlling for the effect of ethnicity, single parenthood, dental caries and dentist-to-population ratio. The adjusted model explained nearly 40% of the variation in DA (R-squared=0.3983). White ethnicity, single parenthood and dental caries were directly associated with an increase in DA; however, dentist-to-population ratio was not.

Table 2.11. Covariates of the regression model for the association of deprivation and dental attendance in 0 to 5-year-old children (Source: NHS dental statistics 2017).

Independent variable	Median %	IQR
IMD ^a	18.1	(12.9-25.2)
White Ethnicity ^b	95.0	(87.4-97.4)
Single parenting ^b	3.2	(2.6-3.9)
Dental caries ^b	20.8	(15.4-26.6)
Dentist to population-ratio ^c	59.8	(51.1-69.0)

^aIndex of Multiple Deprivation Average Score.

^bPercentage of White ethnicity population, Single parents and 5-year olds with dental caries in every local authority.

^cDentists per 100,000 population in every local authority.

Table 2.12. Regression analysis for the association of deprivation (IMD 2015) and dental attendance in 0 to 5-year-old children (Source: NHS dental statistics 2017).

Independent variable	Model 1			Model 2		
	Coef.	95% CI	P Value	Coef.	95% CI	P Value
IMD ^a	-0.1	(-0.2, -0.03)	0.012	-0.39	(-0.53, -0.24)	<0.0001
White Ethnicity ^b		–		0.35	(0.29, 0.41)	<0.0001
Single parenting ^b		–		2.21	(0.91, 3.51)	0.001
Dental caries ^b		–		0.34	(0.25, 0.44)	<0.0001
Dentist to population ratio ^c		–		0.03	(-0.01, 0.07)	0.162
R ²		0.0194			0.3983	

^aIndex of Multiple Deprivation Average Score.

^bPercentage of White ethnicity population, Single parents and 5-year olds with dental caries in every local authority.

^cDentists per 100,000 population in every local authority.

Statistical significant values are indicated in bold.

To evaluate the effect of modifying variables, interaction terms were added to final models (**Table 2.13**). There were significant interactions between deprivation and three covariates, dental caries ($F(6,295) = 34.44$; $p = 0.009$), White ethnicity ($F(6,295) = 37.12$; $p < 0.001$) and single parenthood ($F(6,295) = 33.98$; $p = 0.02$). The decrease in DA with increasing deprivation was steeper in those LAs with the lowest prevalence of dental caries and lowest proportion of single parents, compared to LAs with the highest proportion of dental caries and single parents (**Figure 2.8** and **Table 2.14**). However, in LAs with the lowest proportion of White population, there was an increase in DA with increasing deprivation, but it was not statistically significant.



Table 2.13. Models with interaction terms for the association of deprivation (IMD 2015) and dental attendance in 0 to 5-year-old children (Source: NHS dental statistics 2017).

Independent variable	Interactions								
	IMD and Dental caries			IMD and Ethnicity			IMD and Single parenting		
	Coef.	95% CI	P Value	Coef.	95% CI	P Value	Coef.	95% CI	P Value
IMD ^a	-0.65	(-0.89, -0.41)	<0.0001	0.80	(0.21, 1.39)	0.008	-0.73	(-1.06, -0.40)	<0.0001
White Ethnicity ^b	0.35	(0.30, 0.41)	<0.0001	0.71	(0.53, 0.89)	<0.0001	0.35	(0.30, 0.41)	<0.0001
Single parenting ^b	2.33	(1.04, 3.62)	<0.0001	2.53	(1.25, 3.81)	<0.0001	-0.06	(-2.42, 2.29)	0.96
Dental caries ^b	0.11	(-0.10, 0.31)	0.31	0.38	(0.28, 0.47)	<0.0001	0.36	(0.26, 0.45)	<0.0001
Dentist to population ratio ^c	0.03	(-0.01, 0.07)	0.20	0.05	(0.00, 0.09)	0.029	0.03	(-0.01, 0.08)	0.13
Interaction term	0.01	(0.00, 0.02)	0.009	-0.01	(-0.02, -0.01)	<0.0001	0.10	(0.01, 0.18)	0.024
R2	0.4119			0.4302			0.4087		

^aIndex of Multiple Deprivation Average Score.

^bPercentage of White ethnicity population, single parents and 5-year olds with dental caries in every local authority.

^cDentists per 100,000 population in every local authority.

Statistical significant values are indicated in bold.

Table 2.14. Marginal effect of dental attendance rate (95% Confidence Intervals) for the interaction of deprivation and White ethnicity, single parenthood and caries prevalence at 1%, 25%, 50% and 75th percentiles⁺ (Source: NHS dental statistics 2017).

	Percentiles	Coef.	95% CI
White Ethnicity	1%	0.21	(-0.11, 0.53)
	25%	-0.41*	(-0.55, -0.27)
	50%	-0.52*	(-0.67, -0.36)
	75%	-0.55*	(-0.71, -0.39)
Single Parenthood	1%	-0.53*	(-0.72, -0.34)
	25%	-0.47*	(-0.63, -0.31)
	50%	-0.41*	(-0.56, -0.27)
	75%	-0.35*	(-0.49, -0.21)
Caries Prevalence	1%	-0.59*	(-0.79, -0.38)
	25%	-0.48*	(-0.64, -0.32)
	50%	-0.42*	(-0.56, -0.28)
	75%	-0.35*	(-0.50, -0.21)

* *P Value* <0.001

+*Model was adjusted for covariates.*

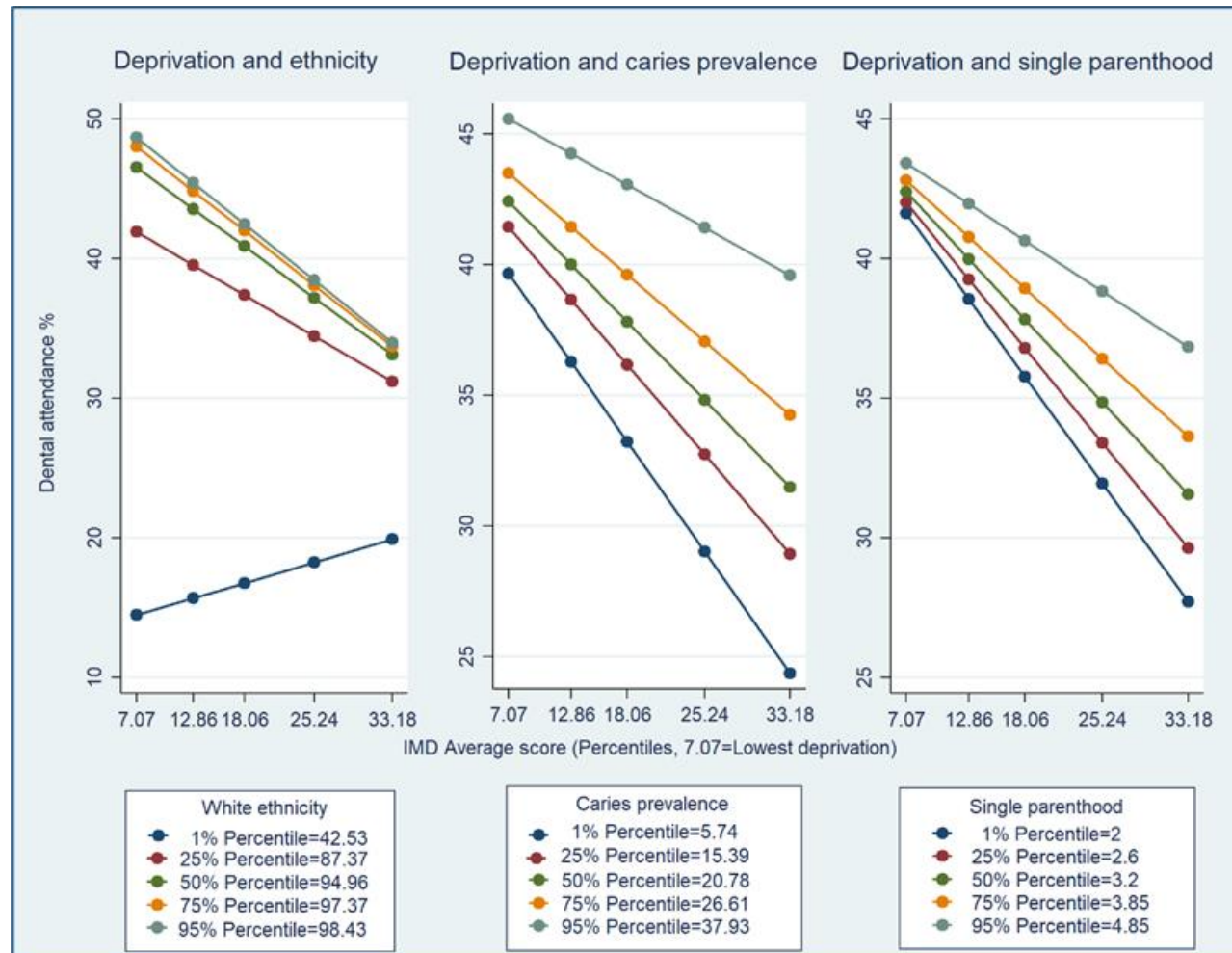


Figure 2.8. Predicted estimates for dental attendance according to deprivation by ethnicity, single parenthood and caries prevalence (Source: NHS dental statistics 2017).

2.4 Discussion

Despite there being lower levels of dental caries experience among children in England, there were greater inequalities compared to Wales and Northern Ireland. Nevertheless, inequalities in dental caries prevalence and severity were seen in the three countries, with children from most deprived backgrounds experiencing higher prevalence and severity in both dentitions.

Rates of DA were generally low with substantial variations across regions and LAs. Approximately 60% of children aged 5 years and under were not seen by an NHS dentist in the 12 months to June 2017 in England. Only 12% of children visited an NHS dentist before the age of two and 3% before the age of one. Rates were higher in the North of the country while the lowest rates were reported in the London region. Rates varied considerably among LAs. The highest rates were seen in South Tyneside whereas the lowest rates were seen in Hackney and London. The highest rate of DA in children aged 5 years and under, more than tripled the lowest rate; while in younger children, there was a tenfold variation for children aged 1 year and under and a 12-fold variation in children under 1 year.

Rates remained steady the following year (to June 2018), with an increase of 0.6% in the rate in children aged five years and under, 1.3% in children aged one year and under and only 0.3% in children under one year. It was not possible to compare rates before 2017 as NHS dental statistics from previous years did not report the number of children seen by single age.



There was a direct link between DA rates and local deprivation in younger children with the percentage of children seen by an NHS dentist decreasing with a decrease in the level of deprivation. Surprisingly, DA rates were slightly higher in more deprived areas. Further analyses showed that the difference in DA rate between the bottom and top of deprivation distribution was two percentage points in children under 1 year, and 5 points in children aged 1 year and under, as suggested by the SII. In children under 1 year, the rate of DA in the most deprived LA was 2.1 times higher than in the least deprived LA while in children aged 1 year and under, the rate was 1.5 times higher, as shown by the RII.

There was also an association between DA and IMD measured by the Proportion of LSOAs in most deprived 10% nationally in the three age groups following the same trend, a decrease in DA as the proportion of most deprived small areas in a LA decreased. However, the associations were not strong, and no association was found with the proportion of children living in income-deprived households (IDACI Average Score). In the analysis in adults, deprivation was also linked to DA rates, the percentage of adults seen by an NHS dentist decreased as deprivation decreased. This association was stronger than in children.

DA in this study, although influenced by socio-economic factors, was only partially explained by LA deprivation. For instance, in younger children, the LAs with the highest levels of deprivation such as Blackpool, Knowsley and Hull were not amongst those LAs with the lowest DA rates. Nevertheless, Hackney which had the lowest rate is among the ten most deprived LAs. The City of London also had the lowest DA rate, but it is not among those deprived LAs. Contrary to this, South Tyneside which had the highest rates was ranked 26th in deprivation.

In seeking to interpret the observed pattern of attendance The Chartered Institute of Public Finance and Accountancy (CIPFA, 2017) “nearest statistical neighbour” tool was used to explore whether DA rates were similar between LAs with comparable characteristics such as ethnicity and urban/rural characteristics. This tool is commonly used with other health data sets in England, including oral health data (PHE, 2017b). However, it did not explain the variation. For example, the DA rate in children aged 1 year and under in North-East Lincolnshire was 4.3% but its nearest statistical neighbour, Redcar and Cleveland, had a rate of 22% (Table 2.15).

Table 2.15. The five local authorities with the highest and lowest rates of dental attendance (2017) in children aged 1 year and under compared to their nearest statistical neighbour (Source: The Chartered Institute of Public Finance and Accountancy 2017).

Local Authority with the highest rates	%	Nearest local authority neighbour	%
South Tyneside	37.6	Redcar and Cleveland	22
Tameside	27.2	Halton	12.2
Rochdale	24.1	Derby	11.3
Stockport	24.1	York	19.6
Newcastle upon Tyne	23.9	Stoke-on-Trent	17.5
Local Authorities with the lowest rates	%	Nearest local Authority neighbour	%
Havering	4.8	Bedford	8.5
Waltham Forest	4.7	Luton	10
North East Lincolnshire	4.3	Redcar and Cleveland	22
Southampton	3.9	Bristol	8.3
Hackney	3.7	Leicester	18.5

Nevertheless, it should be considered that LAs are not homogenous and that there might be variations in population and deprivation both between and within



LAs; for example one LA might be in the middle range of deprivation across its whole population, whereas another with the same IMD score might have substantial heterogeneity. In the study, South Tyneside which had the highest dental rate in the three age groups, has a population dentist-ratio above the England average (NHS Digital, 2017) even though it has a high level of deprivation. It also has a small geographical size, which might make it easier for patients to access services without the need to travel long distances. By contrast, The City of London, which had a very low DA rate is a very heterogenous area with a high level of immigration and a likely high population turnover. It has a very small population of young children which might partially explain its low rate. Only a small number of children were seen by an NHS dentist but none of those under 1 year. Factors such as the availability and access to NHS dental care and even a pattern of reported inappropriate contact with health services might have an influence (Muirhead *et al.*, 2018). These factors, in addition to the small population of young children, might explain the low DA rate.

Progressive restriction of NHS dental contracts that only provide care to children (Secretary of State for Health, 2008) may also be a factor in producing the pattern found. One of the limitations of these studies is that the reported rates did not include children who may have visited a dentist under private arrangements. However, figures of private dental providers were explored to see whether children were being seen privately but apparently it was not the case.

Given that dental services are free for children under 18, the reports from surveys state that nearly all children's dental visits are under NHS arrangements (Tsakos *et al.*, 2015) and that a high proportion of the adult population report successful



attempts to access NHS dental care, as reported by GPs surveys (NHS England, 2017a); it might be assumed that NHS dental access figures for children reflect true access rates. Although, there might be a higher use of private dental care in more affluent LAs; the 2017 GP survey reported that 38% of adults who reported not having tried to get an NHS appointment mentioned private dentistry as the reason for this (NHS England, 2017a).

Jones and colleagues (2013) discussed the information gap for private dental care, which might affect any assessment of inequalities in dental access related to deprivation, and it is logical to theorise that parents in relatively affluent areas are more likely to see a private dentist and may ask the same dentist to care for their child's teeth, even if that dentist does not offer NHS dental care, rather than take the child to a different dentist offering NHS treatment. These private dentists might, in turn, offer their regular adult patients free or minimal charge check-ups for their children, since they would probably have little need for treatment.

Rates of DA in this study do not necessarily represent children accessing dental services at an appropriate interval for preventive care, as they will include children who have attended for urgent conditions. The recorded child DA could include any reason for the dental visit. The incidence of acute dental events is likely to be higher in more deprived communities, matching the observed higher prevalence of dental caries in more deprived groups. Also, the recording of residence by dental provider location rather than child residence might also explain some of the differences between LAs, but it is reasonable to assume that very young children are likely to be taken to a dentist close to where they live. Some children may have only used hospital dental services exclusively, which



are not recorded in NHS dental statistics report. Any such use of hospital services for dental care is, however, more likely to be for management of acute conditions or reflect a small number of children with serious health problems needing to access dental care in a hospital environment. The study of dental extractions and deprivation showed that the rate of dental extractions was higher in deprived areas, as expected, although it was a very weak correlation and there was no link with DA.

It was then hypothesised that the relationship between DA and deprivation might be modified by disease risk and the nature of the attendance outcome measure, therefore the relationship would be non-linear with higher DA rates at the extreme ends of deprivation. This hypothesis, however, was rejected. The fractional polynomial models did not provide a better fit for the shape of the association between DA and deprivation than the linear model.

There was a linear relationship between DA rates in children aged 5 years and under, and deprivation at lower-tier LA level, with rates decreasing as deprivation increased. After controlling for confounders (ethnicity, single parenthood, dental caries and dentist-to-population ratio) deprivation remained a significant predictor of DA. Moreover, the association between DA and deprivation was moderated by the effect of ethnicity, single parenthood and dental caries.

In contrast to the previous findings from this study in younger children, children in more deprived areas were less likely to visit a dentist; however, deprivation only marginally explained variation in DA. It has to be borne in mind that this data differs from previous dental access data in that it was reported at upper-tier LA



level whereas the second data is reported at lower-tier LA level, the child (and parent) populations were also different and DA data was recorded at different times.

Regardless of this, the association between DA and deprivation has been inconclusive. A study by Jones (2001) reported a significant association between NHS child dental registration and social deprivation of English Health Authorities, showing a decrease in the proportion of children registered with an NHS dental practice as deprivation increased. However, the analysis also showed that child dental registrations decreased in the most affluent health authorities, although it was considered unlikely to be statistically significant. Jones (2001) concluded that it might have reflected factors such as low disease prevalence and dental needs but also the use of private dental care. Although the analysis by Jones (2001) was also carried out at local level (i.e. at health authority level) it might be difficult to make a direct comparison with the present study because of different dental service arrangements at the time of Jones' study (i.e. capitation scheme). Additionally, deprivation data was from the 1991 census and a different measure of deprivation (Jarman UPA score) was used. A study by Maunder *et al.* (2006), also reported significant inequalities in child dental registration. The study, however, was limited to a health authority in the North East of England.

Nevertheless, analyses of data from children 0 to 18-year olds have not shown such relationship. For instance, a study by Ravaghi *et al.* (2019), also carried out at local area level, showed that despite an apparent equal access to NHS dental care, inequalities in dental decay are widening. In another study, Jones and colleagues (2013) observed a lack of association between social deprivation and



NHS dental registration of children (under 18) (for contractor and salaried services) in Scotland, though there was a 6% absolute reduction in child registration rates between the least (76%) and most (82%) deprived quintiles. Nonetheless, it is important to consider that these results might not be comparable to the findings in this study due to the differences in primary dental care between England and Scotland.

The association between DA and deprivation might be moderated by the effect of covariates. In this study, White ethnicity, single parenthood and dental caries were directly associated with an increase in DA whereas dentist-to-population ratio was not associated. The strength and direction of the relationship was moderated by the effect of ethnicity and family profile as well as disease level in the area. Most notably, there was a variation according to ethnicity; in LAs with the largest proportion of non-White population, deprivation was associated with a slight increase in DA although not statistically significant. Whereas in those areas with lower prevalence of dental caries and lower percentage of single parents, the decrease in DA with increasing deprivation was steeper. Somewhat counter-intuitively, this association was less steep for areas with higher prevalence of dental caries and higher proportion of single parents. For the latter modifier, it is possible that we were observing an effect of symptom-driven attendance associated with higher caries prevalence modifying the relationship.

There is evidence from the UK that minority ethnic groups are less likely to access primary care services compared to the White majority (PHE, 2017c; 2018a). Surveys in adults have also reported more frequent dental visits among White ethnic groups in the UK (Arora *et al.*, 2016). In terms of dental disease, lower



levels have been reported in White British/Irish children, especially among children from younger age groups (Rouxel and Chandola, 2018). Surveys of 5 year-olds have also reported lower proportion of dental caries in Black and White groups in five-year-olds (PHE, 2017c).

The influence of parental factors on child oral health have previously been reported, including single parenthood, but this might also be also associated with lower income (Hooley *et al.*, 2012). The present study showed, surprisingly, that areas with a higher proportion of single parents tended to have higher DA rates.

There was also a direct association with dental caries, with rates of DA increasing with an increase in dental caries. A study in England (Tickle *et al.*, 2000a) had previously reported a relationship between children's dental caries experience and contact with dental services, although this study was carried out in a small geographic area. As discussed earlier, NHS dental statistics also included children attending for management of urgent conditions and the incidence of these events is likely to be higher in more deprived groups. According to the National Dental Survey for 5-year-olds (PHE, 2016) the North West had the highest caries prevalence (d_3mft) in 5-year-olds and it was the second region with the highest DA rates in children zero to five years.

Whilst studies in England have shown lower dentist-to-population ratios in deprived areas (Moles, 2001; Boulos and Phillipps, 2004) this study did not find an association between DA and dentist-to-population ratio. Nevertheless, it is important to consider barriers to general access and dental care. For instance, areas with low population density might present challenges for more deprived



groups due to transport and there may also be areas with a higher proportion of their population experiencing language barriers.

Nevertheless, the extent to which DA is associated with a reduction in inequalities in dental health is inconclusive (Shen and Listl, 2018). Some public health and health service interventions may increase the health inequality gap (White *et al.*, 2009), as may those that widen the coverage of dental services (Kim *et al.*, 2019). Furthermore, a variation in attendance might not necessarily signify a variation in use of preventive interventions (Shaban *et al.*, 2017).

Children's dental access has in recent years captured the attention of the public media and policy makers. A number of strategies and interventions have been advocated to facilitate NHS dental care, especially in areas of highest need. For instance, there has been a new focus on optimising the use of dental services to improve oral health and tackle inequalities. Therefore, there is considerable investment in child DA to encourage young children to visit a dentist for both prevention and treatment of oral diseases. Some examples are the Dental Check by One campaign (British Society of Paediatric Dentistry, 2017) and the NHSE&I Starting Well 13 and Starting Well Core programmes (NHS England, 2017b).

These exploratory studies provide new insights into the relationship between DA and deprivation. Measures of inequality such as the SII and RII compare the most and the least deprived groups while considering all categories across deprivation groups, in this case across LAs; in contrast to conventional measures commonly used in health and health care which compare only those in the extreme categories of deprivation. Besides, it was the first study to evaluate the shape of



the relationship between DA and deprivation using fractional polynomial models and how it is moderated by other factors such as ethnicity and disease level. Examining interaction terms between deprivation and covariates provided a better understanding of the relationship of DA and deprivation.

These studies have important implications for policy makers in planning of dental services to ensure children especially those from deprived areas and minority ethnic groups have access to preventive dental care and to ensure all children have a dental check-up by their first birthday. LAs with relatively affluent populations and apparent low levels of registration might need to assess private DA rates when planning estimates. It remains apparent, however, that dental rates for very young children are uniformly low, even in areas where rates are comparatively higher.

2.4.1 Limitations

An important limitation is that the recorded DA could be for any reason and as mentioned earlier, some children in these studies might have attended for management of urgent conditions. Therefore, DA rates do not necessarily represent those attending for preventive care. Additionally, some children might have used hospital dental services exclusively, which are not recorded in NHS primary care dental statistics. Moreover, these studies reported NHS dental statistics only and have not included children who might have used private dental services.

Another limitation is that residence was based on the location of the dental service rather than the child residence. However, it is likely to have a minimal



impact on the results as it might be assumed that young children are more likely to attend dental services close to their family home. Another aspect is that the data allocated children to age groups based on their age at the end of the data collection period and not the date that each child was first seen for examination. There might be little difference between a child's age when seen for an examination and their age at the end of the collection period. Therefore, the data are not a precise match for the population of interest and the reference population data used to calculate rates.

It has to be acknowledged that data for covariates was taken from census estimates and dental caries data was from a survey of 5-year-olds only, therefore variables were measured at a different time and the population might be different. For instance, there might have been changes in ethnicity in some areas since 2011. Data for dentist-to-population ratio was not available for the same period of time as DA data; consequently, the data for the closest time period was used. Data for dental activity is not available for every single age year in children, which might have helped to assess the association with deprivation in younger children and understand the reasons for DA.

Finally, the analysis used aggregate DA data from each local area rather than data from individuals. Thus, care has to be taken when attempting to compare these results with those at individual level. Moreover, findings might not imply equitable DA within areas that reported higher rates. Nevertheless, most of the available data (e.g. dental surveys, NHS dental statistics) is reported at local level and it has been recognised that variations across LAs exist. Furthermore,



decisions are usually made at local level. Hence, in order to improve DA, local factors need to be considered and implications need to stay local.

2.5 Conclusions

There are still inequalities in dental caries in children with those from more deprived backgrounds reporting higher prevalence and severity in England, Wales and Northern Ireland. Despite lower levels of disease in England, inequalities were greater than in Wales and Northern Ireland.

DA rates were generally low with substantial variations between LAs. Only a small proportion of children visited an NHS dentist before their first birthday. More deprived English LAs were, unexpectedly, more likely to report higher DA rates in younger children.

DA, however, was only partially explained by deprivation at LA level. It was hypothesised that the shape of the relationship between deprivation and DA in young children might be curvilinear with higher DA in the extreme ends of deprivation, but the analysis showed a linear association between DA and deprivation. This was moderated by the effect of ethnicity, single parenthood and disease level.

It is apparent from these studies that the relationship between deprivation and DA is complex and should not be subject to simple assumptions. The very low baseline and nature of the variation observed creates challenges for policy makers seeking to achieve high rates of DA in younger children. Further research



INITIAL EXPLORATORY RESEARCH

is needed to understand the underlying drivers for DA and the utility of potential interventions to increase dental rates in young children.

CHAPTER THREE

3 METHODOLOGY

The present chapter is organised in two sections. Section 1 provides a background of the methods used in the study such as definitions and important concepts. It gives an overview of what programme evaluation, qualitative research and mixed methods are. Then the methodology for the present study is described in Section 2. It first gives an overview of the Starting Well programme. Section 2A describes the qualitative research conducted for the study and finally Section 2B describes the quantitative approach.

Section 1: Background

3.1 Background on Programme evaluation

There are several definitions of evaluation depending on the context. Evaluation can be defined as a process of judging something to determine whether it is worthy, has value or merit. Evaluation is different from research as it does not look to discover knowledge but to study how effectively existing knowledge is used to inform and guide practical action and support decision making (Clarke, 1999; Mertens and Wilson, 2012).



Evaluation research, often referred as programme evaluation, involves a systematic assessment or examination using scientific research methods to collect and analyse information of the structure and outcomes of an intervention, a programme or a project. It looks to investigate the feasibility of a programme, evaluate whether it was installed as planned and assess causal associations between the activities of the programme or intervention and the outcome to determine whether it works, and explain how it works. It also looks to evaluate the responses of people involved (Lincoln and Guba, 1980; Clarke, 1999).

Evaluation research is closely linked to social sciences and can be seen as a form of applied social research. It can also be seen as a type of policy research as it usually involves a political activity and generates evidence to inform decision making needs. Evaluation research, however, unlike social research and other types of research, focused on the objectives, the purpose of the research methods and on determining the value of an intervention or policy (Clarke, 1999; Mertens and Wilson, 2012).

3.1.1 Types of evaluation

Generally, there are two approaches, formative and summative, which differ in their design and methods. In the **formative approach**, the evaluation is carried out during the planning and implementation of the programme aiming to identify how a programme or intervention can be improved. In the **summative approach**, the evaluation is carried out at the end of the programme or intervention looking to determine its effectiveness (Clarke, 1999; Mertens and Wilson, 2012). Four basic types of evaluation based on its functions and its stages have also been



distinguished (Chen, 1996). These approaches and types are described in **Table**

3.1.

An evaluation can be a) **external**, the evaluator is independent and is commissioned to undertake the evaluation on behalf of an agency or organisation; b) **internal**, the evaluator is an employee within the organisation that is conducting the evaluation (Clarke, 1999; Mertens and Wilson, 2012).

There are many other types of evaluation depending on its purpose. For example, a *needs and assessment evaluation* would be useful to have an insight of an intervention or programme, look at the implementation prior to the launch and determine necessary inputs. An *implementation evaluation*, a *process evaluation*, *formative evaluation* or *participatory evaluation* would be useful when the purpose is to identify strengths and areas that need to be improved: e.g. what works and what does not, and to examine a programme or intervention from different perspectives (Mertens and Wilson, 2012).

A *process evaluation* would help to assess to what extent the intervention is operating as planned and the effectiveness in addressing the needs of those who will benefit from it, whereas an *implementation evaluation* would be more convenient when a new programme has been implemented or when the objectives of an existing programme are not satisfactorily met. Finally, a *summative evaluation*, *policy evaluation*, *outcome/impact evaluation* or *cost-analysis* are recommended to assess the effectiveness and efficiency of the programme, evaluate impacts and benefits. Cost effectiveness and cost benefits are the most common method for estimating efficiency of an intervention or programme (Clarke, 1999; Mertens and Wilson, 2012).

Table 3.1. Main types of evaluation (Chen, 1996; Clarke, 1999; Mertens and Wilson).

a) Main types of evaluation		
	Formative	Summative
Aim	To identify how a programme or intervention can be improved. Explores to what extent the activities are meeting the objectives, how the programme operates and how it is perceived. It is seen as process orientated.	To assess and determine the effectiveness of an intervention or treatment. It is seen as outcome-focused.
Target audience	Those responsible for planning, managing and delivering the programme, e.g. programme managers, practitioners.	Policy makers, funders, public.
Data	Focus on goals, nature of implementation and outcomes. There is a continuous monitoring and regular feedback to people responsible for running the programme.	Focus on the implementation issues and the outcomes measures, looking at the extent to which the programme or intervention has achieved its objectives.
Evaluator role	Works closely with those involved in the programme (interactive role).	Independent
Methodology	Uses both qualitative and quantitative, with an emphasis on qualitative.	Emphasis on quantitative, mainly experimental and quasi-experimental research designs.
Report	Informal, via discussion groups and meetings through the period of the study.	Formal reports to the commissioning body on completion of evaluation.
b) Basic types of evaluation (based on Chen, 1996).		
	Evaluation functions	
	Improvement	Assessment
Programme stages	<p>Process improvement evaluation: Uses findings from a specific study to inform decision making at a general level. It contributes to programme planning, design and development.</p> <p>Outcome improvement evaluation: Looks to investigate how the programme interventions affect the outcomes, identifying which elements are more successful. It helps to identify areas that need improvement.</p>	<p>Process-assessment evaluation: Determine whether a programme has been successfully implemented</p> <p>Outcome-assessment evaluation: It assess the worth of a programme. Summative evaluation belongs to this approach.</p>

3.1.2 Evaluation design

In designing an evaluation, theory plays an important role in choosing the adequate methods, providing guidance to determine both the purpose of an evaluation and evidence for decision making (Mertens and Wilson, 2012). Evaluation is informed by theories of evaluation, program theories and social science theories. Evaluation theory refers to theory applied to evaluation, it responds to questions of what the purpose is and why an evaluation is appropriate. Programme theory, also referred as “theory of change”, helps to explain the mechanism influencing the achievement of outcomes (Clarke, 1999; Mertens and Wilson, 2012). Programme theory has been used to developed logic models or log frames (The W.K. Kellogg Foundation, 2004; Mertens and Wilson, 2012), which are graphic depictions as shown in **Figure 3.1**.

A theory-based evaluation has its basis on a model, theory or philosophy about how the programme works and the causal relationships. It has to meet three criteria: 1) plausibility, the relationship between the activities and the outcome must be coherent and logical; 2) there must be resources and expertise, and 3) have a testable theory of change. This approach is needed when the purpose is to determine how and why a programme was either successful or unsuccessful. It can, however, be expensive and time-consuming (Connell and Kubisch, 1998; Clarke, 1999).

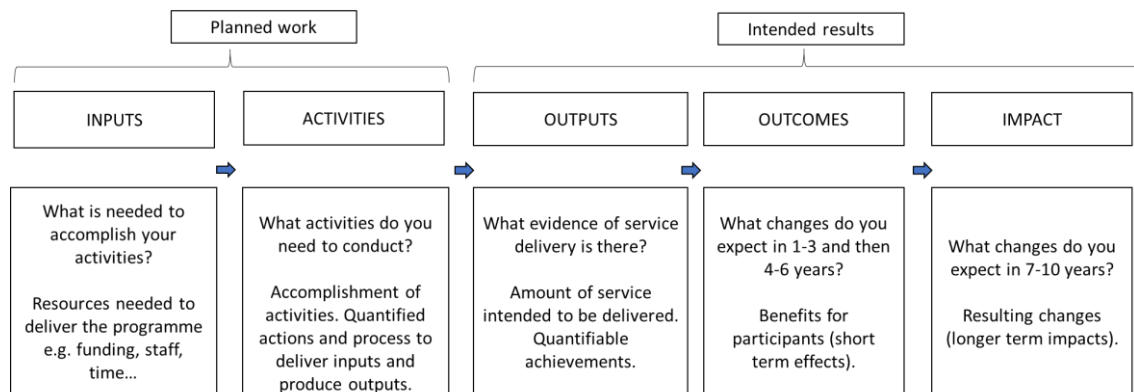


Figure 3.1. The basic logic model. Adapted from The W.K. Kellogg Foundation (2004).

3.1.3 Methods used in evaluation

Evaluation uses qualitative and quantitative methods. The methods chosen will depend on several factors such as the context, the purpose of the evaluation, the nature of the evaluation problem, characteristics of the participants, information needs, programme theory among others (Clarke, 1999).

Quantitative design can be either descriptive (e.g. surveys) or can determine the effectiveness of an intervention or programme (e.g. experimental designs, cost analysis) to show whether changes are the result of the interventions. In the latter, the purpose is to determine whether the observable changes are the results of the intervention. Qualitative design is mainly used in process evaluation, it is useful to identify cause-effect relationships (Mertens and Wilson, 2012). This work provides an overview of qualitative methods in [Section 3.2](#).

3.1.4 Evaluation in health care

The hierarchy of evidence has been discussed in **Section 1.2**. In public health interventions, the assessment of causality depends on the level of evidence (Glasziou and Longbottom, 1999; Rychetnik *et al.*, 2002). However, the use of randomised control trials is rare for these, it has been argued that randomised control trials might not be feasible in public health interventions and might be difficult to conduct due to the complexity of interventions, the difficulty in interpreting the results, practical and resource constraints (Rychetnik *et al.*, 2002). Although quantitative approaches, for example epidemiological and statistical techniques, have been used to evaluate public health programmes, cultural and contextual variables can only be captured through qualitative research (Mertens and Wilson, 2012). In recent years the use of qualitative methods in dental public health has increased (Bower and Scambler, 2007).

3.1.4.1 The Donabedian model

Frameworks have been used in the evaluation of health services across different settings. They are underpinned by theoretical principles and are useful to provide guidance, both theoretical and practical, provide structure and simplify complex process. A robust framework guides data analysis but also focuses on the effect of services, sustainability and cost (Bradford *et al.*).

The Donabedian model has been used as a framework to examine and evaluate the quality of care and health services (Gardner *et al.*, 2014). It identifies three dimensions of health care, structure, process and outcomes which according to Donabedian each of them has an effect on the next (Donabedian, 2005). Every

METHODOLOGY

measure has a different purpose in determining the impact of a project or intervention. Outcomes will finally validate the effectiveness and quality of care of an intervention. **Figure 3.2** summarises the three dimensions.

A literature review (Bradford *et al.*) of studies using frameworks to evaluate health services suggested that the Donabedian model helps to simplify complex processes by providing structure and guidance for the evaluation process. It promotes a meaningful evaluation by including stakeholders, explaining reasons for outcomes, generating transferable lessons and identifying mechanism driving or inhibiting change. The Donabedian model has the advantage of being adaptable to different situations. However, it might not identify unique aspects of patients and environmental factors.

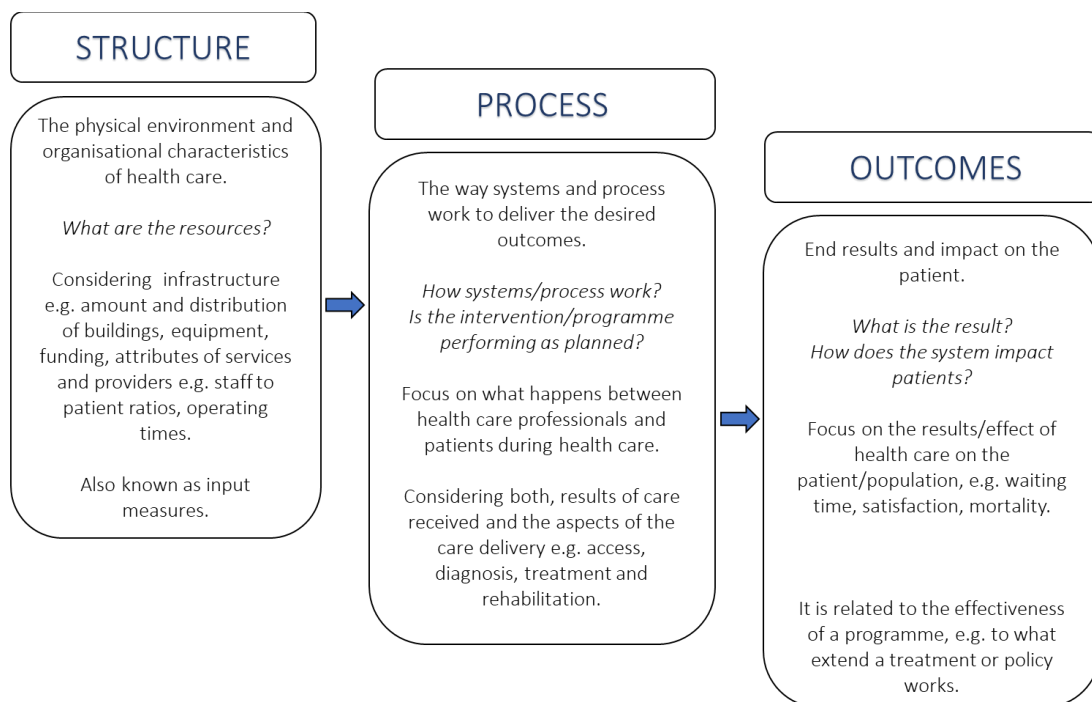


Figure 3.2. The Donabedian model (Clarke, 1999; NHS, 2018; Toma *et al.*, 2018).



Balancing measures have been also used as a fourth measure when assessing improvement. They refer to unintended consequences as a result of change to improve one part of the system. They look at the system from different dimensions. Identifying and monitoring these measures is important to make the necessary improvements when needed and evaluate the effectiveness of changes (NHS, 2018; Toma *et al.*, 2018).

3.2 Background on qualitative research

3.2.1 Definition and uses

Qualitative research constitutes a range of methodological approaches or techniques for data collection and analysis aiming to have a deeper understanding and explanations of social processes or phenomena by exploring and interpreting people's social and material circumstances, experiences, perspectives and histories (Bower and Scambler, 2007; Braun and Clarke, 2013). These social processes or phenomena are usually explored from the perspective of the participants in their natural environment e.g. home or work (Britten *et al.*, 1995; Bower and Scambler, 2007). Qualitative research has been long used in sociology, anthropology and education (Britten *et al.*, 1995). More recently its use has been extended to areas of health and healthcare research (Green and Thorogood, 2004).

Qualitative research can address questions that are not possible to answer by quantitative methods alone, e.g. those exploring people's perspectives (Bower and Scambler, 2007). It can be used at different stages of the research process. For instance, to develop a hypothesis at the start of a project in a new or under-



researched area which can then be tested by quantitative research in later stages (Stewart *et al.*, 2008). It can also be used to research poorly understood topics where a hypothesis cannot be constructed in advance (Britten *et al.*, 1995).

According to Braun and Clarke (2013), qualitative research can be divided into the following: **a) Experiential research**, which focuses on the interpretations of the participants, looking to validate meanings, views, perspectives and experiences from the data. This process involves an organised and interpretative framework around data; **b) critical research**, which looks to analyse interpretations by understanding the factors influencing meanings and the effects of meanings. The interpretations of the researcher are more important than those of the participants.

Qualitative research generates knowledge of social events and processes; providing a deeper understanding by looking to answer why, how and under what circumstances social phenomena occurs. It also gives an insight into the meanings of decisions and actions. Qualitative research can also help to investigate beliefs and attitudes on sensitive topics. It can also give a holistic view (Britten *et al.*, 1995; Ulin *et al.*, 2012).

In terms of methodologies, qualitative research uses interpretative and open-ended methods; it is flexible, iterative and emergent; participants have an active role while the researcher is an instrument; it is carried out in natural settings which allows the researcher a better understanding of people's experiences. Data is mainly expressed in words and images.



3.2.1.1 Use of qualitative methods in health research

The use of qualitative methods in health care and health policy has become more common as a way to understand implications of health behaviours and health services. Qualitative data can provide evidence for population needs and policy development. For instance, it can be used to evaluate the process of health interventions as it can answer questions that cannot be reached by quantitative research or to explore beliefs and behaviours which then can provide information for policymaking (Green and Thorogood, 2004).

In dental public health, qualitative research can be useful to evaluate perceptions about services, treatments, programmes and health policies. For example, to examine in-depth the implementation of an oral health promotion programme or to evaluate oral health initiatives, exploring how programmes and initiatives are perceived and understood by the people involved (Bower and Scambler, 2007; Stewart *et al.*, 2008).

3.2.2 Approaches for data collection

One of the strengths of qualitative research is that planning, collection and analysis of data are cyclical, interactive and flexible (Britten *et al.*, 1995). Qualitative research approaches with a broad research question that can be open to modifications as data is emerging. The flexibility of data collection and analysis allows to explore emerging issues. The analysis of data collected in each phase can provide information on the data to be collected in the following phases (Britten *et al.*, 1995; Bower and Scambler, 2007).

METHODOLOGY

In qualitative research more than one method can be used at the same time for data collection, depending on the research question, the social context, individual perspectives and topic sensitivity (Bower and Scambler, 2007). In health care the most common used are research interviews and focus groups (Stewart *et al.*, 2008). Sampling in qualitative research is determined by non-probability methods, identifying individuals with relevant characteristics to the study. Sampling is systematic and based on a developed criteria in order to select the appropriate sample (Stewart *et al.*, 2008).

Main methods for data collection are described in **Table 3.2**. Approaches used in the present study are further describe below.

Table 3.2. Main methods for data collection (Britten *et al.*, 1995; Green and Thorogood, 2004; Bower and Scambler, 2007; Gill *et al.*, 2008; Stewart *et al.*, 2008; Ulin *et al.*, 2012).

Approach	Description
Qualitative interviews	They are the most common method of data collection in qualitative research. Qualitative interviews are similar to a guided conversation aiming to encourage the interviewee to talk about their experiences and perspectives about a topic previously determined. They are useful when the phenomena of study are not well understood and to explore sensitive topics.
Focus groups	Focus groups are conducted in a small group of people to discuss a guided topic, the discussion is monitored and recorded by the researcher. They have similar characteristics to less structured interviews but allow the researcher to collect information from many participants at the same time and have information on a range of views. This is the most common method used in social research.
Observation	Observation consists of systematically watching people and events with the purpose of learning how people behave and interact in natural settings. The researcher is engaged in watching but can also join the group of study and interact.
Documentary analysis	It involves exploring content and meaning from texts or documents, e.g. official reports, diaries and letters. In public health, it might involve looking at hospital, clinical records and health education materials. It can be also used as a secondary analysis of transcripts of interviews or focus groups previously conducted.
Action research	The purpose of this method is related to personal and social change. It has been used in community development projects to research social issues and can serve as a political tool in addressing health inequalities. It has a cyclical research design where planning, observing and analysing data provide feedback to the next planning cycle.

3.2.2.1 Qualitative interviews

One-to-one interviews

Interviews in research might be of three types: structured, unstructured and semi-structured. In qualitative research, interviews are usually referred as being unstructured to distinguish them from structured interviews which are commonly



METHODOLOGY

used in quantitative research. Qualitative interviews differ from structured interviews in that these are constructed on the basis of structured questionnaires to ask closed questions in a standardised manner. Qualitative interviews, on the other hand, identify subjects rather than questions allowing the researcher to have a detailed insight from the participants (Britten *et al.*, 1995; Pope and Mays, 2005; Stewart *et al.*, 2008).

Qualitative interviews are the most common method of data collection in qualitative research and one of the most common methods in social and health sciences (Pope and Mays, 2005; Braun and Clarke, 2013). Interviewing can be defined as “conversations” with a structure and purpose aiming to encourage the interviewee to talk about their experiences and perspectives about a topic previously determined. Qualitative interviews are similar to a guided conversation, they are flexible, interactive and responsive to the language and concept used by the interviewee (Rubin and Rubin, 2011; Kvale (2008) cited in Braun and Clarke, 2013).

Qualitative interviews provide information according to the interviewee’s priorities, understanding and interpretations. They are useful when the phenomena of study are not well understood and to explore sensitive topics for instance, when participants might not feel comfortable with verbalising and talking about certain issues. Qualitative interviews should create a positive and motivated atmosphere to encourage participants to be open about behaviours and attitudes that might not be admitted in normal circumstances. The skill of the interviewer to listen attentively and encourage the interviewee to talk openly is required. Questions are usually predetermined but they are flexible and should



be open ended, understandable, neutral and sensitive. The interviewer has a passive and adaptive role, giving direction to topic areas. The interview length varies depending on the topic and the interviewee, generally health interviews last between 20 to 60 min (Britten *et al.*, 1995; Gill *et al.*, 2008; Stewart *et al.*, 2008).

According to Rubin and Rubin (2011) there are four categories of qualitative interviews, a) internet interviews, b) casual conversations and in-passing clarifications; c) semi structured and unstructured interviews, and d) focus groups. Internet interviews are useful with hard to reach participants and when participants might not want or might not be able to talk face-to-face, they are usually conducted through emails. Casual conversations and in-passing clarifications occurred when the research and participant meet one another unexpectedly, they are brief, unstructured and open-ended conversations. Semi structured and unstructured interviews are the two fundamental types of in-deep qualitative interviews.

Semi structured interviews (interview guide approach)

Semi-structured interviews are the most common approach in medical research (Britten *et al.*, 1995). A topic guide (a list of key open questions) is predetermined as a guide to help to define the areas to be explored. However, they are flexible as the interviewer does not need to adhere strictly to this. The interviewee or interviewer might diverge to follow and idea in more detail. Their flexibility allows the interviewee to bring issues that were not anticipated by the researcher or important information that the

researcher might not have thought previously (Pope and Mays, 2005; Gill *et al.*, 2008; Braun and Clarke, 2013).

Unstructured interviews

Unstructured interviews do not have a preconceived idea and are conducted with less organisation. They usually start with a simple question from which the interview develops. They can be, however, time consuming and difficult to carry out since there is not a predetermined interview guide (Britten *et al.*, 1995; Gill *et al.*, 2008; Braun and Clarke, 2013). Some authors distinguish in deep interviews as a different approach from semi structured and unstructured interviews (Pope and Mays, 2005). These are less structured than semi structured interviews and might cover one or two areas, they aim to have more detail and understanding of the research topic. A list of themes or topics is also produced but the interview is mainly led by the interviewee.

Interviews are mainly conducted face-to-face which is seen as the “gold standard” (Novick, 2008). Face-to-face interviews are usually audio recorded and then transformed into written text (Braun and Clarke, 2013). In some cases, face-to-face interviews can be supplemented by telephone interviews, email and online interviews. They have the advantage of being accessible for participants that are not easy to reach geographically, can save time and money; although, engagement with the participant might be more difficult compared to face-to-face interviews (Rubin and Rubin, 2011). Some advantages and disadvantages are shown in **Table 3.3**.



Table 3.3. Advantages and disadvantages of face-to-face and virtual/telephone interviews (Rubin and Rubin, 2011; Braun and Clarke, 2013).

FACE-TO-FACE INTERVIEWS	VIRTUAL/TELEPHONE INTERVIEWS
Advantages	
<ul style="list-style-type: none"> -Data can be rich and detailed. -Flexible, allowing to probe and ask unplanned questions. -They can be suitable for sensitive issues. -Allows the researcher to have control over the interview. -A small number of interviews is usually needed. -They can be used to collect data from vulnerable groups. 	<ul style="list-style-type: none"> -They could be more convenient and accessible, as they are not limited geographically, e.g. can be conducted in a comfort place. -Participants might feel they are in control and feel a sense of empowerment, e.g. they have more time to reflect and answer the questions. -Participants might find it easier to express themselves and it might be ideal for sensitive topics, e.g. hard to engage people might be more willing to take part. -They are more time and cost effective which makes it possible to obtain a larger sample.
Disadvantages	
<ul style="list-style-type: none"> -It can be time consuming for both, the researcher and the participant. -Participants might feel more comfortable in a group setting. -The lack of anonymity might make it hard to engage participants. -Participants might not feel empowered. -Sample size may be smaller. 	<ul style="list-style-type: none"> -More time consuming for participants (i.e. email interviews), as they might take longer to complete, and participants might find it onerous. -Less accessible for some people, e.g. those with limited access to a network, telephone. In the case of email interviews, participants require reading and writing skills. -Some participants can express themselves better when speaking than writing. -Researcher might have less control. -Data from email interviews is less spontaneous as participants can edit their responses.

3.2.2.2 Observation

Observation consists of systematically watching people and events with the purpose of learning how people behave and interact in natural settings. The researcher is engaged in watching but can also join the group of study and interact. Observation can help to assess inconsistencies between what people say and what they do. Disadvantages are, that care has to be taken so that the researcher does not become too engaged or deviates from the research purpose, it can be expensive, laborious and time consuming (Pope and Mays, 1995; Stewart *et al.*, 2008). Observation can be:

Direct

This method uses techniques such as questioning, watching, listening and acting. Observations are recorded through fieldnotes which might or might not follow a structured framework (Britten *et al.*, 1995). This method maybe: **a) Non-participant.** The researcher is only observing without being involved. It is useful to understand how a particular event happened instead of how it was perceived. It is often used in programme evaluation and operations research (Green and Thorogood, 2004; Stewart *et al.*, 2008). **b) Participant.** The researcher is the observer and has also a participating role. Participant observation might be overt or covert, depending on whether the study group knows that the observer is a researcher (Britten *et al.*, 1995; Green and Thorogood, 2004; Stewart *et al.*, 2008). Covert observation involves greater ethical considerations than overt observation. However, overt observation has the risk that the researched group might behave differently if they are acknowledged that are being observed (Green and Thorogood, 2004; Stewart *et al.*, 2008).

Indirect

It refers to documentary analysis of written materials, for instance medical textbooks; or conversation analysis of a doctor-patient interaction. This method is widely used in health policy, although it is less common in health research. Advantages are that it might be cost effective when data is already available and easy to access. However, there might be archiving and retrieval issues (i.e. when dealing with larger volumes of data or material) (Britten *et al.*, 1995; Stewart *et al.*, 2008; Pope and Mays, 2020).

3.2.3 Approaches for data analysis

Generally, qualitative analysis can be descriptive or interpretative. A **descriptive** approach focuses on what people said about the topic, it is useful to know details of an event (i.e. what happened, where, when and why) whereas in an **interpretative** approach data is analysed in more detail; it looks to interrogate and theorise in order to have a deeper understanding. This approach is associated with experiential and critical research (described in [Section 3.2.1](#)) (Braun and Clarke, 2013). (Braun and Clarke, 2013).

Analysis of data can look for patterns (pattern-based), interactions, or can look at stories (Braun and Clarke, 2013). Analysis can be deductive or inductive in terms of using a structure or framework. (Burnard *et al.*, 2008; Braun and Clarke, 2013) A **deductive** approach uses a structure or framework to analyse the transcripts. The researcher has their own concepts, ideas and topics and uses them to interpret the data. It is useful when the researcher is already aware of how participants will probably response. A deductive approach has the



METHODOLOGY

advantage of being relatively quick and easy to develop. However, it lacks flexibility and can lead to bias as the framework is determined in advance which can also limit theme and theory development (Burnard *et al.*, 2008; Braun and Clarke, 2013). An **inductive** approach, the most common in qualitative research, analyses data with little or no structure framework or predetermined theory. In this approach, theory is derived from the actual data and requires the identification of codes and themes. Advantages of this approach is that it is comprehensive and useful when little or nothing is known about the study phenomena. It is, however, time consuming. In common practice both approaches, deductive and inductive, are often used at the same time (Burnard *et al.*, 2008; Braun and Clarke, 2012; 2013).

There are several approaches and methods to analyse qualitative data. Thematic, grounded theory and the framework approach are the three broad methodologies (Pope and Mays, 2005). However, a number of qualitative methods use a “thematic coding” where central organising concepts (themes) related to the research question are identified and organised into categories or themes (Braun and Clarke, 2013). Main methodologies of qualitative data analysis are described in **Table 3.4**. The methodology used in the present study (Thematic analysis) is further described below.

Table 3.4. Main methods of qualitative data analysis (Britten *et al.*, 1995; Green and Thorogood, 2004; Pope and Mays, 2005; Braun and Clarke, 2013; Gale *et al.*, 2013; Clarke and Braun, 2017).

Methodology	Description
Grounded theory	This inductive approach provides a deeper analysis aiming to generate a theory or provide an explanation. It is not guided by any preliminary research on the topic. Data collection, coding and analysis, is a cyclical process. There are different versions, but some common characteristics of this approach are the line-by-line coding, the constant comparative analysis, theoretical sampling and saturation. This is commonly used in social sciences.
Interpretative Phenomenological analysis	This analysis is focused on exploring participants' experiences looking to understand and interpret how those experiences are seen and perceived by the participant. It organises data within a framework, but emerging themes are discussed in more detail. It can serve to analyse individual cases or identified themes across a small group.
Discourse	The analysis is focused on language and aims to explore and understand meanings produced by language. It looks at "what" (social realities) and "how" (meanings) are created by language.
Framework	This approach was developed by the National Centre for Social Research in England, to be used in policy research but has now been applied in other areas. Analysis is deductive from the aims and objectives. Data is summarised and analysed within a thematic framework which involves organising data by cases or individuals and by codes, comparing data across and within cases.
Thematic	This method analyses data by systematically identifying, organising and interpreting patterns of meanings across data. It is similar to content analysis where data is coded and analysed systematically. Thematic analysis provides a method for data analysis, but does not provide any method for data collection.

3.2.3.1 Thematic analysis

This method analyses data by systematically identifying, organising and interpreting patterns of meanings (themes) across data. It is similar to content analysis where data is coded and analysed systematically. It involves identifying codes from all interviews, organise and categorise them into themes. Thematic analysis provides a method for data analysis, but does not provide any method



for data collection and is not guided by any epistemological foundations (theory of knowledge i.e. determines whether knowledge is or not true) or ontological frameworks (theory about the nature of being i.e. determines whether reality is separate from human practices and understandings) nor any theoretical positions (Mackenzie and Knipe, 2006; Braun and Clarke, 2013; Clarke and Braun, 2017).

Thematic analysis has the advantage of 1) being accessible as it allows the researcher to use other research methods simultaneously and it is useful when the researcher might not have expertise in qualitative research as it can be easier to learn compared to other analytic methods; and 2) being flexible (in terms of theoretical framework, research question, methods of data collection), as it can be carried out in different ways and can be used in most of the research questions. Identification of themes are data-driven in either a “bottom-up” approach which is according to data content; or “top-down”, exploring particular theoretical ideas. Both approaches can be often used together. Thematic analysis can be experiential or critical (as described in [Section 3.2.1](#)). It can develop a critical and constructionist analysis; or give a detailed description of a phenomenon or some aspects of it (Braun and Clarke, 2013).

Some disadvantages are, however, that it requires a theoretical framework to enhance interpretation, which might limit more interpretative analysis. As it focusses on patterns, it does not provide a sense of continuity among individuals participants, therefore individual voices might not be easy to follow (Braun and Clarke, 2013). According to Braun and Clark (Braun and Clarke, 2012) thematic analysis involves six phases ([Figure 3.3](#)).

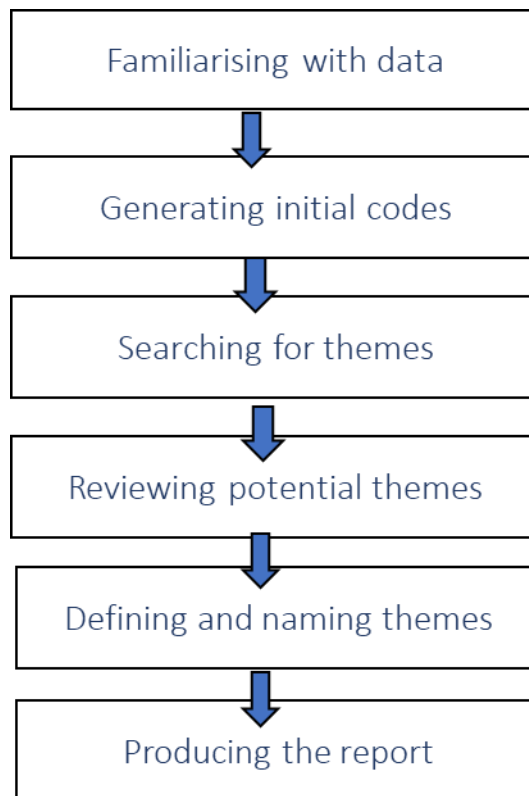


Figure 3.3. Thematic analysis phases.

Familiarising with the data (e.g. by reading and rereading transcripts, listening audio recordings, watching video data) is a necessary step to start thinking about the meaning of data and highlight relevant topics. It requires reading actively, analytically and critically. It also involves making notes, although this is not systematically at this stage but observational and casual (Braun and Clarke, 2012).

Coding process

Codes can be words or phrases which represents relevant aspects to the research question, they can be semantic or latent. **Semantic (data-derived)**



codes are based on the semantic content, giving a concise summary of a determined part of the data. They reflect the language and concepts from the interviewees. **Latent (research-derived)** codes require interpreting data in a more conceptual or theoretical way and identify meanings that are implied within the data (Braun and Clarke, 2013).

In pattern-based analysis the coding process can be (Braun and Clarke, 2013):
a) Selective. Codes identify particular aspects of the data with the purpose of reducing it. It requires the ability to identify analytic concepts. **b) Complete.** This approach identifies and codes all the relevant data that answer the research question. However, coding becomes more selective in the analytical process.

Relationships can be non-hierarchical (lateral) or hierarchical. Hierarchical relationships have three levels of themes: 1. Overarching themes: they give organisation and structure to the analysis, capturing main ideas but do not contain codes or data; 2. Themes: they capture specific aspects of a theme; and 3. Subthemes (Braun and Clarke, 2013).

3.2.3.2 Use of Computer Assisted Qualitative Data Analysis (CAQDAS)

Software packages such as ATLAS.ti, NVivo and HyperResearch can help store, manage, sort and organise data for analysis and therefore increase efficiency. Their use depends on the type of project, research question, data, analytic approach and familiarity with the use of technology (Pope and Mays, 2005; Braun and Clarke, 2013). These programmes have advantages such as managing large volumes of quantitative data, allow coding data, help in a quick search of codes,



do annotations and extract data. It can increase the rigour of coding and analysis if performed correctly. However, disadvantages are affordability and that it might require learning about their use. There might be a sense of “distance from data” as some researchers might feel less immersed with the data. There might be also a risk of over-coding or focus on quantity (Burnard *et al.*, 2008; Braun and Clarke, 2013).

3.2.3.3 Verification of data analysis

Researchers might interpret data in different ways, therefore the process of verification can make the analysis more rigorous and may reduce bias (Burnard *et al.*, 2008; Braun and Clarke, 2013). This can be made by:

a) Respondent validation or member checking. This involves asking the participants to validate (or refute) the interpretation of the researcher. This form of validation can help to refine theme and theory development. However, it is time consuming and participants might not be engaged or want to take part, and the participant might have changed their perceptions and views because of temporal effects (Burnard *et al.*, 2008; Braun and Clarke, 2013).

b) Peer review, peer debrief or inter-rater reliability. In this form of verification an independent qualitative researcher analyses the data. This process might help with lone researcher bias and can provide additional insight. However, it has been argued that the researcher might interpret data differently which might create conflicts (Burnard *et al.*, 2008).



c) Triangulation. This process involves using two or more methods of data collection in order to have different perspectives of the subject study (Britten *et al.*, 1995; Bower and Scambler, 2007). Some authors are of the view that it helps to strengthen analytic claims and have a “richer” story rather than having a single accurate story (Smith (1996) cited in Braun and Clarke, 2013). This technique was developed for qualitative methods but is also used in mixed methods analysis (Braun and Clarke, 2013).

3.3 Background on the use of mixed methods

Quantitative and qualitative research can complement each other as they serve different purposes and address different types of questions. Qualitative research can be used as a preliminary study to a quantitative study, while it can contribute to generate and develop theories (hypothesis generating), quantitative research can be used to test these findings (hypothesis testing) (Britten *et al.*, 1995).

For instance, in dental care research, quantitative methods are used to study the extent of a phenomenon, for instance, disease prevalence, on the other hand, qualitative research helps to describe the form and nature of this, e.g. the experience of illness (Britten *et al.*, 1995). Quantitative research can investigate variations in oral health behaviours, for instance those variations according to sociodemographic characteristics, on the other hand, qualitative research can help to explore *why* these variations exist, *what* is the social role of behaviour and how advertisements of oral health products are perceived (Bower and Scambler, 2007). Some differences between quantitative and qualitative research are summarised in **Table 3.5**.

Table 3.5. Differences between quantitative and qualitative research (Bower and Scambler, 2007; Braun and Clarke, 2013).

	Quantitative	Qualitative
Nature of reality and knowledge	Reality is independent of human beliefs and interpretations. It can be measured directly.	There is an independent reality that can only be accessed through human interpretations, there are, therefore, multiple perspectives. Some researchers claim that there is no single independent reality, but individual or shared human constructions.
Aim	Looks to identify associations between variables, seeks general patterns. Aims to generalised findings.	Looks to understand and interprets meanings. Seeks patterns exploring differences and divergences within the data.
Data	Use numbers.	Use words and images (written and spoken language). Data is narrow but detailed.
Research questions	How much, how many? Looks for statistical differences, correlations, predictors.	What, why, how?
Theory	Testing, deductive.	Theory generating, inductive.
Acquisition of knowledge	Mainly through deduction.	Induction and deduction.
Relationship between researcher and participant	Data from participants is not affected by the researcher. The researcher is detached and impartial (objective).	Researcher and participant influence each other. Values personal involvement and partiality (subjective).
	Objective. "Value-free" research is possible.	Objective. "Value-free researcher" is not possible.
Approach	Reductionist, the design is predetermined. Phenomena is understood from the perspective of the researcher. Focused on objective measures.	Holistic, flexible allowing to explore emerging ideas. Phenomena is understood from the perspective of the participant. Focus on subjective meaning, understating process Conducted in natural settings.
Research instrument	Uses a validated instrument, measures, questionnaires.	Researcher is the primary instrument.
Sampling	Uses probability sampling determined by statistical calculations and it is representative of the population.	Purposive and theoretical sampling reflecting diversity of the population (flexible to be adapted by emerging theory). Participant number is ideally determined by theoretical saturation. Involve a small number of participants.
Method	Fixed method (i.e. it may be difficult to change the research focus once data collection has commenced).	Less fixed.
Analysis	Analysis after the collection of data. Use of statistical analyses and formulas. Can be completed relatively quick.	Analysis is simultaneous with data collection. Use non-statistical methods, there is no formula. As it is interpretative, can take longer to complete.
Results	Provide descriptive statistics, statistical evidence and prediction of effect of independent variables on an outcome.	Detailed descriptions and explanations.
Generalisation	Probabilistic, inferential.	Representational, inferential, theoretical.

3.3.1 Integrating data

Data can be integrated by using a triangulation protocol which is the most used approach in mixed methods studies (O'Cathain *et al.*, 2010; Östlund *et al.*, 2010). A triangulation protocol compares findings from each study using a “convergence coding matrix” to see whether data converge, e.g. agreement, partial agreement or silence (a theme appearing in one set of data but not in another), dissonance or whether data offer complimentary information (O'Cathain *et al.*, 2010). Triangulation can be *via data* when data is collected from different sources; *via methods* where different methods of data collection and data analysis are used, commonly used in mixed methods; and *via researchers* where a team of researchers collect and analyse data (Braun and Clarke, 2013).

3.3.2 Mixed methods in healthcare evaluation

Some ways in which quantitative and qualitative studies can be combined in health care evaluation are (Pope and Mays, 2005): **a)** for instance, in a process evaluation, observation and interviews can be conducted along with experimental designs, e.g. RCTs to study how the intervention works; **b)** in a formative or summative evaluation, qualitative research methods can help with the development of the intervention whereas quantitative research can be used to assess whether the intervention has worked; **c)** in a trial, observation and interviews with health professionals that are recruiting patients for RCT, can help to identify barriers for participation, and finally **d)** qualitative research can be used at different stages of the evaluation of complex interventions to gain a better understanding of how the intervention works and improve its delivery.



Section 2: The Starting Well Programme and Methodology for the study

3.4 The Starting Well programme

3.4.1 Introduction

The NHS Starting Well programme (A Smile4Life Initiative) (NHS England, 2017b) was announced through a Ministerial Statement to the British Dental Association conference in May 2016 in response to the challenge of improving children's oral health (House of Commons Hansard, 2017). This programme of dental practice-based initiatives aimed to reduce oral health inequalities and improve oral health in children under the age of five years living in 13 areas identified as 'high priority areas' (**Section 3.4.2**). The programme was available to all children under five, with a focus on those who are not currently visiting the dentist and those aged under one-year. The programme documentation and methods were made available to all NHS England local teams, meaning that commissioners can consider using the programme as a template for other areas. An aligned initiative, Starting Well Core, commenced during 2018. This programme is also designed to improve access to dental services for young children and promote a greater focus on prevention. To assist distinction from the Starting Well Core, the programme being evaluated has been referred to as **Starting Well 13 (SW13)**.

3.4.2 Selection of the 13 areas

The 13 high priority areas were selected in terms of high levels of deprivation and tooth decay, and with an anticipated no change or worsening of disease levels based on data trends. PHE assisted with the process to select these priority areas. **Figure 3.4** shows LA boundaries and the LAs in which SW13 was commissioned. Details of the 13 local authorities who took part in the initiative are summarised in **Table 3.6**.

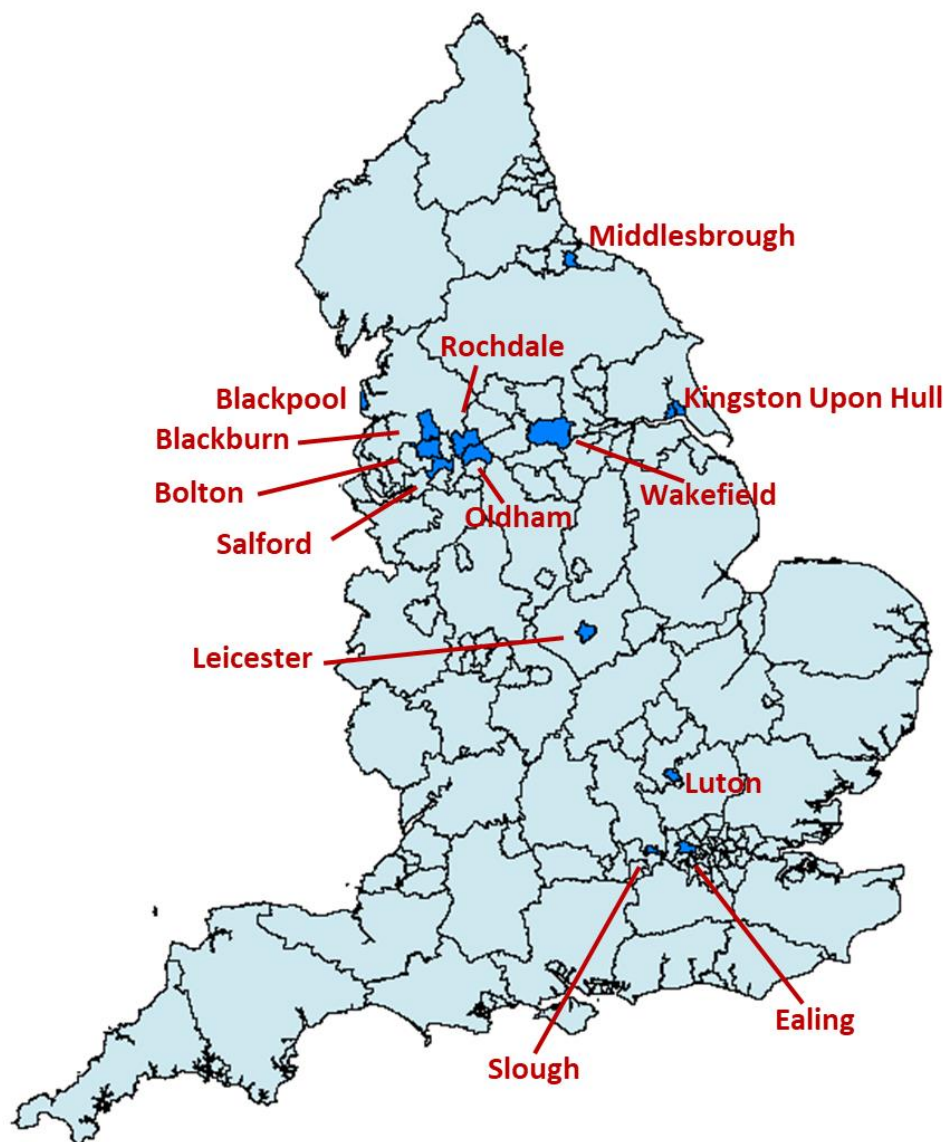


Figure 3.4. Local authorities in which SW13 was commissioned.



Table 3.6. Details of local areas participating in the SW13 (Department for Communities and Local Government, 2015a; NHS Digital, 2017; PHE, 2018b; c).

Local Authority	IMD Rank	IMD Average Score	Dental caries in 5 years old % (2017)	Dental Attendance rates (2017)				Changes in the level of decay prevalence (Trend classification using PHE analysis)
				All children	Children aged 5 years and under	Children aged 1 year and under	Children under 1 year	
Blackpool	1	41.997	24.9	57.4	39.4	15.0	3.8	-
Kingston upon Hull, City of	3	41.235	32.8	70.8	46.2	15.3	3.6	Not change
Middlesbrough	6	40.216	32.1	70.7	48.1	20.0	5.6	Improving
Blackburn with Darwen	14	34.189	42.6	67.8	44.5	14.3	3.5	No change
Rochdale	15	33.684	47.1	65.7	49.6	24.1	8.0	No change
Leicester	19	33.065	38.7	68.9	46.6	18.5	4.9	Improving
Salford	20	32.959	44.6	62.1	42.1	16.7	5.1	No change
Oldham	28	30.291	34.8	61.5	46.7	23.6	9.0	No change
Bolton	40	28.42	37.8	64.4	47.5	21.5	7.4	No change
Luton	47	27.577	37.6	55.2	35.0	10.0	1.8	No change
Wakefield	52	26.892	28.8	65.5	45.9	14.9	3.3	-
Ealing	73	23.585	30.7	57.2	33.4	9.5	2.0	-
Slough	78	22.873	41.5	52.3	28.6	6.8	1.5	No change
ENGLAND	-	-	23.3	58.3	38.1	11.7	2.8	-

3.4.3 Modes of delivery

The Starting Well initiative has two modes of delivery:

a. Starting Well Preventive Practice (SWP)

Interventions were offered at an individual child and family level. This aspect focussed on implementing systems and processes within practices to ensure a greater preventive focus. Features included each practice identifying a designated practice prevention champion to support change.

b. Advanced Starting Well Preventive Practice (ASWP)

This aspect involved all the features of SWP but, in addition, dental teams were to integrate with their local community and engage with a range of local partners to promote key oral health messages, uptake of dental checks by children before their first birthday and increase access for “high-risk groups” (i.e. those at high risk of developing caries).

3.4.4 Contracting and monitoring

Dental providers were recruited by local commissioners who held launch events to introduce the programme to dental practices and local partners. Contracting was via a standard contract variation to NHS GDS contracts. The number of contracts that could be offered in any particular area was determined by the funding made available to local commissioners.



Providers were required to submit information centrally describing their activities over and above the information submitted through standard FP17 returns. SW13

Practices were monitored on the following activities:

- Establishment of a designated Practice Prevention Champion (PPC)
- Staff training and meetings on preventive practice and safeguarding
- Implementation of a Delivering Better Oral Health audit and action plan
- Improvement against the baseline Delivering Better Oral Health audit
- Dental attendance by young children
- Provision of preventive advice and interventions
- Fluoride varnish applications in the under fives
- Follow-up appointments for children referred from Starting Well practices for extractions under general anaesthetic or sedation

In addition to the monitoring required of a SWP, ASWP were also monitored on the following:

- Number of external settings engaged with to promote oral health
- Types of oral health promotion activities provided
- Number of DAs by children aged under the age of five from the selected high-risk group
- Number of children that attend following referral by health or social care professionals

3.5 Evaluation of the Starting Well 13 programme

The evaluation of the Starting Well 13 was a joint initiative between NHS England, NHS Business Services Authority, Public Health England and The University of Birmingham. My contribution was to the design of an evaluation plan, conducting qualitative research to an agreed programme, summarising quantitative data collected by NHSBSA and contribute to the development of a Baseline and Final evaluation report. These reports can be found in **Appendix III**. The final report was still under development at the time of writing and is presented as a draft.

3.5.1 Aim of the evaluation

To evaluate if the aims and objectives of the programme were met and to inform the development of guidance to future commissioners of such programmes.

The evaluation sought to assess the programme from the perspectives of commissioners, dental teams, local networks and PHE consultants in dental public health. It focused on whether the interventions were operable and whether high level outcomes such as increased number of children from high needs areas attending dental practices were achieved.

3.5.2 Evaluation design

The evaluation followed the Donabedian model (Donabedian, 2005) (described in **Section 3.1.4.1**) which examines Structure, Processes and Outcomes. It used a mixture of qualitative and quantitative methodologies. In evaluation, mixed



methods are commonly used when the focus of the evaluation is on the process (Mertens and Wilson, 2012). A concurrent mixed methods design was employed (Described in [Section 3.3](#)) as both methods were implemented at the same time.

The evaluation plan was designed to be dynamic and adapt to meet changing circumstances during the course of the programme. The evaluation was conducted from January 2018 to March 2020. The timeframe for the evaluation and coverage of the initiative did not allow an assessment of whether the initiative led to reduced levels of tooth decay among the local population.

A summary of the evaluation plan is shown in [Table 3.7](#).

3.5.3 Data

Quantitative data

Quantitative data for the evaluation derived from routine FP17 data and specific Starting Well submissions (via a Web Tool):

1. A monthly practice submission. Practices reported operation of the main processes through which Starting Well 13 services are delivered.
2. A quarterly preventive practice audit. It was based on PHE guidance Delivering Better Oral Health in which practices report a wide range of preventative practices.



3. Quarterly patient experience audits (Patient questionnaire). Parents and guardians report their experience of individual visits by children to Starting Well practices.

Qualitative data

A series of semi-structured interviews supplement the above data. As mentioned earlier, semi-structured interviews are commonly used in health research to explore perceptions about a programme or intervention on how it is perceived and understood by the people involved. An advantage of semi-structured interviews is their flexibility as emerging issues can be explored. The qualitative study also included observation of some local and national networking events through the development of the programme.

Quantitative and qualitative data were collected and analysed separately, then they were integrated following a triangulation protocol (O'Cathain et al., 2010) (described in [Section 3.3.1 Integrating data](#)) in which findings were compared and complemented. The methodologies for both, quantitative and qualitative studies, are detailed in the next two sections.



Table 3.7. Evaluation plan for the SW13 programme.

Aim of the evaluation		To evaluate if the aims and objectives of the programme were met and to inform the development of guidance to future commissioners of such programmes.					
Duration		January 2018 to March 2020.					
DONABEDIAN MODEL	Objectives	Qualitative data		Quantitative data			FP17 Data
		1st Stage Before implementation in SW practices	2nd Stage Midway through implementation	Non-FP17 Data			
				Practice Submission Monthly	Audit Quarterly	Patient Questionnaire Quarterly	
DOMAIN 1: STRUCTURE	Describe the SW13 areas, the commissioners and the practices: i. The commissioning processes used to recruit and contract with practices joining the initiative. ii. The number of participating practices and pattern of provision (SWP/ASWP). iii. The contract models employed between NHSE and the dental teams. iv. Details of the local networks, including LDNs, LAs and early years leads. v. Local oral health strategies and other initiatives relevant to child oral health in the 13 areas.	-Semi-structured one-to-one interviews with local commissioners and those involved in the design and planning of the initiative (local partners: PHE, BDA, HEE, LDNs) to capture experience in establishing local projects.	-Semi-structured one-to-one interviews with dental practices to capture how they see their role developing, support needs, processes adopted, potential facilitators and barriers. Follow-up interview with local commissioners.				
DOMAIN 2: PROCESS	i. Practice development (identification of prevention champion, team development, audits). ii. Local partnership working (e.g. prevention champion working collaboratively with early years partners, local community, oral health improvement team / LA health improvement, local PHE). iii. Process adopted by dental practices.	-Observation of national/local meetings.	-Observation of national and local meetings.	✓	✓		
DOMAIN 3: OUTCOMES	Seeks to provide a narrative on: i. How access rates for younger children changed after the initiative commenced, particularly for children who were not regularly visiting the dentist. ii. The extent to which practices adopted a more preventative approach as a result of the initiative.			✓	✓	✓	✓

Section 2A

3.6 Qualitative study for the evaluation of the SW13 programme

3.6.1 Aim

To capture the experiences of those involved in the design, planning, implementation and development of the programme. Interviews were carried out in two stages, before implementation in dental practices and midway through implementation.

3.6.2 Ethical approval

An application form for ethical review was submitted to the University of Birmingham for consideration of any implications as the study involved human participants. However, participants were not identified as vulnerable. After consideration, it was decided that further ethical approval was not required, rather the study was noted as a “Service evaluation programme”.

3.6.3 Participants and recruitment

The number of interviews was determined by the number of people involved in the design, implementation and development of the initiative across the 13 SW areas and according to the objectives of each stage. A list of participants is shown in **Table 3.8**. A purposive (selective) sampling technique was used (Palinkas *et*



al.; Etikan, 2016). In this non-random technique participants are chosen deliberately because they have certain characteristics. In this case, all local commissioners across the 13 areas and people involved in the planning and design of the evaluation were included.

For the selection of dental practices, a maximum variation (heterogeneous) purposive sampling was used, this approach looks to have a broad range of perspectives (Palinkas *et al.*; Etikan, 2016). Since it was not possible to interview all dental practices participating in the programme the criteria developed included:

1. At least one PPC and one dental provider (NHS contractor) in each of the eight SW13 District Commissioning Offices (DCOs).
2. A range of interviewees in terms of progress and engagement (assessed by local commissioners).
3. A mix of Preventive and Advanced practices. Interviews also included a follow up with NHS England local commissioners and/or PHE Consultants in Dental Public Health.

A list of contact details (local commissioners, local dental networks chairs, Public Health England consultants in dental public health in the 13 SW areas and national leads) was provided by the NHS central team who advised participants of the interviews. Contact details of dental practices were provided by local



METHODOLOGY

commissioners or PHE consultants in dental public health in each of the eight SW13 DCOs.

Participants were invited for the interview via email, they were informed of the purpose of the evaluation and the aims of the interview, the anonymity of the interview, the use of data and the main topics covered, this in order to provide them an insight of the expectations. For the first stage of the interviews 34 people were invited, 6 of them did not reply. For the second stage, 37 people were contacted, 4 of them did not reply.



Table 3.8. Participants and main topics for each stage of qualitative research.

		FIRST STAGE	SECOND STAGE
		Before implementation in dental practices. Nov 2017 to Feb 2018.	Midway through implementation. Nov 2018 to Mar 2019.
Aim of qualitative research		To capture the experience of those involved in the design and initiation of the SW13 Programme.	To explore early experience with implementing and establishing the programme at local level.
Participants		28 interviews: -NHS Central Team (4) -Chief Dental Officer representative -PHE National Lead -BDA national representative -Local Commissioners (8) -PHE Consultant in dental public health (8) -LDN Chair (5)	33 interviews: -NHS England local commissioners and/or PHE Consultants in Dental Public Health (10) -Practice Prevention Champions (11) -Dental providers (10, four of them were also PPCs) -Health Education England (2)
Main topics	Structure	Expected ambitions and benefits. Structure of the programme. Local context and programme suitability with local programs.	Current shape of the programme. Current context and synergy with other programmes. Specific to dental practices: Practice organisation Experience during initial implementation.
	Process	Recruitment of practices. Role of key partners/ Partnership working Required process to achieve the benefits. Anticipated challenges and how to overcome them.	Recruitment of practices and contracting. Practice and PPC development. Training. Partnership working and local network. Information and monitoring. Challenges to date, facilitators and barriers. Anticipated challenges. Specific to dental practices: Role of the practice and PPCs. Process adopted by dental practices to achieve a preventive focus and taking on new patients. PPC role developing Challenges, facilitators and barriers.
	Outcomes	Evaluation of success, anticipated outcomes and how they will be achieved. Key lessons.	Evaluation of success and achievement of outcomes: Indicators of improvement to date/measures of success. Sustainability. Key lessons.

3.6.4 Data collection

Sixty-one semi-structured interviews were conducted either face-to-face or by telephone (28 face-to-face interviews during the first stage; 26 face-to-face interviews and 7 telephone interviews during the second stage). Face-to-face interviews were usually conducted at the participants' place of work or at a convenient place. Telephone interviews were planned to be conducted mainly with dental practitioners to make them more accessible. The duration was around 30 to 60 minutes. Interviews were recorded using a digital voice recorder in order to have an accurate summary of the responses.

At the time of the first stage of the interviews, recruitment of dental practices was still underway. By the second stage, it was anticipated that commissioners and providers had already agreed the local shape of the programme and providers had already started to undertake the commissioned activity. **Table 3.8** shows the stages of qualitative interviews.

3.6.4.1 Consent and data security

Participants were given reassurance of the confidentiality and anonymity of the interviews and were asked for permission to record the interview. Recordings were transferred to a secured computer at the Dental School, University of Birmingham. Transcripts and files from NVivo 12 Plus (QSR International, 2018) software were also stored in a secured folder. Two of the participants did not consent to record the interview.



3.6.4.2 Topic guide

The topic guide was developed following the Donabedian's model described in **Section 3.1.4.1** looking at the structure, process and outcomes. The first interviews served as pilot to determine if there was a clear understanding of the research questions and make the adequate changes for a better understanding and sequence of the questions. This was modified through the development of interviews. Questions were modified according to the interviewee position (e.g. local commissioner, Public Health England Consultants). Main topics are also summarised in **Table 3.8**. The full topic guide can be found at **Appendix II**.

3.6.4.3 Observation of meetings

Three national meetings (one online meeting) and four local networking meetings (one telecom) were observed following a direct non-participant approach (described in **Section 3.2.2.2**.) National meetings were organised by the central team and attended by local commissioners and/or PHE England Consultants in Dental Public Health. Local meetings were organised by local teams usually with the support of Local Authorities. These meetings were attended by local champions, and in some cases by dental providers and local partners.

3.6.5 Data analysis

Audio-recorded interviews were transcribed verbatim (orthographic transcription) to avoid bias. In this style words and non-semantic sounds (erm, er, uhuh...) are transcribed (Braun and Clarke, 2013). Transcriptions were carried out by an



METHODOLOGY

independent person with no relation to the project. Five interviews of those from the first stage were transcribed by myself in order to get some hands-on experience. Manuscripts were captured in Word. The recordings were listened carefully using Media player to check agreement between the recordings and the transcripts. Punctuations were omitted. Pauses were signalled as (Pause). Non-identified words were checked with supervisors.

Analysis of data followed a thematic analysis using a framework approach (described in [Section 3.2.3.1](#)). NVivo 12 Plus (QSR International, 2018) was used to organise and manage data. Steps taken are described in [Figure 3.5](#), as suggested by Braun and Clarke (2012). Main themes and subthemes identified are shown in [Figure 3.6](#). These will be presented and discussed in the next chapters.

Triangulation was used as a form of verification, via methods, using two different data collection methods: semi-structured interviews and observation. Observation of meetings helped to validate findings from interviews.

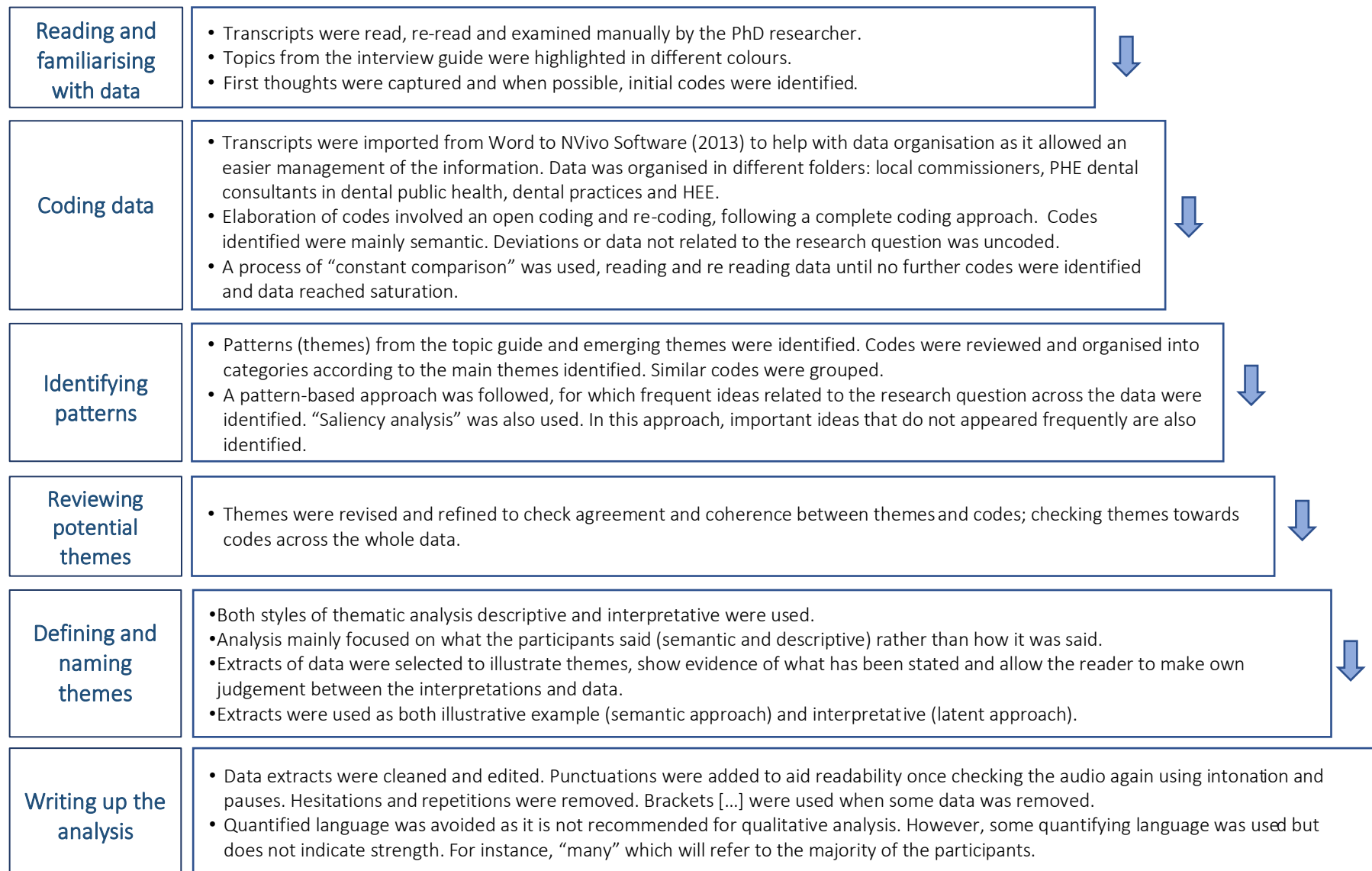


Figure 3.5. Steps taken for data analysis of qualitative interviews.

METHODOLOGY

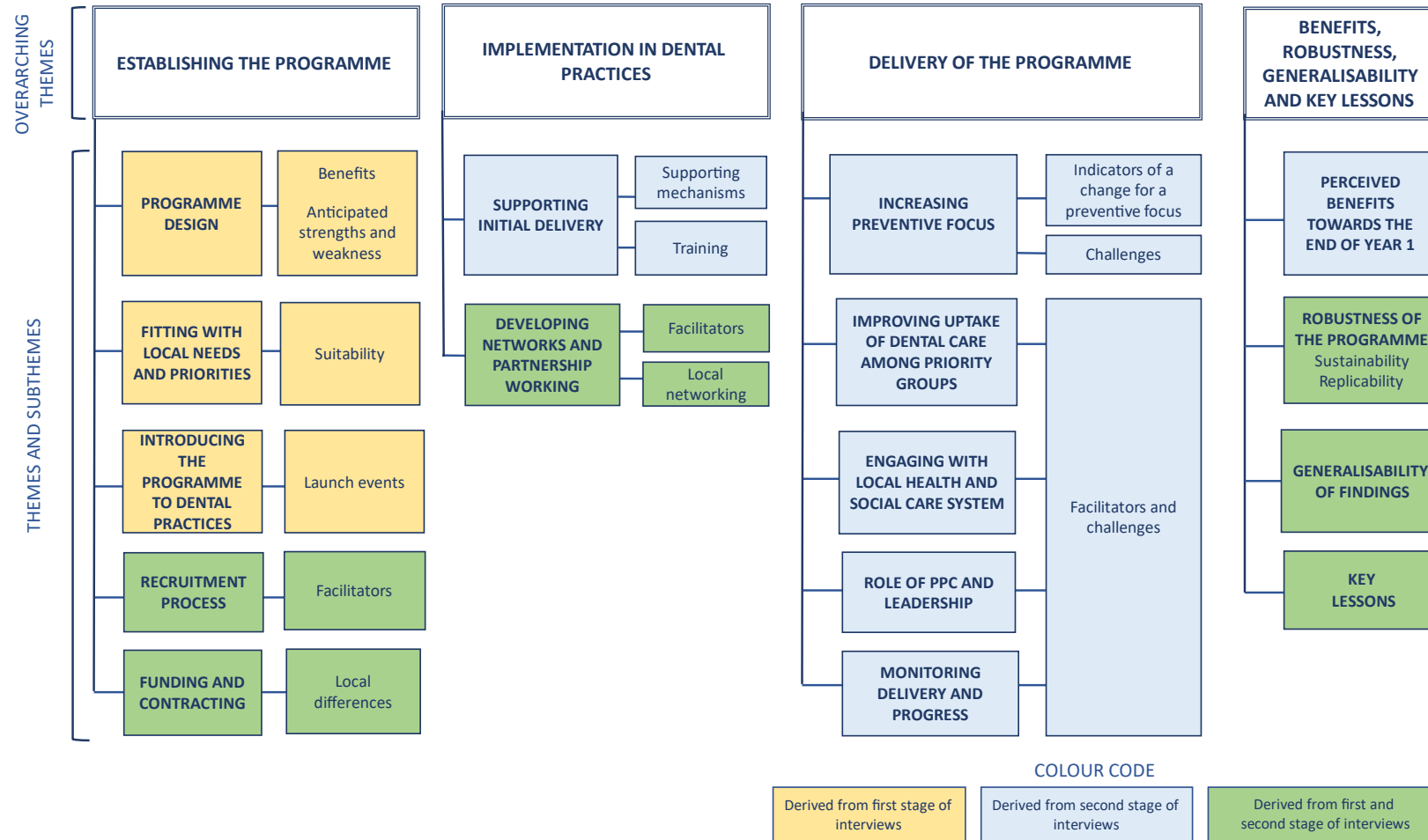


Figure 3.6. Main overarching themes, themes and subthemes derived from analysis of qualitative data.

Section 2B

3.7 Quantitative study for the evaluation of the SW13 programme

Indicators from the SW13 which were captured through the monthly practice submission were grouped according to the process, structure and outcomes. They are shown in **Table 3.9**.

Data received from monthly submissions, audit and patient questionnaire were collated, cleaned (due to inconsistencies described below) and summarised in excel tables. This was done with every monthly submission. Then, some indicators were chosen to present them in the results as graphs and tables. The monthly practice submission was presented quarterly; results of the quarterly preventive practice audit were presented biannually whereas the patient experience audit was presented quarterly. FP17 data was presented per year (12 months to January for dental access data and 12 months to March 2020 for Fluoride Varnish rates).

3.7.1 Data management

There were some inconsistencies related to the number of submissions and errors when introducing the contract number. Some practices made more than once submission in a month having as a result duplicated data. These data were



reviewed in detail. Some of them were late submissions, as reported by some practices in the additional information. Actions taken were:

- 1) For those who clarified that it was a late submission, the data was moved to the corresponding month.
- 2) Only one submission was considered when the other(s) were incomplete.
- 3) In some cases, figures from both submissions were summed up. For non-numeric indicators, when the answer to the “Practice Submission indicator” should be YES/NO, the responses were modified to show only one response.

Some practices made multiple submissions of the Audit to reflect the individual work from each dentist in the practice, in these cases the average was taken. There were also some inconsistencies when reporting the percentage achieved in the Audit indicators, and other practices wrongly reported the total number of patients seen and the number achieved inversely. Those figures were amended accordingly. For those practices that introduced an incorrect number, it was verified, and data was reported in the appropriate contract.

Table 3.9. Quantitative data indicators for the SW13.

	SW Practices	Indicators	Source data	Frequency
DOMAIN 1: STRUCTURE (Data derived from Qualitative study).				
DOMAIN 2: PROCESS				
i. Practice development	All Practices	-Has the practice completed a baseline DBOH audit? -Has the practice completed an action plan for their baseline audit? -The practice has a flow chart for managing Safeguarding concerns -Does the practice have a prevention champion in post? -Has the practice held a monthly meeting for all dental team members on preventative practice and Starting Well? -Is the practice advertising it is a breast-feeding friendly practice?	Practice submission	Monthly
		Has the practice submitted the quarterly patient questionnaire data?	Patient Questionnaire	Quarterly
		Has the practice submitted the quarterly DBOH re-audit data?	DBOH Audit	Quarterly
ii. Local partnership working	All Practices	Has the champion attended the most recent locality network meeting?	Practice submission	Monthly
	Advanced SW Practices	Number of health and social care staff engaged with during the month Types of social care staff engaged with.		

Table 3.9. Continuation.

	SW Practices	Indicators	Source data	Frequency
DOMAIN 3: OUTCOMES				
i. How access rates for younger children changed after the initiative commenced, particularly for children who were not regularly visiting the dentist	All practices	-Is the practice actively taking on new patients who are under 5 years old? Has a target high risk group/locality been identified through the local prevention network? -The number of patients under 5 the practice has taken on from the high-risk group/locality. -The total number of patients (without a regular dentist) who have been referred to the practice post extraction under general anaesthesia/sedation (include children under 5 and their siblings). -The total number of patients who have attended the practice, having been referred to the practice, post extraction under general anaesthesia/sedation (include children under 5 and their siblings). -The total number of patients from the high-risk group/locality who have been referred from the practice for extraction under general anaesthesia/sedation (include children under 5 and their siblings).	Practice submission	Monthly
	Advanced SW Practices	-The number of patients attending the practice who have been signposted to the practice from a named adopted setting. -The number of patients attending the practice who have been referred by health and social care staff.		
	All Practices	-The number of new under-fives accessing care. -The number of under-fives accessing care.	FP17 Data	Annually

FP17 data is captured monthly but received per year (12 months to January) for analysis.

Table 3.9. Continuation.

	SW Practices	Indicators	Source data	Frequency
DOMAIN 3: OUTCOMES				
ii. The extent to which practices adopted a more preventative approach as a result of the initiative	All practices	-The number of under-fives accessing care. -The number of parents of children under 5 that have had a 'Make Every Contact Count' contact. -Practice has had an oral health improvement display in practice with content that has been agreed by the network. -Number of tooth brushing packs given to under 5-year-olds.	Practice submission	Monthly
	Advanced SW Practices	-Tooth brushing club supported. Has the practice had an open day? -The number of other oral health events and initiatives the practice has supported in the previous month (include both in-practice and wider setting activities, but not tooth brushing clubs). -Details of oral health events and initiatives supported. -Has the practice adopted any new settings in the previous month that have been agreed by the Network? -Details of activity at adopted settings.		
	All practices	-The fluoride varnish rates for under-fives.	FP17 Data	Annually
	All Practices	-Prevention advice given to all 0- to 2-year-olds. -Prevention advice given to all 3- to 4-year-olds.	Practice Audit	Quarterly
-Patient experience: Dental appointment visit.		Patient Questionnaire	Quarterly	

FP17 data is captured monthly but received per year (12 months to January) for analysis.

CHAPTER FOUR

4 RESULTS

4.1 Introduction

This Chapter presents the results from both, quantitative and qualitative research conducted for the SW13 initiative. As discussed in the previous chapter, quantitative data derived from routine dental data and specific SW13 submissions. At the time of the first stage of qualitative research, recruitment of dental practices was still underway. The second stage of the interviews was conducted after implementation of the programme in dental practices. Main emerging themes are shown in **Figure 4.1** and are discussed along this chapter.

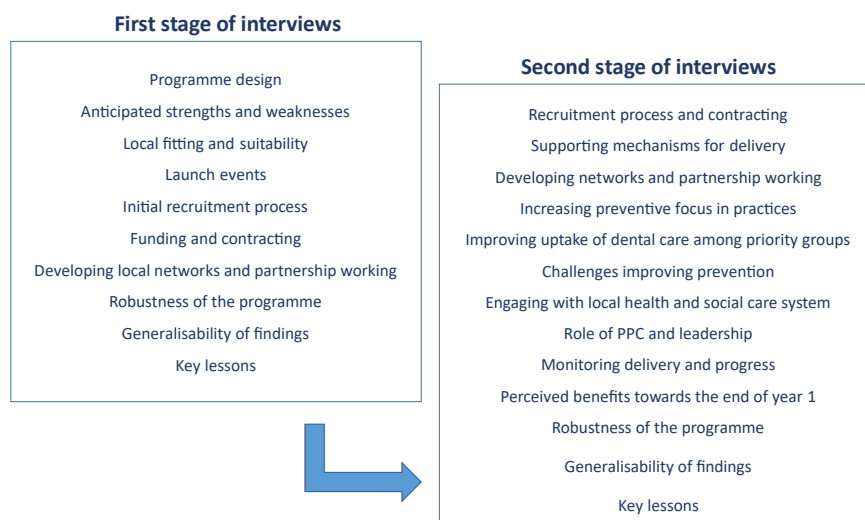


Figure 4.1. Main emerging themes from qualitative interviews.

4.2 Establishing the programme

4.2.1 Programme Design

The NHSE&I central team arranged national programme board meetings on a frequent basis. These meetings involved a representative from each locality, usually local commissioners and provided an opportunity to collaborate in different aspects of the planning and development of the initiative. Local teams were very positive about the programme at the point of initiation. It was considered that the initiative was ambitious and had brought an opportunity for different parts of the health system to work together in a coordinated way:

'I think it's been incredibly rewarding to see people who don't normally work together working outside of their comfort zone to produce something as high quality as we can and really people have been very committed to doing that' (NHS central team).

'It's got a lot of the things you need to make something work so you've got the national leadership you've got the programme board...I've really enjoyed working on it...we've had just about the right number of meetings that hasn't become a chore and you don't get to the point where you think we don't need to meet I think it's been managed really well it's funded, we've managed in [SW locality] to identify funding for it and I know that's not the case everywhere' (Local Commissioner, NHS England).

'I think it's such a good programme it was really collaborative work with the public health team and the local authority and we actually put in some active movement as part of the training...' (Regional Dental Adviser, Health Education England).



In particular it was felt that the initiative had allowed practices to devote more time to prevention and engage with local communities:

'I think the Starting Well Programme is good because they do pay the practices to free up staff and I think that's a really good thing you know I think that's going to make it much more effective.' (BDA).

'What I like about Starting Well is it's absolutely inspired because it looks into the practice and it also looks outside as well because without that link with the community our efforts as a dental profession will be less effective' (PHE Consultant in Dental Public Health).

It was anticipated that the programme might facilitate local system development which would be of benefit beyond the SW13 objectives, as exemplified by this comment:

'We leave a legacy which means that our local authorities and our dental practices are forever linked together and working together going forward that once the funding runs out it's custom and practice for health visitors to talk to dental practices and it's custom and practice for Sure Start dentists to talk to our dental practices to have that kind of engagement going backwards and forwards' (NHS Central team).

4.2.2 Anticipated strengths and weaknesses at the point of initiation

Having a national framework was helpful, whilst allowing some flexibility for local adaptation. There were some conflicting views, however, implementing a programme that is led nationally but funded and implemented locally:

'The national programme has been really helpful in terms of providing a framework nationally and a national profile for us to then adopt and adapt locally so as I say we are not doing exactly what the national framework is but we are looking to deliver the same outcomes' (Local Commissioner, NHS England).

'...how that balance between a nationally led but locally implemented ...that dynamic is quite a difficult one to achieve' (Local Commissioner, NHS England).

There were some concerns voiced over the ability of dental providers to adopt more preventive approaches and adapt to new ways of working and that investment in training and support would be vital:

'I'm not sure that the dental practices were ready for it I think there are still practices out there that are not following the advice in delivering better oral health ...' (PHE Consultant in Dental Public Health).

'I think quite a lot will fall on the oral health champion the prevention champion that is within the model and I think my biggest worry probably would be turnover of staff...'' (LDN Chair).



'I think you need to have the teams the whole dental team really trained up [...] I think there are challenges for the dental teams in terms of finding the time to do what they need to do there's challenges in terms of them actually having had the training and the knowledge to do what needs to be done' (PHE Consultant in Dental Public Health).

The importance of working with the community was seen as essential in attracting patients and producing a cultural change towards prevention, as exemplified by this comment:

'I think we certainly need to work with communities to stimulate demand and to get them to understand that dentistry and the delivery of dental care is not necessarily interventional it is about prevention and improving health and that's a massive job that we have to do' (NHS Central team).

Some interviewees felt that caution was needed to emphasise how the programme requirements differed from those for base contracts, particularly regarding individual prevention interventions. It was also recognised at the outset that it might take some time for oral health improvement to be apparent and that in the short term some indicators, such as referrals for extractions might worsen. Concerns were also raised about long-term sustainability of the programme, including funding arrangements. Some comments were:

'Part of the big benefits will be that if the prevention messages are embedded then hopefully in the future years the level of decay etc. will be reduced...but that's not something that happens that quickly...' (Local Commissioner, NHS England).

'Always difficult to say for preventative programmes...I think over a number of years we might expect there to be an improvement in the oral health of the children that have been involved in the programme...hopefully encouraging that both them and the rest of their family to take better care of their teeth to understand what they need to do and to reduce the incidence of dental decay later in life' (NHS Central team).

'If particularly in (locality) if you get more children coming to the dentist GAs are almost certainly going to go up so and that's not necessarily a bad thing because actually it means that maybe these kids who weren't getting their dental care addressed will now get it addressed' (Public Health England Consultant in Public Health).

In some areas, securing local funding was one of the main challenges and there were concerns in relation to the number of practices that the programme could afford. However, the fact that it was a national programme helped to obtain local investment that otherwise would not have been possible for some localities to obtain:

'Securing the funding was a challenge with all of the other competing priorities that we have... I don't think anyone will disagree improving the oral health of children is a priority but there are a number of priorities around we've had challenges around access for all ages...' (Local commissioner, NHS England).

'I think it was a national programme and it was you know at the ministerial kind of announcement behind all of that I think our local directors understood the importance of making this happen and so we got it through but getting money for anything is always a challenge' (Local commissioner, NHS England).

4.2.3 Local fitting and suitability of the programme with local priorities

Local teams (usually formed of local commissioner, PHE Consultant in Dental Public Health and LDN chair) agreed that the programme was a good fit with local needs and priorities for oral health improvement and felt that the programme might be applicable to other areas of high need that had not been included in the selection of the 13 areas. Some comments were:

'There are a number of areas in [Region name] which have quite a lot of social deprivation and there are other areas in [Region name] who felt that they should have been chosen for the initiative rather than [SW locality] but according to the criteria for selection of the areas [SW locality] was actually the one which in particular showed the least improvement in child oral health over a given period which was one of the critical criteria' (Local Commissioner, NHS England).

... we have concentrated very much on the priority areas [...] so the other areas are saying what about us can we do this... but it's not conflict it's more that they want to get involved and get on board with the whole programme (Local Commissioner, NHS England).

Some areas already had oral health improvement initiatives; the view of interviewees in general was that Starting Well would work alongside these initiatives rather than duplicate them, though care might be needed to ensure this. In follow-up interviews local teams reported that the initiative had complemented and reinforced other local programmes, though contract management can be

challenging for local commissioners. Some areas had already planned to implement the subsequent initiative Starting Well Core. Some comments were:

'We already have a number of initiatives which were going on in (locality) relating to trying to improve the health of young children [...] and basically this just helps to kind of cement that and give us a little extra resource to play in the local dental practice and get them more involved' (LDN Chair).

'I think there could have been (duplication) but because we've mapped out you know quite well I think what's already happening [...] so it's not that there's clashes it's just that we need to be clear about what's happening under each heading really' (PHE Consultant in Dental Public Health).

What was already existing has just been built into the Starting Well programme so in other words it's been revitalised and re-badged and re-energised through the Starting Well Programme, so I don't think there has been any duplication... (PHE Consultant in Dental Public Health).

Views from dental practices were that the initiative had utility and was appropriate to local oral health needs. Some comments were:

'It seems to be working really well and it's definitely a job that was needed, to go and spread the word even if they're not your patients at the practice, it's going out saying make sure you get a dentist make sure you register babies faster earlier ... I definitely think it's a good a great programme' (PPC).

'I thought it was a good opportunity to try because I don't see new patients for the past few years it was a good opportunity to build up a number of new patients of that age

group and try to help the community too because it is a big case really in our area with the attendance of that age group and the problems and the work that the hospitals get to do because the oral care isn't good at this age group' (Dental provider).

4.2.4 Establishing the programme in the 13 localities

Local commissioners, PHE consultants in dental public health and LDNs were reported to work closely in each area to implement the programme. At the time of the first stage of the interviews it was apparent that there were variations in how the programme was being implemented.

In some areas, the programme ran alongside, or was integrated with other local initiatives. For instance, in Greater Manchester, local commissioners continued to commission 'Baby Teeth Do Matter' and the SW13 contract was amended, alongside a community-based initiative working with LAs. Commissioners in Middlesbrough implemented a modified version of SW13 that they felt able to offer to all practices within the available cost envelope and in Hull the programme was integrated with an initiative to refer children at risk of tooth decay for intensive prevention under a programme called In-Practice Prevention.

The SW13 initiative started at different times in the 13 areas and the anticipated duration at the time of the interviews varied depending on funding availability. Some areas started the initiative in February 2017. Generally, the initiative finished in March 2020, but some areas managed to secure funding to continue and/or extend it to other areas. Middlesbrough finished the programme in April 2019.

4.2.5 Introducing the programme to dental practices

Advertising of the programme to dental practices was generally through the local dental network in the form of emails and / or letters, including newsletters, followed by launch events that were supported by Colgate. These events were organised between September and October 2017; usually scheduled in the evening and at a convenient place for attendees in terms of location. Communication between local teams and dental practices was usually through the practice principal or contract holder.

The launch events, designed to introduce the initiative to dental practices, were felt to have been useful and successful though some were held before some key details were available. Some reported, however, that they were resource intensive.

'It was really successful we got some fabulous feedback and the workshops went down particularly well and the case study from a local GDP went down well. I think non dental people found it really helpful because I don't think they appreciated really what was being done in practice and they found it a really useful opportunity to actually meet practices and dentists and people that they send patients to but have never seen' (PHE Consultant in Dental Public Health).

'We were pleased in that it was a good turnout there was a good discussion at the meeting and I think it was helpful that we had some sort of nationally derived slides to work from so we were giving the same message as being given elsewhere' (Local Commissioner, NHS England).



'I think there was something about the events were incredibly difficult to develop and do locally on top of everything else and a huge amount of work locally [...] I think perhaps some of that stuff...could have been done nationally so the LDN Chairs presentations there could have been a national slide set there was a slide set which we had to do significant amount of work on to tweak because actually those...are the important bits in terms of selling the project...' (PHE Consultant in Dental Public Health).

Some local teams emphasised the importance of giving practices adequate notice of events to help them attend and some felt that this may have limited practice attendance. The importance of having key information to communicate, particularly funding arrangements, was underlined by some. Practices were of the view that launch events had been successful, although some reported that it would have been helpful to have more detail about the initiative. Some comments were:

'Something that felt a little bit last minute you know I didn't feel as though we were always able to give them all the information [...] we can't give you all the detail and when we get the detail we will tell you about it, it would have been nice to have had a lot of that stuff in advance' (PHE Consultant in Dental Public Health).

'I think the launch was successful it was just basically telling me all what the initiative was going to be about and going over like statistics of GA referrals and why they've put all the scheme together it was quite useful' (PPC).

'It [the launch event] told you the basics and things that you need to know I think the detail came afterwards when you actually get into it and it tells you exactly what you've

got to do that's when I understood it a bit more I guess it was more vague at the introduction but it was helpful it give me an idea of what I was going to be doing' (PPC).

The Chief Dental Officer attended some events and there was usually representation from the NHSE&I central team, local authorities, commissioners, PHE, the local dental network chair and a range of local partners such as school nurses, health visitors, early intervention team, community dental services, Health Education England and Healthwatch.

4.2.6 Process for recruitment

Whilst the recruitment process was still underway at the time of the first stage of the interviews, there was a general optimism from local commissioners on the number of practices that were going to be recruited. Restricting the number of practices that could participate to match the funding available was a concern to some commissioners.

Commissioners reported following the national criteria for practice selection but there was some local variation. In addition to more routine procurement criteria such as capacity to deliver, base contract type and stability of delivery, some commissioners identified areas within their locality that were a priority for recruitment based on local needs. Some comments were:

'We already knew that we wouldn't be able to roll it out to all of our practices...we gathered some intelligence around the deprivation indices, the current access rates for children...' (Local Commissioner, NHS England).



'We looked at the needs assessment for "Starting Well locality" and we looked at the areas that had the highest decay rates so a number of things ...when we had our event for Starting Well we invited all of the for "Starting Well locality" dentists but we did specify obviously that we are going to be focusing on 'x' areas' (Local Commissioner, NHS England).

Commissioners felt at the outset that practices may decline to participate if they were struggling to deliver against their base contract, or if they felt the level of remuneration was insufficient or the activities too onerous. Some reported that corporate practices might be more difficult to engage on the programme. One felt that practices in the priority areas were under-represented among those seeking to participate. Some comments were:

'It's a difficult time to engage practices and it's probably come at a time when practices are probably struggling to think about taking on new initiatives to do more for a little bit of money it's probably going to be a challenge...' (PHE Consultant in Dental Public Health).

'I think if you're looking a needs based approach the problem is that we have to work with what we've got working with existing practices and where we'd like the initiative, we haven't got all those practices they are not the ones that have come forward...I think there is some genuine nervousness you know people who want to sign up to something but they think they can't deliver...' (PHE Consultant in Dental Public Health).

In the second stage of interviews, it was reported that some practices decided not to take part due to their experience with previous programmes, concerns

about delivery, staff capacity, internal practice issues and perceived insufficient funding.

Challenges in communicating with the dental team were the internal communication within dental practices and communication reliant on individuals such as practice owners, as shown in this comment:

We engage with our contract holder or provider who runs the practice but often it's the dentists, the hygienist, the therapist and the dental nurses who want to make sure they get the message and we are very much reliant on the dental practice owner communicating that [...] sometimes it depends who opens the emails or you know communication within practices sometimes isn't very good...' (Local Commissioner, NHS England).

4.2.7 Facilitators for the recruitment of practices

Local teams were generally positive about the recruitment process and were very pleased with the level of uptake. They saw the initiative as an opportunity to establish or reinforce a relationship with dental practices:

'I think more positively from the practices' point of view probably for the first time they were very engaged with the commissioners in a proper commissioner wider sense [...] that was the best part of the Starting Well actually for me getting to know those practices and you know being able to sort of encourage them to be thinking about the public health role...' (Local Commissioner, NHS England).

'I mean it feels quite good that we've got the number of practices that we have and we've got a mix of practices and there is the engagement from the practices some of the providers and the champions you know there's the links with the local authority [...] I think it's positive we haven't had any like I say nobody drop out no real issues with the contract variation and the funding...' (Local Commissioner, NHS England).

'...because we've got really good relationships with our practices and because we work quite closely with our practices they've been involved in other prevention initiatives and there's such a high oral health need in the area the practices have been absolutely fantastic have been really receptive so I've not encountered any challenges particularly in this area' (PHE Consultant in Dental Public Health).

In some areas PHE Consultants in Dental Public Health had been closely involved, supporting the recruitment. This kind of support was identified as a facilitator in the implementation of the initiative. In some areas PHE Consultants in Dental Public Health, local authorities and LDN chairs provided support in engaging dental practices.

Commissioners mentioned that the commitment shown by dental practices, clear understanding of objectives, relationship management and the financial reward offered to providers were some of the facilitators. Greater awareness of the initiative before recruitment would, however, have helped discussions.

4.2.8 Funding and contracting

The nationally developed NHS GDS contract variation was adapted according to local circumstances. In general, the initiative was funded from dental

commissioning budgets, including funds made available through “claw back”. In the current dental contract income is based on Units of Dental Activity (UDAs). In the clawback, the commissioning body (i.e. NHSE&I) who provides the practice with a contract is able to “claim back” the value of underachieved activity (i.e. UDAs). Local commissioners used a national template to calculate the funding allocated to dental practices which was based on practice workforce numbers.

The different incentives for contract holders and dental performers was reported to be a challenge to increasing prevention, some dental providers felt that the incentives applied to providers but not all team members; the lack of incentive in the mandatory services contract was noted. Some comments were:

‘... there is funding from the NHS for the practice but there’s no funding formal as such, so for the practice principal it makes sense but for the practice associates there’s no extra funding to be part of Starting Well...’ (Dental provider).

‘In our current contract there’s no additional payments for us to do prevention so for example if you do an examination on a child then you would get paid the same whether you examine a child didn’t really give any instructions and you sent them on their way [...] so there’s no incentives with the current contract to emphasise prevention to your patients’ (Dental provider).

Some areas allocated funding for additional access, and in one DCO to community based oral health interventions. In some areas where practices already had other programmes in place, the amount of funding was adapted to reflect this.



4.3 Programme implementation

4.3.1 Extent of the programme

There was a total of 112 dental contracts providing SW13 services (**Table 4.1**) of which 101 (90%) were providing Advanced SW services. Some practices joined towards the end of the programme but were not considered for the evaluation. Whilst the number of contracts does not necessarily denote the number of locations from which services were offered, the number of locations from which services were being provided was also 112. Over the first year of the programme there was a progressive increase in participation. The total value of contract variations to reimburse providers was £1.53M.

Table 4.1. Overview of Starting Well 13 initiative

NHSE DCO area	Starting Well locality	Contracts*	Physical locations**	Contracts providing Advanced Starting Well services	Contracts providing Preventative Starting Well services only
		n	n	n	n
Central Midlands	Leicester	8	8	4	4
	Luton	7	7	6	1
Cumbria and North East	Middlesbrough	7	6	7	0
Greater Manchester	Bolton	12	13	12	0
	Oldham	12	12	12	0
	Rochdale	10	10	10	0
	Salford	14	14	14	0
Lancashire	Blackburn with Darwen	8	8	7	1
	Blackpool	4	4	4	0
London	Ealing	12	12	12	0
South Central	Slough	4	4	4	0
West Yorkshire	Wakefield	7	7	5	2
Yorkshire and The Humber	Kingston upon Hull	7	7	4	3
TOTAL		112	112	101	11
Percentage of contracts providing Advanced/Preventative Starting Well				90%	10%

*Annual contract value (NACV variation, full year effect) for SW13 services 2018/19 was £1,525,190.

** Some contracts relate to services provided at more than one location and some locations relate to more than one SW13 contract.

4.3.2 Supporting initial delivery

Results from the second stage of interviews revealed that although there were still some challenges in local implementation of a nationally designed programme, associated resources such as guidance were felt to have been helpful as they gave legitimacy that reinforced local action. Some comments were:

'...although it was a local implementation you had a national message behind it so in some ways it's easier to take that national message and then try to get that to be adopted locally [...] I think if you tried as a local office... would really struggle to do all of those individual elements on your own...' (Local Commissioner, NHS England).

'I think there's real benefit in the national programme around the focus and around the commitment ...and you know the response to the Secretary of State that we wouldn't have been able to do if it had been a local programme... but I think the national programme became very complex [...] if this is about how we target you know resource to meet local needs that needs to be considered as that it needs to be very simple' (Local Commissioner, NHS England).

Supporting mechanisms for practices were reported to include meetings, training and physical resources such as leaflets, posters and toothbrush and paste packs. These were appreciated by providers, though were not always in place before the initiative commenced and commissioners considered that it was necessary to have a logistics plan in place in order to avoid any issues or delays in the delivery

of packages. A practice mentioned that being part of a corporate practice provided additional support in terms of resources. Some comments were:

'We got all the leaflets... the tooth brushing packs and everything else [...] some of the material that the scheme's provided us with the leaflets and things like that has facilitated it because it saved us having to try to produce of all that ourselves which would've been a lot more difficult...' (Dental provider).

'...they were quite clear what they wanted us to do but they needed to give us more material and more information sooner... we were still waiting so we were having to buy our own toothbrushing packs and because we didn't want to wait we wanted to get on with it...' (Practice manager).

Some practices mentioned that having an agreed action plan was helpful in giving structure to delivery and monitoring progress:

'I think the main facilitation factor is really... when we started the process we were given an action plan and part of that action plan said okay you need to do this at these particular times and part of signing to this agreement was that we will do these things so I think there's been some degree of control through the area team...' (Dental provider).

Some local teams were of the view that the initiative created a sense of competition and considered that it had encouraged practices to share ideas for delivery:



'...they're in a little bit of competition and I like that it's healthy competition so one practice will come in and say I'm doing this and somebody will go Oh I didn't think of that I'm going to start doing that so there's that really healthy competition [...] when practices see other practices doing something they do become competitive and go I want to be better' (Local commissioner, NHS England).

In one area a project manager was appointed to oversee and support the initiative. It was suggested that it might be helpful to have this support for example, a practice facilitator, a senior practitioner or a project manager dedicated to the initiative. Local teams also expressed that in order to support dental practices it is necessary to have access to the resources and data on a regular basis. In some areas such facilitation to bring focus on the initiative was present but in others this resource was not available.

Nevertheless, some practices were struggling to provide the service and felt that the reporting requirements were burdensome and confusing. The guidance and support from the local NHSE&I team was identified as key to facilitate the implementation in dental practices. While some practices felt very well supported, others expressed that more support was needed:

'We've had a lot of support from NHS England local team lots of support we've had monthly meetings and they have provided guidance and what is expected of us also how we can deliver various activities, they've supported us also in planning and delivery of the activities as well as providing resources...' (Dental provider).

*'I think the concept is a really good idea and when I first heard about it and asked to be a part of it I was really looking forward to doing it but I've found it quite challenging [...]
I'm not sure whether I'm up to date with everything because there's nobody to say yes you're doing that right or no you're not doing it right and here's how to fix it' (PPC).*

4.3.3 Training of practices (PPC and dental providers)

Learning modules developed by HEE were available shortly after the programme commenced and were reported to have been very useful. These were, however, challenging to produce to the required timescales. The modules included: a) a "Starting Well programme" module containing details of the programme (e.g. aims, completing FP17 data, role of the PPC) aimed at all staff; b) a "Delivering Better Oral Health Key Messages" module containing topics such as research and evidence base behind key messages, recommendations to 0-4 year olds, risk and recall intervals, and team approach to prevention, two sessions were developed, the first aimed at non-clinical staff and the second aimed at clinical staff; and c) a "Behaviour Change theory" module to help clinical staff to apply communication and behaviour change theories and models to everyday practice (e.g. empowering patients, recognising barriers and supporting resisting parents). The modules on Delivering Better Oral Health and Behaviour Change are available to all practices on the e-Learning for Healthcare website (e-Learning for Healthcare, 2021b; c; a).

Practices highlighted, however, the importance of having the modules available earlier so that they could be completed before commencing delivery. A few suggested that the content could be summarised. Some comments were:



'I think the challenge is time, the expected timescales of when the project was launched to when we needed to have the training day was very tight... because you're relying on very busy people to do this work as part of their normal job so I think one of the challenges was actually delivering something that was fit for purpose that was user friendly that could be piloted before it was rolled out which takes time and stages...'
(Postgraduate Dean for Health Education England).

'We got given some Starting Well modules to do... the dentists and the nurses in the practice and reception and everybody had to read through them answer the questions on them so they all had a good read about actually what it was about so the training in terms of Starting Well is you know it was quite good' (PPC).

Some practices also received locally designed and delivered training which was reported to be helpful to reinforce the knowledge and give more confidence to the dental team. Some other practices received online training and some others were given funding for training. While some practices felt they had received enough support in terms of training, some others expressed that continuous training was needed. Some comments were:

'They've [The local team] arranged training of staff with very highly qualified people in the field like consultant paedodontist and they have invited the nurses, dentists receptionist to go to these courses to train them on how to deliver the message and generally make us more aware of what can be done [...] so the training and education support has also been very good' (PPC/Dental provider).

'I think we need to have more training events for whole practice teams like they ran last year again so they need to do those sorts of things and get those messages across

certainly and keep everybody motivated and essentially reinforce what we already know'
(Dental provider).

Training needs were identified to empower PPCs in order to support their leadership role and to engage with the community, especially for Advanced practices:

'I think leadership is very important this is led by a champion within the practice and it's about empowering them to be able to sort of plan and bring the whole team on board... ongoing training in leadership I think is a key thing and that's something that Health Education England and particularly on our patch we're very interested in exploring looking at how all members of the dental team can be leaders...' (Regional Dental Adviser, Health Education England).

4.3.4 Developing networks and partnership working

At the commencement of the programme commissioners described engagement with partners, in particular LA and public health teams, and were establishing local networks. Where engagement was strong this was described as beneficial in affording a perspective into the needs of local communities:

'We've got very strong links with the local authorities the local councils and they attended our launch events but I think within the local councils we've got some fairly strong relationships as well with local communities and it's all facilitated with local councils' (PHE Consultant in Dental Public Health).

'... luckily in the area they're just actually setting up a managed clinical network around oral health prevention and the local council ... they're very engaged in the initiative



because it bolts in well with the other initiatives so for local partnership working it's come at the right time [...] I think the local authorities they have a very much an interest in oral health we have intended to work with them very closely or closely enough I think initiatives like this will help to maintain that momentum so it's more about us learning from each other and working with each other' (Local Commissioner, NHS England).

At the point of initiation, some, however, anticipated that it might prove difficult in some areas to engage stakeholders and manage local expectations:

'I think it could be a challenge in terms of getting the other partners involved because they've already got a lot of stuff they have to try and take on and so it will be a question of trying to sort of sell the benefits to them so they can see some positive outcomes for them always I think one of the risks is when you do things multi organisationally it's whether it's a priority for that other organisation...' (Local Commissioner, NHS England).

'I think the expectations of our local authority stakeholders making sure they are managed appropriately I think they have very high expectations that this will be a cure all and it will happen very quickly and I think they also have some I think what they ultimately want to see is dental clinicians going out into different settings providing dentistry which isn't going to happen at all' (Local Commissioner, NHS England).

There was general agreement that a wide range of local partners had a role in supporting the programme to achieve its objectives, including local authorities, local dental networks, PHE local teams, health visitors, early intervention teams and community dental services. There was a particular role for these other agencies in helping providers understand the needs and perspectives of communities who were not regular dental attenders.

'...and I think in particular in "Starting Well locality" we have...a partnership...with our local community organisation; they are going to do some focus group work for us for example so that we can best understand our population so lots and lots of partners' (PHE Consultant in Dental Public Health).

The role of the LAs was identified as key to give the SW13 initiative priority in the area and to provide an environment to facilitate delivery. Reported examples of support included providing venues, hosting meetings, engaging dental practices, making links with local settings and identifying high risk groups. Some practices mentioned that they had received support in the form of advertising, banners, leaflets and support with open days and school visits. Some commissioners had already an established relationship with local authorities, for others the SW13 initiative helped to establish it. Some comments were:

They are the ones who have provided the venue all the time throughout all of this they've also been working with community dental services because they actually inform them of what they want them to do even though we are commissioning the service so they have been working very closely to us with everything we have been doing they are also doing the tooth brushing scheme alongside the schools and supporting that so there's been a massive amount of support from "Starting Well locality" Council... (Local Commissioner, NHS England).

'They [Local Authorities] have engaged hugely I think in some ways this addresses to some degree their statutory responsibility for oral health... the way that they can support that responsibility is also via supporting the Starting Well programme and I think they have been a massive support...' (PHE Consultant in Dental Public Health).

In some areas PHE Consultants in Dental Public Health had been closely involved, supporting the recruitment, engaging practices and networking; this support was regarded as very helpful. The clinical leadership of PHE Consultants in Dental Public Health and LDN chairs was felt useful in helping to engage dental practices:

'I think probably the clinical leadership of the process through the LDN and Public Health England... I think it's been good to have clinical people front and centre of that rather than commissioners going out, the practices would tend to see the relationship with us as being contractual [...] I think they're really crucial [PHE Consultants in Dental Public Health] in terms of getting this to fly because they do they keep coming back to explaining to people why we need to do this and I think they haven't got any contractual axe to grind so you know they're really able to explain to people why this is big picture stuff...' (Local commissioner, NHS England).

'...as well have worked quite closely with LDN Chair in terms of the Health Education England elements cause "LDN Chair's name" got some funding agreed for certain places ... like for training for the champions... he'd again worked with the local authority on getting that funding secured and then identifying people to attend so again that meant NHS England we I didn't have to get involved...' (Local Commissioner, NHS England).

A few areas reported working with HEE at local level. Where this type of engagement existed, it was also described as very helpful. Their role was seen as crucial in supporting practice leadership and networking. Some comments were:

'We have training by them [HEE] so a massive amount of training for all our practices not just the Starting Well... they've been absolutely brilliant they attend these meetings as well and they support whatever issues we may have so if we said we need a bit more training on this they will actually pick up that issue first so they've been very supportive'
(Local Commissioner, NHS England).

... training I think has probably been a big thing and a lady called "Person name" from Health Education England's been really helpful on that she's been part of a national group looking at the training resources to support it... (Local Commissioner, NHS England).

Local networking

While some areas were already part of mature local networks, others were new to this way of working. Local meetings had different formats in different areas, in some they were coordinated by PHE Consultants in Dental Public Health or LDN Chairs; in others they were incorporated into other meetings such as LA oral health meetings. Lack of direction and local ownership were some of the challenges in setting up a network. While some interviewees reported that networking meetings had been successful with a good participation of practices and stakeholders, in others the level of engagement had not been the same.

Local meetings were reported by dental practices to be very helpful for share learning and networking between practices and health services. Some mentioned that they would have liked more meetings. Some comments were:

'It's helpful going to these meetings and discussing with other centres and discussing with NHS England things they want to bring in or things that aren't working so that's been quite helpful' (PPC).

'I think it's been good I've enjoyed it I have enjoyed going to the meetings as well because you get to find out what other practices are up' (PPC).

Some areas set up a WhatsApp group to share ideas and to provide support among dental practices:

'We've up I've set up a WhatsApp group with all the champions in our area as well so we all share ideas send each other pictures and keep in touch just if anybody's got any questions we'll email each other backwards and forwards so that's a good support network...' (PPC).

During 2018, four local network meetings were attended to observe the developing dialogue between practices and other parts of the local health system. The role of NHSE&I local commissioners and LA public health teams was key in facilitating local links. It was apparent that cooperation and mutual support between practices was beneficial, particularly as there was a wide variety in skill and experience among PPCs.

4.4 Delivery of the initiative in dental practices

By December 2018, 89 out of the 112 contracts (79%) had submitted at least one monthly SW13 return (an example of the online data capture tool is included in **Appendix IV**). There was some variability across areas with the proportion of

contracts submitting these data in each local area varying from 42% to 100%. However, fewer contracts submitted a return for every month. As an indicator of this only 41 contracts (37%) had submitted at least 2 returns for the period October to December 2018. The progressive increase in the percentage of monthly returns is shown in **Figure 4.2**. The proportion of contracts that submitted SW13 returns, monthly submission, audit and patient questionnaire are shown in **Figure 4.3**.

By the end of the programme (March 2020) 96 out of 112 dental practices (86%) had submitted at least one monthly SW13 return with the proportion of contracts reporting data in each LA varying from 58% to 100% (**Table 4.2**). In 9 out of the 13 localities, all practices submitted at least one monthly SW13 return. Almost a half of dental practices submitted at least six monthly SW returns during the whole duration of the programme. During the last six months of the programme 35% of the practices submitted at least two SW13 returns.

Regarding the practice audit, by December 2018, 69% of practices had submitted at least one quarterly Delivering Better Oral Health (DBOH) audit return, it increased to 78% by the end of the programme. During the whole period of the programme 54% submitted at least four audit returns and 63% made at least one submission containing patient questionnaires (**Table 4.3**). Although not all practices were submitting data, there were early signs of improvement in delivery of preventive practice.

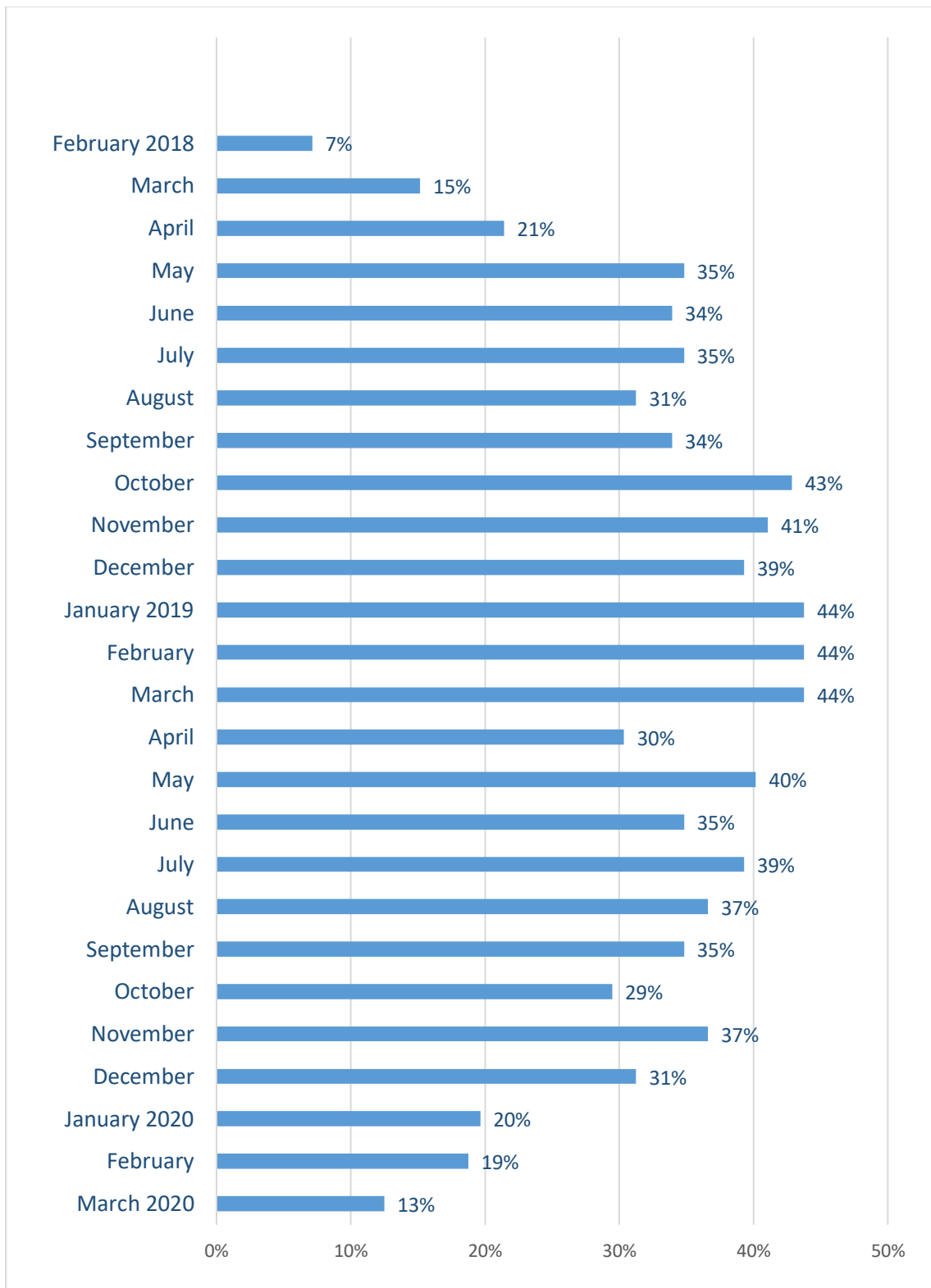


Figure 4.2. Proportion of contracts (dental practices) that submitted SW13 monthly returns from February 2018 to March 2020.

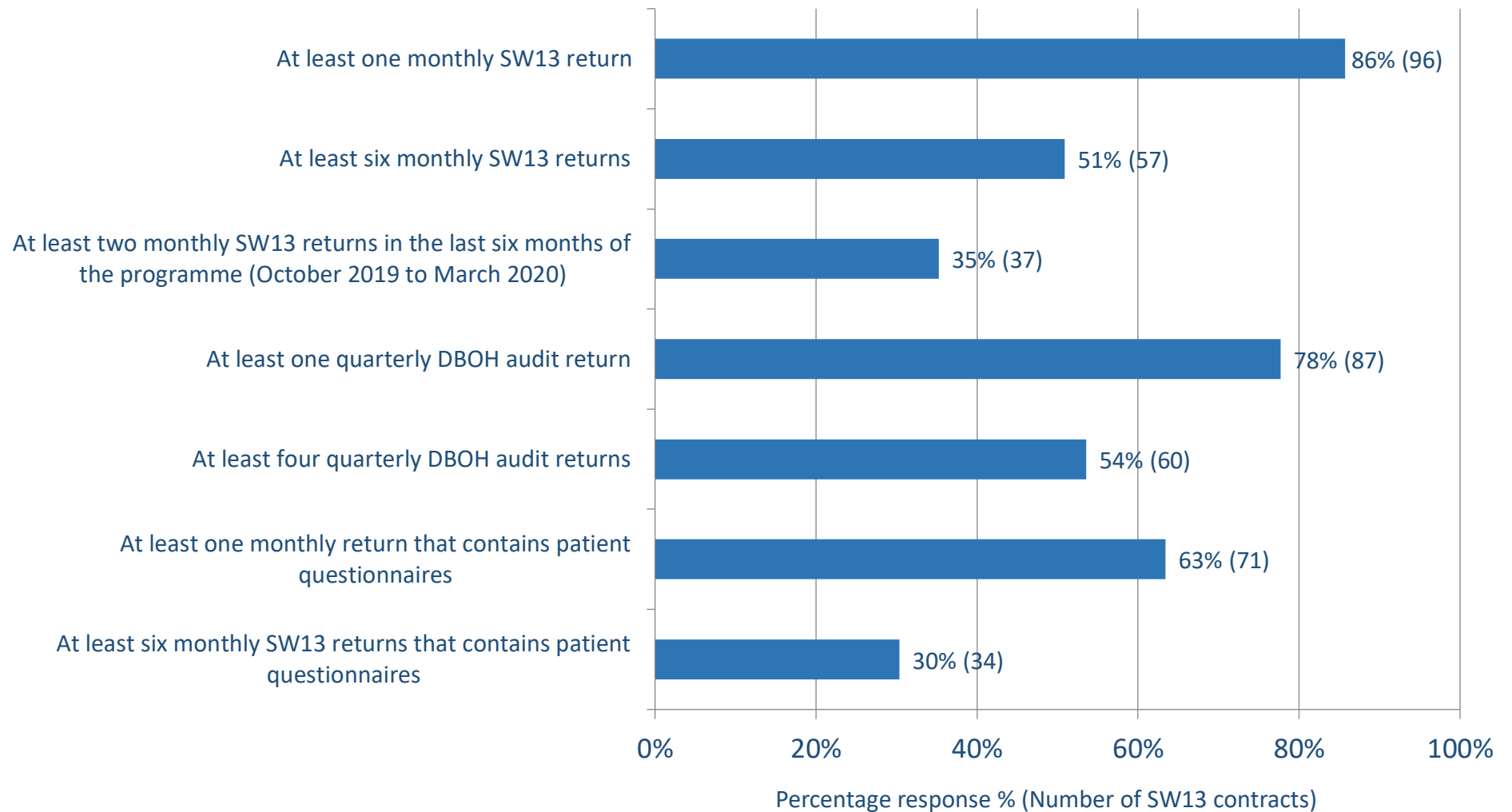
RESULTS


Figure 4.3. Proportion and number of contracts (dental practices) that submitted SW13 returns (monthly submission, audit and patient questionnaire) from February 2018 to March 2020.



Table 4.2. Overview of Starting Well 13 returns: monthly submissions from February 2018 to March 2020, by locality.

NHSE DCO area	Starting Well locality	Contracts	Contracts that submitted at least one monthly SW return		Contracts that submitted at least six monthly SW returns		Contracts that submitted at least two monthly SW returns in the last six months of the programme (Oct 2019 to Mar 2020)	
			n	n	%	n	%	n
Central Midlands	Leicester	8	8	100%	4	50%	1	13%
	Luton	7	7	100%	4	57%	2	29%
Cumbria and North East	Middlesbrough*	7	7	100%	0	0%		
Greater Manchester	Bolton	12	9	75%	7	78%	3	25%
	Oldham	12	7	58%	3	43%	3	25%
	Rochdale	10	7	70%	3	43%	3	30%
	Salford	14	9	64%	5	56%	3	21%
Lancashire	Blackburn with Darwen	8	8	100%	6	75%	2	25%
	Blackpool	4	4	100%	2	50%	2	50%
London	Ealing	12	12	100%	6	50%	5	42%
South Central	Slough	4	4	100%	4	100%	4	100%
West Yorkshire	Wakefield	7	7	100%	6	86%	4	57%
Yorkshire and The Humber	Kingston upon Hull	7	7	100%	7	100%	5	71%
TOTAL		112	96	86%	57	51%	37	35%

*Middlesbrough finished the programme in April 2019.



RESULTS

Table 4.3. Submission of quarterly returns and patient questionnaires from February 2018 to March 2020, by locality.

NHSE DCO area	Starting Well locality	Contracts	AUDIT				PATIENT QUESTIONNAIRE			
			Contracts that submitted at least one quarterly DBOH audit return		Contracts that submitted at least four quarterly DBOH audit returns		Contracts that submitted at least one monthly return that contains patient questionnaires		Contracts that submitted at least six monthly SW returns that contains patient questionnaires	
			n	n	%	n	%	n	%	n
Central Midlands	Leicester	8	8	100%	6	75%	6	75%	4	50%
	Luton	7	7	100%	6	86%	5	71%	2	29%
Cumbria and North East	Middlesbrough*	7	6	86%	1	14%	4	57%	0	0%
Greater Manchester	Bolton	12	8	67%	6	50%	7	58%	5	42%
	Oldham	12	6	50%	3	25%	4	33%	2	17%
	Rochdale	10	6	60%	4	40%	6	60%	1	10%
	Salford	14	7	50%	3	21%	7	50%	3	21%
Lancashire	Blackburn with Darwen	8	8	100%	5	63%	7	88%	1	13%
	Blackpool	4	4	100%	3	75%	4	100%	0	0%
London	Ealing	12	9	75%	6	50%	4	33%	1	8%
South Central	Slough	4	4	100%	4	100%	4	100%	4	100%
West Yorkshire	Wakefield	7	7	100%	6	86%	7	100%	6	86%
Yorkshire and The Humber	Kingston upon Hull	7	7	100%	7	100%	6	86%	5	71%
TOTAL		112	87	78%	60	54%	71	63%	34	30%

*Middlesbrough finished the programme in April 2019.

4.4.1 Increasing preventive focus

Among those practices that submitted information, 92% completed a DBOH audit and an action plan (79% of the total practices participating in the programme); and 99% reported having a flowchart for managing safeguarding concerns and a practice prevention champion in post (85% and 84% of the total dental practices, respectively). These indicators are shown in **Table 4.4**.

Similarly, 99% of practices reported holding monthly dental meetings within the practice (85% of total practices). Whilst reducing numbers of returns in latter stages of the programme made it hard to assess, those that were submitted information indicated a reducing number of meetings. Challenges with data submission will be discussed in **Section 4.7 Monitoring delivery and progress**. The number of PPC attending local prevention networking meetings increased along the development of the programme but it decreased again by the end of the programme.

In terms of oral health promotion (**Table 4.5**), 92% of dental practices had reported to have an oral health improvement display (79% of total dental practices); and 95% reported that the practice was breastfeeding friendly (81% of total dental practices). A high number of parents or carers of patients under 5 have had a 'Make Every Contact Count' contact although it varied considerable across dental practices. All practices that submitted information were taking on new patients, 86% of the total number of SW13 practices. These indicators saturated early in the programme and tended to decline thereafter (**Figure 4.4**).



RESULTS

Table 4.4. Practice actions reported via SW13 practice monthly submissions from February 2018 to March 2020.

NHSE DCO area	Starting Well locality	Contracts that submitted at least one monthly SW return		Contracts reporting completing a baseline DBOH audit and action plan		Contracts reporting having a flow chart for managing safeguarding concerns		Contracts reporting having practice prevention champion in post (at least once)		Contracts reporting monthly dental team meetings (at least once)	
		n	%	n	%	n	%	n	%	n	%
Central Midlands	Leicester	8	100%	8	100%	8	100%	8	100%	8	100%
	Luton	7	100%	7	100%	7	100%	7	100%	7	100%
Cumbria and North East	Middlesbrough	7	100%	5	71%	7	100%	7	100%	7	100%
Greater Manchester	Bolton	9	75%	8	67%	9	75%	9	75%	9	75%
	Oldham	7	58%	6	50%	7	58%	6	50%	7	58%
	Rochdale	7	70%	5	50%	7	70%	7	70%	6	60%
	Salford	9	64%	9	64%	9	64%	8	57%	9	64%
Lancashire	Blackburn with Darwen	8	100%	8	100%	8	100%	8	100%	8	100%
	Blackpool	4	100%	3	75%	3	75%	4	100%	4	100%
London	Ealing	12	100%	11	92%	12	100%	12	100%	12	100%
South Central	Slough	4	100%	4	100%	4	100%	4	100%	4	100%
West Yorkshire	Wakefield	7	100%	7	100%	7	100%	7	100%	7	100%
Yorkshire and The Humber	Kingston upon Hull	7	100%	7	100%	7	100%	7	100%	7	100%
% from total of practices that submitted information		96	–	88	92%	95	99%	94	99%	95	99%
% from all SW13 practices		112	86%	88	79%	95	85%	94	84%	95	85%



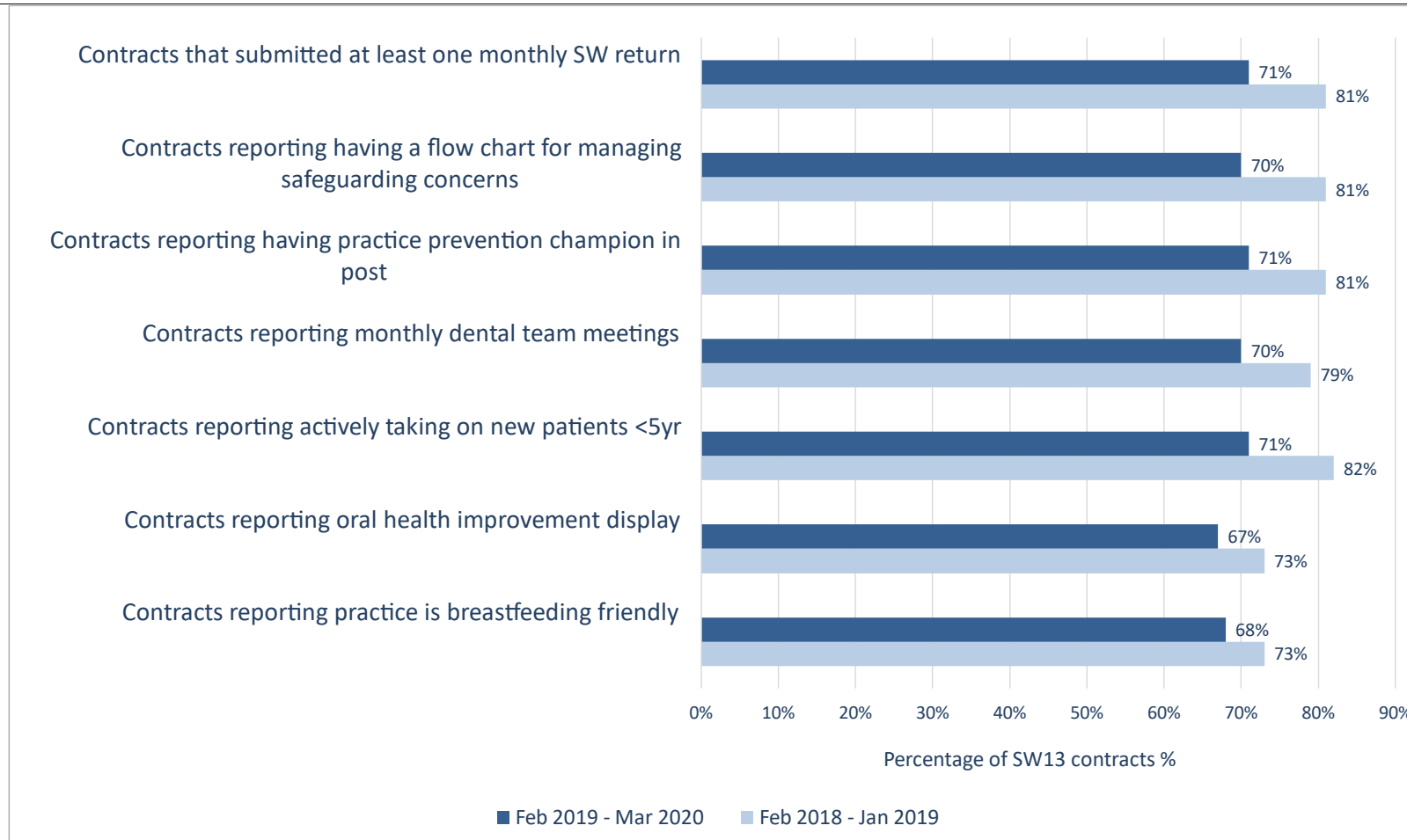
Table 4.5. Practice actions reported via SW13 practice monthly submissions from February 2018 to March.

NHSE DCO area	Starting Well locality	Contracts reporting actively taking on new patients <5yrs		Contracts reporting oral health improvement display		Contracts reporting practice is breastfeeding friendly	
		n	%	n	%	n	%
Central Midlands	Leicester	8	100%	8	100%	8	100%
	Luton	7	100%	7	100%	7	100%
Cumbria and North East	Middlesbrough	7	100%	7	100%	7	100%
Greater Manchester	Bolton	9	75%	7	58%	9	75%
	Oldham	7	58%	6	50%	6	50%
	Rochdale	7	70%	5	50%	6	60%
	Salford	9	64%	6	43%	8	57%
Lancashire	Blackburn with Darwen	8	100%	8	100%	8	100%
	Blackpool	4	100%	4	100%	4	100%
London	Ealing	12	100%	12	100%	10	83%
South Central	Slough	4	100%	4	100%	4	100%
West Yorkshire	Wakefield	7	100%	7	100%	7	100%
Yorkshire and The Humber	Hull	7	100%	7	100%	7	100%
% from total of practices that submitted information		96	100%	88	92%	91	95%
% from all SW13 practices		96	86%	88	79%	91	81%

Numbers are for at least one submission reporting the specific detail.



RESULTS



Percentages are from all SW13 dental practices (contracts), irrespective of whether they reported data. Numbers are for at least one submission reporting the specific detail.

Figure 4.4. Practice actions reported via SW13 practice monthly submissions, by periods.



Whilst the data was limited and not all practices submitted audits, the indicators from those submitting DBOH audit returns suggested that there was an improvement in the delivery of prevention advice and treatment (**Tables 4.6-7**). There were generally high levels of compliance at the outset and consequently little apparent scope for improvement. For instance, the percentage of 0 to 2 years receiving advice on toothbrushing increased from 83% in the first months of the programme to 98% by late 2019. However, rates decreased in the last three months of the programme.

There were substantial improvements in promotion of breast feeding and avoiding adding sugar to weaning foods for 0 to 2-year olds and advice on prescribing of sugar free medicines. For instance, advice on breastfeeding increased from 44% in the first months of the programme to 75% by December 2019. Nevertheless, rates of advice on sugar free medicine were lower compared to other indicators. Some dental teams reported that they rarely prescribe medication for child patients and this might have affected the reporting rather than practices not usually prescribing sugar free medicines.

Some dentists reported difficulty in providing advice on breastfeeding as they felt some parents might feel uncomfortable over the matter being discussed. Other dentists reported that it can be difficult to provide advice to parents due to cultural reasons. This will be discussed in **Section 4.4.5 Challenges improving prevention**.

Table 4.6. Prevention advice and treatment given to all 0 to 2-year olds (Source: Quarterly preventative practice (DBOH) audit returns).

Audit indicators	% of cases examined where advice recorded as given					
	Feb-June 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Mar 2020	TOTAL
Prevention advice and treatment given to all 0 to 2-year olds						
1. Parents should brush twice daily as soon as teeth erupt	83%	95%	95%	98%	86%	94%
2. Parents should brush last thing at night and on one other occasion	84%	89%	94%	97%	85%	92%
3. Use a smear of toothpaste containing at least 1000ppm fluoride	70%	90%	89%	95%	81%	88%
4. Breast feeding provides the best nutrition for babies	44%	64%	70%	75%	65%	67%
5. From the age of six months, babies should be introduced to drinking from a free-flow cup. Bottle feeding should be discouraged from 12 months old	64%	75%	80%	82%	74%	77%
6. Sugar should not be added to weaning foods	59%	74%	76%	87%	75%	77%
7. Frequency and amount of sugary foods and drinks should be reduced	79%	91%	94%	96%	84%	91%
8. Sugar free medicines are recommended	51%	72%	74%	83%	74%	73%
9. Tooth brushing instruction	82%	92%	92%	96%	85%	91%
10. Prescribe sugar free medicines	39%	63%	64%	80%	72%	66%

Percentages are number of cases reported achieved divided by number of cases examined. Figures may be affected by multiple submissions from some contracts.

Table 4.7. Prevention advice and treatment given to all 3 to 4-year olds (Source: Quarterly preventative practice (DBOH) audit returns).

Audit indicators	% of cases examined where advice recorded as given					
	Feb-June 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Mar 2020	TOTAL
Prevention advice and treatment given to all 3 to 4-year olds						
1. Brush last thing at night and on one other occasion	89%	90%	92%	94%	83%	92%
2. Brushing should be carried out/supervised by an adult	78%	84%	87%	92%	75%	86%
3. Use a pea-sized amount of toothpaste containing more than 1000ppm fluoride	70%	87%	88%	90%	81%	86%
4. Spit do not rinse	69%	81%	87%	90%	83%	84%
5. Frequency and amount of sugary foods and drinks should be reduced	86%	90%	88%	93%	82%	89%
6. Sugar free medicines should be recommended	38%	65%	69%	79%	63%	66%
7. Application of fluoride varnish for all children twice a year	79%	88%	85%	87%	81%	85%
8. Tooth brushing instruction	81%	89%	83%	90%	81%	88%
9. Prescribe sugar free medicines	35%	61%	61%	65%	63%	59%
10. Use 1350-1500ppm fluoride toothpaste	74%	77%	80%	82%	71%	78%
11. Application of fluoride varnish for high-risk children more than twice a year	77%	75%	75%	74%	63%	74%
12. Investigate diet and advise in line with the Eat well Guide	73%	75%	75%	78%	74%	75%

Percentages are number of cases reported achieved divided by number of cases examined. Figures may be affected by multiple submissions from some contracts.

4.4.2 Indicators of a change for a preventive focus in practices

The general impression was that the SW13 initiative had helped to reinforce and prioritise prevention by dental teams. There were multiple overlapping mechanisms through which this was reportedly achieved, from involvement of the wider team, educational support and financial incentives allowing time to be devoted to the issue. Some comments were:

'I think this programme has really kind of emphasised the importance of prevention and I think it's something that we're all at least in our practice more involved [...] I think previously prevention was really between the dentist and the patient but now it's a little bit more wider than that...' (Dental provider).

'...some of the reception staff don't have dental background they're not nurses so now because we have the regular meetings we talk about Starting Well and about the messages that they can deliver on the front desk they've been really helpful it helps for the front desk' (PPC and Dental provider).

Some practices felt that the audits had helped to monitor and assess whether prevention was being delivered; though others felt that these were too time consuming and suggested making them simpler.

'The audit has been brilliant for us to use to adjust... we've been able to look back at the audit and Oh you know this information was missing we must make sure that we try and address that so from the audit we then sit down and have a meeting [...] so like the audits

have been really good to help us make sure we're hitting everything that's been asked'
(PPC).

Practices reported developing a range of in-house materials to support prevention. For instance, sugar displays, which were the most appealing among patients. Some practices organised child tooth brushing clubs within the practice and activities during school holidays. The use of social media was helpful to advertise the initiative and promote the activities that practices were developing.

'The displays that we have in the practice, patients see those displays and ask to discuss things with the receptionist for instance like our sugar display... and the receptionist tells us the number of people that look at that display and start to discuss how much sugar particular food or drinks have... I think it's definitely encouraged prevention on a wider level' (Dental provider).

'...in-house we have with every school holidays we make a list of children who are due for their examinations and we try and book them in and we run a kids club so we have activities and things for them to make the dentist a bit more fun and so it's just then encouraging children to go...' (PPC).

4.4.3 Improving uptake of dental care among priority groups

At the initiation of the initiative there were concerns expressed about how difficult it might prove to increase uptake of dental care, for example whether practices had the capacity to take whole families on as new patients. Guidance from the Chief Dental Officer was felt to have been helpful in reassuring dentists about potential contract delivery implications of seeing very young children.

However, a number of practices reported to have enough capacity to take new patients. In some areas, practices were given additional funding through their mandatory services contract to be able to see additional children. Some dental providers mentioned, however, that the limited UDAs capacity might be a challenge, as exemplified by this comment:

'We kind of are struggling a little bit in maintaining the monthly UDA contract so we're actually overrunning contract a little bit so that that's the only challenge that we are facing is how to keep taking on new patients but still work within our NHS pot [...] I'll probably overshoot my UDAs because of having to take new patients...' (Dental provider).

Practices reported using advertising and providing information on how to contact the practice through leaflets and posters in local settings such as GP surgeries, pharmacies, nurseries and schools. Although a number of practices said they had been taking on young patients prior to the initiative, they expected the initiative to help target children from communities where DA was particularly low and risk of dental disease high. Establishing contacts with local settings, especially schools, was felt to be helpful in this context. Practices reported monitoring children referred for extractions under general anaesthesia or sedation though some reported that they rarely had to refer patients.

The initiative was also reported to have focussed teams on the importance of early attendance:

'We didn't encourage babies to come to the practice, Starting Well I think has opened up more educating parents and educating new mums [...] now it's newborn babies educating the mums so that's preventative that's I would say how we've changed as a practice [...] we are encouraging reception if they see any new born babies to speak to parents' (PPC).

'We are also really asking the patients to register the children as soon as possible but we're also asking pregnant women to bring the child to be in because of the recommendation that is dental check by one and in fact we start giving the prevention advice with leaflets and supporting verbal messages to the pregnant women [...] so that they know the little one can be brought in as soon as possible...' (PPC/Dental provider).

Most of the practices interviewed reported organising open days, these were seen as an opportunity to be more involved with the community, increase awareness and to engage with patients. This required effort to organise, and experience was mixed. Some practices received support from the local council, e.g. in the form of advertising and/or banners.

'Our practice has been quite successful with them but I know that a lot of the other practices have really struggled to get people to attend the opening days they are quite hard to get to get kids on board cause a lot of parents they haven't got the time to come or and things like that' (PPC).

...we've had we've had three so far ... three open days and they were really good because I know a few of the other practices have only had one or two people turn up... we had about 30 turn up [...] so they've been really successful here... (PPC and Project manager).

Some practices encouraged the whole family to attend but for others this proved challenging. The majority, however, reported not seeing the numbers of patients expected and not receiving enough referrals. Some comments were:

'I know with my receptionist when they book in a family it's always do you have any more children who need to come in so they always try and encourage families rather than just parents to come in so our numbers are always improving with children...' (PPC).

'We've allocated some spaces specifically for patients that have been referred through the scheme [...] whereas before we wouldn't have necessarily been taking on all the time but we've made allocations for a whole family if that's what's necessary [...] I expected a bit more from the referrals I expected the children's centres and health visitors to have been able to bring more children... I don't know if it's quite steady like there's always people of that age being accepted and being offered appointments, but I did expect it to be a bit more...' (PPC).

According to quantitative data, 86% of the total dental practices participating in the initiative reported to have been taking on new child patients aged under 5 years (**Table 4.5**); this was reported by all 96 contracts who submitted data. Of the total dental practices, 30% organised an open day at least once. Practices, however, were unsure about identifying a high-risk group through the local prevention network. For instance, approximately 30% of dental practices who submitted data clearly stated they had identified a high-risk group.

It appeared that practices had been struggling to see patients that had been signposted from an adopted setting. For instance, from those practices that



submitted information, 28% saw patients signposted from an adopted setting at least once. Despite challenges 21% of those practices submitting data reported seeing patients who have been referred post-extraction.

In terms of dental access, the number of children being seen under the SW13 contracts collectively increased by 14.2% over the two years of the programme compared to an increase of 6.2% in the SW13 localities and an increase of 3.7% across England. Whilst the numbers for SW13 contracts increased in all localities there was wide variation from 0.9% to 40.1% (**Table 4.8**). However, these are not necessarily children from the locally determined priority populations. **Figures 4.5** and **4.6** show the number of children attending SW13 practices.

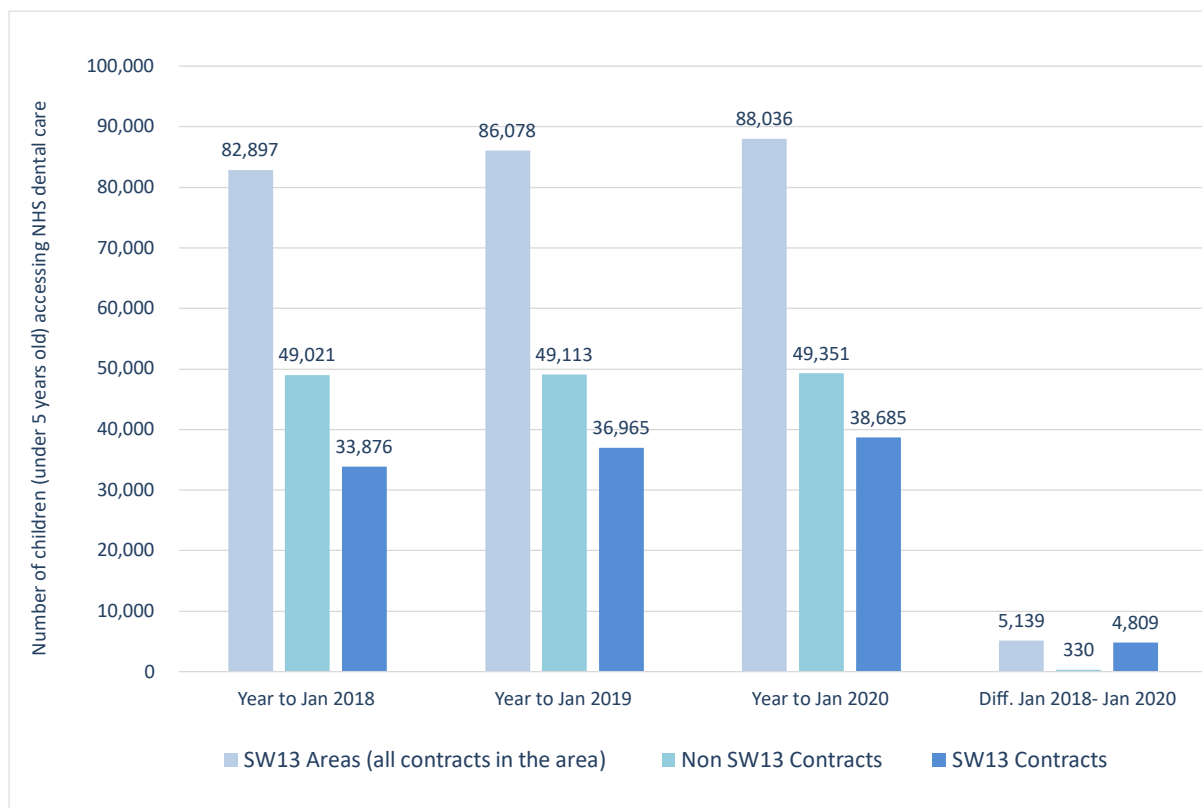


Figure 4.5. Children aged under 5 accessing NHS dental care in SW13 areas (Source: FP17 data).

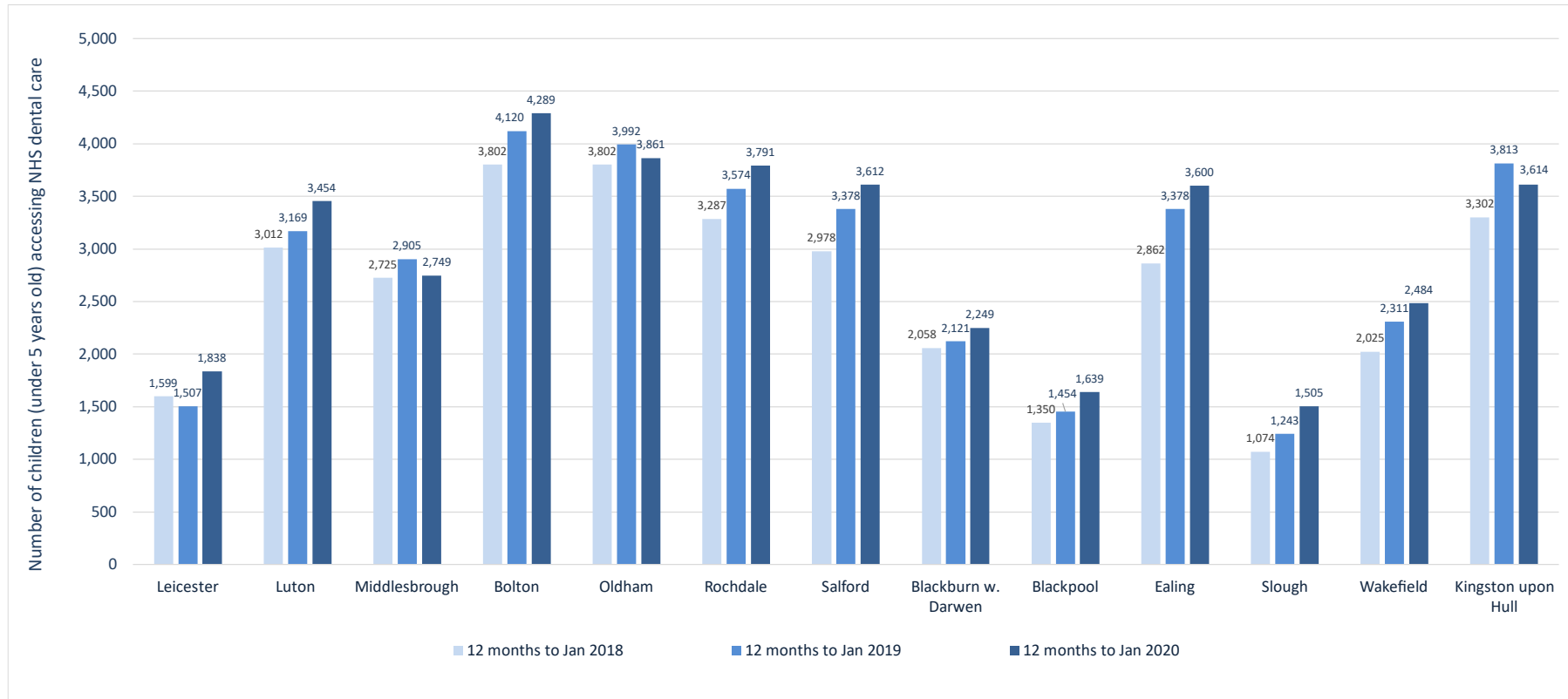


Figure 4.6. Children aged under 5 years accessing NHS dental care in SW13 practices, by locality (Source: FP17 data).



RESULTS

Table 4.8. Children aged under 5 accessing NHS dental care in SW13 practices, by locality (Source: FP17 data).

SW Area		12 months to Jan 2018	12 months to Jan 2019	12 months to Jan 2020	Difference 2018-2019		Difference 2019-2020		Difference 2018-2020	
		n	n	n	Difference in number	% change	Difference in number	% change	Difference in number	% change
Central Midlands	Leicester (incl. SW contracts)	10,775	10,825	10,347	50	0.5	-478	-4.4	-428	-4.0
	Leicester SW Contracts	1,599	1,507	1,838	-92	-5.8	331	22.0	239	14.9
	Luton (incl. SW contracts)	5,362	5,662	5,948	300	5.6	286	5.1	586	10.9
	Luton SW Contracts	3,012	3,169	3,454	157	5.2	285	9.0	442	14.7
Cumbria and North East	Middlesbrough (incl. SW contracts)	4,256	4,298	4,118	42	1.0	-180	-4.2	-138	-3.2
	Middlesbrough SW Contracts	2,725	2,905	2,749	180	6.6	-156	-5.4	24	0.9
Greater Manchester	Bolton (incl. SW contracts)	8,502	8,543	8,678	41	0.5	135	1.6	176	2.1
	Bolton SW Contracts	3,802	4,120	4,289	318	8.4	169	4.1	487	12.8
	Oldham (incl. SW contracts)	7,176	7,581	7,439	405	5.6	-142	-1.9	263	3.7
	Oldham SW Contracts	3,802	3,992	3,861	190	5.0	-131	-3.3	59	1.6
	Rochdale (incl. SW contracts)	6,694	6,667	6,866	-27	-0.4	199	3.0	172	2.6
	Rochdale SW Contracts	3,287	3,574	3,791	287	8.7	217	6.1	504	15.3
Salford	Salford (incl. SW contracts)	6,807	7,233	7,445	426	6.3	212	2.9	638	9.4
	Salford SW Contracts	2,978	3,378	3,612	400	13.4	234	6.9	634	21.3
Lancashire	Blackburn w. Darwen (incl. SW contracts)	4,257	4,367	4,525	110	2.6	158	3.6	268	6.3
	Blackburn w. Darwen SW Contracts	2,058	2,121	2,249	63	3.1	128	6.0	191	9.3
	Blackpool (incl. SW contracts)	2,726	2,556	2,675	-170	-6.2	119	4.7	-51	-1.9
	Blackpool SW Contracts	1,350	1,454	1,639	104	7.7	185	12.7	289	21.4
London	Ealing (incl. SW contracts)	7,422	8,242	8,802	820	11.0	560	6.8	1380	18.6
	Ealing SW Contracts	2,862	3,378	3,600	516	18.0	222	6.6	738	25.8
South Central	Slough (incl. SW contracts)	3,258	3,510	3,970	252	7.7	460	13	712	21.9
	Slough SW Contracts	1,074	1,243	1,505	169	15.7	262	21.1	431	40.1
West Yorkshire	Wakefield (incl. SW contracts)	8,630	9,358	9,718	728	8.4	360	3.8	1088	12.6
	Wakefield SW Contracts	2,025	2,311	2,484	286	14.1	173	7.5	459	22.7
Yorkshire and The Humber	Kingston upon Hull (incl. SW contracts)	7,032	7,236	7,505	204	2.9	269	3.7	473	6.7
	Kingston upon Hull SW Contracts	3,302	3,813	3,614	511	15.5	-199	-5.2	312	9.4
Total	Local Authority (incl. SW contracts)	82,897	86,078	88,036	3,181	3.8	1,958	2.3	5,139	6.2
	SW13 Contracts	33,876	36,965	38,685	3,089	9.1	1,720	4.7	4,809	14.2
	England	1,147,398	1,174,007	1,189,614	26,609	2.3	15,607	1.3	42,216	3.7

*Figures for Local Authorities are based on location of dental practice.
Each child identity is counted only once in the time period.*



Reported fluoride varnish application rates were slightly higher at baseline (2016/17) for (subsequent) SW13 contracts (32.0%) compared to all contracts in the SW13 areas (31.3%), rates increased in each year thereafter for all contracts, though the increase was greater for SW13 contracts in each of the following three years (10.2% for SW13 contracts; 8.3% for all contracts) (**Figures 4.7-4.8** and **Table 4.9**). It is not known whether the increase reflected true changes in practice or changes in reporting only and whether the increase was for children from the locally determined priority populations.

The increase in the actual number of FP17s relating to children aged 0-4 was greater but may reflect other factors. There were 19,049 reports with fluoride varnish from SW13 contracts in 2016/17 rising to 30,196 in 2019/20, a 58.5% increase compared with a 31.9% increase for all contracts in SW13 localities. There was some variation between localities in the programme; while the rates of fluoride varnish increased in all areas in some it was little different to, or lower than the change in the locality as a whole.

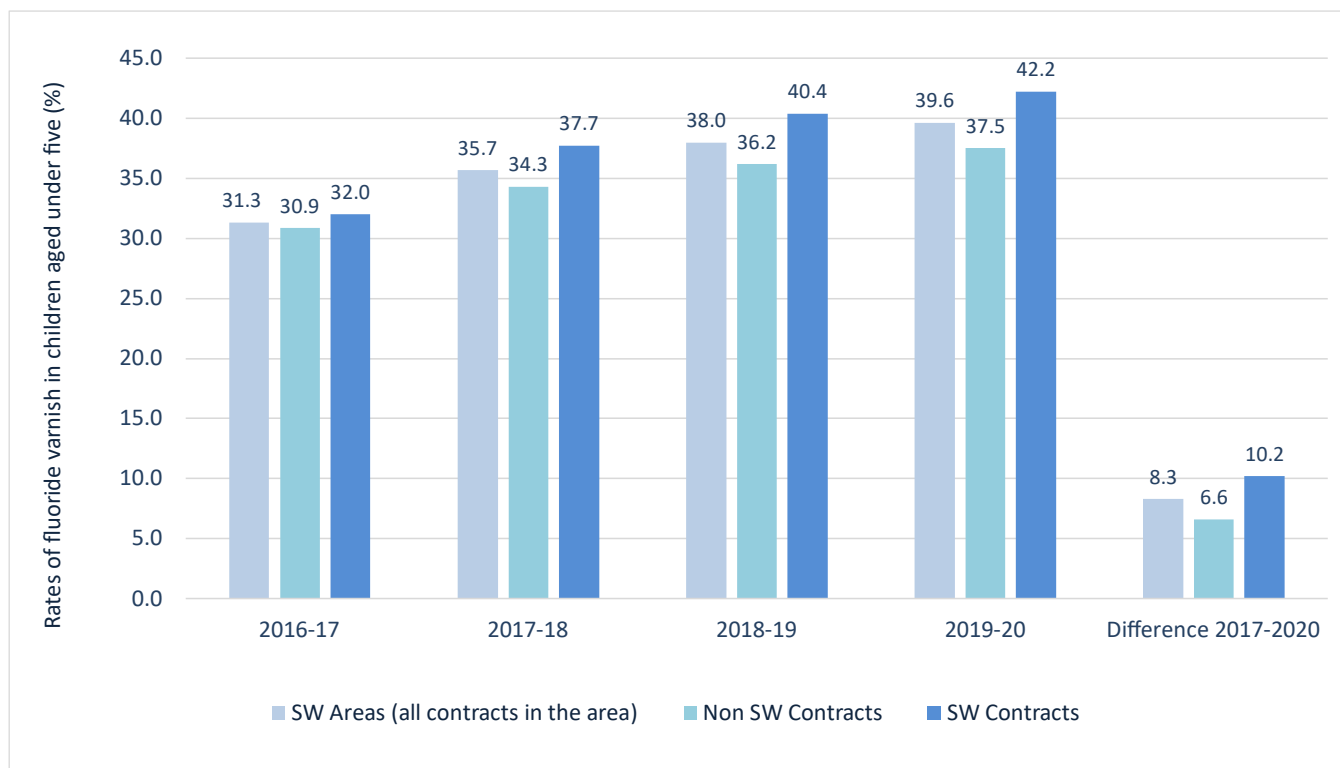


Figure 4.7. Rates of fluoride varnish in children aged under 5 in SW13 areas (Source: FP17 data).

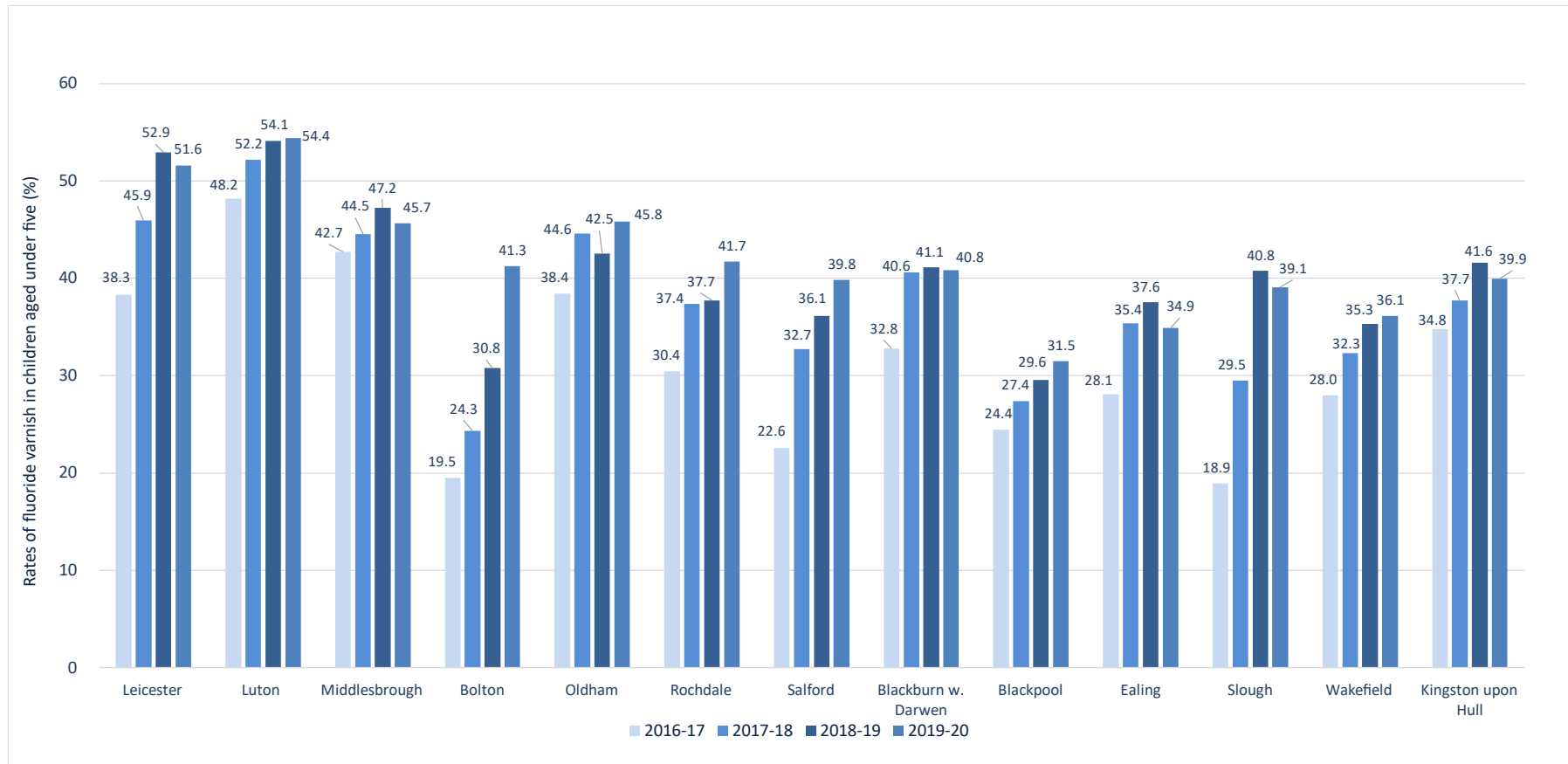


Figure 4.8. Rates of fluoride varnish in children aged under 5 in SW13 practices, by locality (Source: FP17 data).



RESULTS

Table 4.9. Rates of fluoride varnish in children aged under 5 in SW13 practices, by locality (Source: FP17 data).

SW Area		2016-17		2017-18		2018-19		2019-20		Difference 2016/17 - 2019/20		
		n	%*	n	%	n	%	n	%	Difference in number	Difference in %	% change
Central Midlands	Leicester (incl. SW contracts)	7,354	39.1	7,933	42.2	8,895	45.5	8,634	46.8	1280	7.7	17.4
	Leicester SW Contracts	1,027	38.3	1,331	45.9	1,609	52.9	1,791	51.6	764	13.3	74.4
	Luton (incl. SW contracts)	3,531	37.2	4,095	40.5	4,749	43.6	5,079	45.3	1548	8.1	43.8
	Luton SW Contracts	2,424	48.2	3,017	52.2	3,320	54.1	3,757	54.4	1333	6.2	55.0
Cumbria and North East	Middlesbrough (incl. SW contracts)	3,029	39.1	3,237	43.4	3,474	44.5	3,035	42.7	6	3.6	0.2
	Middlesbrough SW Contracts	2,130	42.7	2,161	44.5	2,543	47.2	2,205	45.7	75	3.0	3.5
Greater Manchester	Bolton (incl. SW contracts)	3,258	21.1	4,241	26.7	5,130	31.6	6,201	37.7	2943	16.6	90.3
	Bolton SW Contracts	1,339	19.5	1,744	24.3	2,474	30.8	3,368	41.3	2,029	21.7	151.5
	Oldham (incl. SW contracts)	4,622	33.6	5,348	39.6	5,759	40.1	5,839	42.2	1217	8.5	26.3
	Oldham SW Contracts	2,569	38.4	3,140	44.6	3,093	42.5	3,183	45.8	614	7.4	23.9
	Rochdale (incl. SW contracts)	3,911	30.8	4,844	38.2	4,951	37.8	5,444	41.3	1533	10.5	39.2
	Rochdale SW Contracts	1,919	30.4	2,407	37.4	2,762	37.7	3,158	41.7	1239	11.3	64.6
Lancashire	Salford (incl. SW contracts)	2,937	25.0	3,577	30.0	4,244	33.4	4,949	37.9	2012	12.9	68.5
	Salford SW Contracts	1,091	22.6	1,722	32.7	2,117	36.1	2,511	39.8	1420	17.2	130.2
Lancashire	Blackburn w. Darwen (incl. SW contracts)	2,405	27.7	2,813	34.6	2,797	32.9	2,831	32.6	426	4.9	17.7
	Blackburn w. Darwen SW Contracts	1,316	32.8	1,561	40.6	1,675	41.1	1,770	40.8	454	8.0	34.5
	Blackpool (incl. SW contracts)	1,233	23.3	1,225	25.3	1,232	27.6	1,324	29.5	91	6.2	7.4
	Blackpool SW Contracts	588	24.4	689	27.4	732	29.6	858	31.5	270	7.0	45.9
London	Ealing (incl. SW contracts)	3,389	27.6	4,471	34.1	5,331	36.6	5,129	35.6	1740	8.0	51.3
	Ealing SW Contracts	1,394	28.1	1,796	35.4	2,154	37.6	2,148	34.9	754	6.8	54.1
South Central	Slough (incl. SW contracts)	1,682	30.1	2,111	34.8	2,621	39.5	2,781	39.8	1099	9.7	65.3
	Slough SW Contracts	332	18.9	585	29.5	956	40.8	1,455	39.1	1123	20.1	338.3
West Yorkshire	Wakefield (incl. SW contracts)	5,005	32.3	5,747	35.2	6,551	38.1	6,580	38.8	1575	6.4	31.5
	Wakefield SW Contracts	998	28.0	1,237	32.3	1,448	35.3	1,531	36.1	533	8.2	53.4
Yorkshire and The Humber	Hull (incl. SW contracts)	5,171	34.9	4,853	35.1	4,748	36.6	4,859	36.5	-312	1.6	-6.0
	Hull SW Contracts	1,922	34.8	2,171	37.7	2,784	41.6	2,461	39.9	539	5.2	28.0
Total	Local Authority (incl. SW contracts)	47,527	31.3	54,495	35.7	60,482	38.0	62,685	39.6	15158	8.3	31.9
	SW Contracts	19,049	32.0	23,561	37.7	27,667	40.4	30,196	42.2	11,147	10.2	58.5

Data include all activity data collected from FP17s scheduled in any of the fifteen schedule months from April to June, where the date of completion is on or between 1st of April and 31st of March.

Figures for Local Authorities are based on Local Authority location of dental practice.

Percentage of total FP17s.



4.4.4 Patient questionnaire

There were 4,910 patient questionnaires submitted. More than a half (60%) of children whose parents filled in the questionnaire were around two to four years. There was a similar percentage of male and female patients; 54% were from White ethnicity. Around half of parents or caregivers (51%) rated the oral health of their child as very good. There was a relatively low percentage of parents reporting their child had difficulties in the last six months, for instance, 10% reported their child had pain, around 6% and 5% reported difficulty eating and sleeping, respectively. The majority of children (88%) attended for a dental check-up, 7% because the child had a dental problem and 3% for dental treatment. Over a half (56%) of parents/caregivers reported that their children had visited the dentist in the last 6 months. The percentage of children who attended to the dentist for the first time was 28%; among those one year and under 65% attended for the first time.

The indicators from the patient questionnaires showed a high level of preventive behaviour from the outset and this changed little during the course of the programme. In general, indicators about the experience of dental appointment were rated high. The majority of parents/caregivers reported to have seen information, mainly posters and leaflets (72% and 63% respectively). In qualitative interviews, practices frequently reported that displays were successful in attracting patients. A great percentage of parents/caregivers reported to have received advice on toothbrushing (88%), fluoride toothpaste (61%) and diet

(71%). Over a half of patients (54%) said they received information on how often to visit the dentist (**Table 4.10**).

Nearly all respondents reported that they felt the dentist had listened carefully to their views, the dentist spoke to them and the child in a way that they could understand, they had enough time to discuss the child's oral health, they were treated with respect and friendliness and that they had confidence with tooth brushing, diet, attending future check-ups and that their child's teeth would be healthy in the future (**Table 4.11**). The 1,099 questionnaires that related to children before their first birthday showed a very similar pattern, though with a slightly greater proportion of respondents (63%) recalling advice on frequency of dental visits (**Table 4.10-11**).



Table 4.10. Indicators from patient questionnaire regarding oral health promotion in the dental visit (February 2018 to March 2020).

Indicator	All children						Children aged one year and under					
	2018		2019		2020		2018		2019		2020	
	Feb-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Mar	Feb 2018 - Mar 2020	Feb-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Mar	Feb 2018 - Mar 2020
Total Questionnaires	426	1461	1434	1298	291	4910	102	332	303	298	64	1099
First dental visit	23%	30%	28%	27%	28%	28%	69%	68%	67%	62%	66%	65%
Information seen in the practice about how to take care of the child's teeth												
Posters	73%	71%	74%	70%	71%	72%	75%	71%	76%	70%	69%	72%
Leaflets	63%	65%	65%	62%	54%	63%	70%	63%	69%	63%	63%	65%
Messages on TV screen	15%	23%	24%	15%	18%	20%	13%	20%	18%	10%	20%	16%
Other information	26%	30%	23%	24%	25%	26%	25%	34%	26%	25%	38%	29%
No information	5%	6%	6%	8%	9%	7%	5%	6%	5%	7%	6%	6%
Advice given about how to keep the child's teeth healthy												
Tooth brushing	88%	89%	87%	88%	82%	88%	93%	90%	88%	91%	72%	89%
Fluoride toothpaste	60%	63%	61%	61%	56%	61%	65%	64%	67%	65%	55%	65%
What the child eats and drinks	71%	72%	69%	70%	74%	71%	75%	75%	74%	74%	81%	75%
How often to visit the dentist	50%	56%	50%	57%	64%	54%	65%	66%	60%	61%	64%	63%
No advice	4%	2%	4%	3%	7%	3%	1%	2%	3%	2%	8%	2%

* Percentages are from the total of patient questionnaires.



RESULTS

Table 4.11. Indicators from patient questionnaire regarding the dental visit (February 2018 to March 2020).

Indicator	All children						Children aged one year and under					
	2018		2019		2020	Feb 2018 - Mar 2020	2018		2019		2020	Feb 2018 - Mar 2020
	Feb-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Mar		Feb-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Mar	
Agreement/Disagreement with the following statements:												
The dentist listened carefully to what I had to say about the child's teeth												
Strongly agree	64%	73%	68%	71%	60%	70%	73%	73%	75%	77%	70%	74%
Agree	32%	25%	28%	26%	34%	27%	23%	25%	21%	20%	28%	23%
The dentist spoke to the child and I in a way that I could understand												
Strongly agree	63%	72%	67%	70%	56%	68%	67%	72%	73%	75%	64%	72%
Agree	32%	25%	29%	26%	34%	28%	25%	26%	23%	21%	30%	24%
I had enough time to discuss the child's oral health												
Strongly agree	62%	72%	65%	69%	54%	67%	68%	74%	73%	74%	66%	73%
Agree	32%	26%	29%	26%	38%	28%	29%	24%	22%	22%	33%	24%
The child and I were approached with respect and friendliness												
Strongly agree	69%	75%	70%	73%	60%	72%	74%	76%	77%	78%	73%	76%
Agree	29%	23%	26%	23%	33%	25%	25%	23%	20%	20%	25%	22%
I feel confident that I can help improve the child's tooth brushing												
Strongly agree	61%	69%	62%	66%	54%	64%	68%	73%	73%	73%	66%	72%
Agree	35%	29%	33%	29%	35%	31%	29%	25%	23%	22%	33%	24%
I feel confident that I can help improve the child's eating habits												
Strongly agree	57%	64%	60%	63%	52%	61%	65%	71%	70%	71%	64%	70%
Agree	36%	31%	33%	29%	34%	32%	27%	25%	24%	23%	34%	25%
I feel confident that I will bring the child for a dental check-up in the future												
Strongly agree	70%	73%	69%	71%	56%	70%	77%	77%	77%	78%	69%	77%
Agree	27%	25%	28%	25%	34%	27%	22%	22%	20%	19%	30%	21%
I feel confident that the child's teeth will be healthy in the future												
Strongly agree	63%	71%	65%	68%	54%	67%	72%	75%	74%	76%	66%	74%
Agree	31%	27%	29%	27%	34%	28%	25%	23%	22%	22%	33%	23%

* Percentages are from the total of patient questionnaires.

4.4.5 Challenges improving prevention

Despite practices having the capacity to take patients, most of the practices reported challenges in encouraging regular DA as they felt people attended mainly for emergencies and that it consequently would have a negative effect on children DA:

'...like a lot of people in this town don't aren't regular attenders they just wait until they have pain so they come for emergencies they're not interested in preventative dentistry... they don't see the point in coming to a dentist and if that's how the adults are again it does feed down to the children they're not being brought regular for their examinations...' (PPC).

'...there is capacity it seems like it's a choice not to attend [...] it's a high needs area but we don't have regular attenders [...] we've got enough people you know to keep our books full but they're just choosing not to come in (PPC and Contract Manager).

Achieving behavioural change was reported to be challenging by some interviewees; cultural barriers, language and parents' attitudes and behaviours were reported to be barriers. For example, it was commented that differences in diet and beliefs could make providing advice challenging. Despite the availability of translation services for non-English speaking patients, communication could still be a barrier. Some practices had translated information, but some felt that having access to materials such as educational videos in other languages would also be beneficial. Some comments were:



RESULTS

'... if the kids have problems with the baby teeth they're [Parents] not really concerned about that because they know they're going change the teeth so they think it's not that important [...] it's quite difficult to get interaction with the parents you could see that you would speak about diet and they would get quite defensive...' (Dental provider).

'... is educating parents as well as educating children and "Starting Well locality" is just one of those areas where not all cultures brush their teeth twice a day and that's not going to change just because they live here so that is one of the main barriers that we have in this particular town' (PPC).

'SW area" is a very multicultural town... so the language barrier is an issue [...] we have an arrangement with a language translation service... which is helpful in-house but it's getting the parents who don't necessarily speak English we need to educate them as much as we educate the children because especially younger children don't brush their own teeth until they're you know five six seven so that is a barrier' (PPC).

Generally, dental practices felt that prevention needs to be supported under current NHS arrangements. Although other interviewees felt that prevention is part of the practice and that it is required to do by regulation. Some local teams were of the view that contracts could be modified to support prevention as exemplified by this comment:

I think the contract that they're working under if that could be modified or using flexible commissioning so that they're being rewarded for prevention so then you're going to get all that preventive activity... (PHE Consultant in Dental Public Health).



4.5 Engaging with local health and social care systems

(SW13 Advanced practices)

Engaging with the community was seen as an important component of the initiative to deliver prevention messages and reach high-risk patients, pregnant women and mothers of young children. The SW13 also enabled the link between dental practices and the health and social care system. Some comments were:

'...we were very aware that perhaps the message wasn't getting across and I think since starting this programme we've engaged more children within the community as opposed just our regular patients. It's been surprising perhaps how little the families know about looking after their dental health, so it's been really important to get that message across...' (Dental provider).

'Because I think when we were going into the community they felt like their barriers were dropped because they were in their place and we were going there one of my nurses would just go and answer any questions... she'd get in touch with the oral health educators and take some of their resources along she'd take some leaflets and things we could register them with the practice there and then and we would just ring them after book an appointment so I think just because it was more of a relaxed environment people were did have the time to listen where if they're in the dentist they'd get X amount of time for a check-up' (PPC).

During the period of February 2018 to January 2019, 30% of all practices reported any engagement with health and social care staff. The percentage was 26% for the period of February 2019 to March 2020 (**Table 4.12**). Practices engaged



RESULTS

mainly with health visitors, social workers and nurses. Around 37% of all practices reported organising oral health events including toothbrushing clubs and a range of events and activities such as national smile month and school visits.

Table 4.12. Number of contracts who have reported at least one engagement with Health and Social Care staff (Source: Monthly practice submissions).

Indicator	Number of practices	Feb 2018 - Jan 2019		Feb 2019 - Mar 2020	
		n	%	n	%
Any reported engagement with health and social care staff*					
Advanced Starting Well Practices	101	34	37%	29	29%
Starting Well Practices	11	0	0%	0	0%
All practices	112	34	30%	29	26%
Any reported oral health events and initiatives, including toothbrushing clubs*					
Advanced Starting Well Practices	101	39	39%	41	40%
Starting Well Practices	11	1	9%	0	0%
All practices	112	40	36%	41	37%
Number of engagements		n		n	
Advanced Starting Well Practices		221		371	
Starting Well Practices		0		0	
All practices		221		371	

*Number of contracts who have reported at least one engagement with Health and Social Care staff.



As mentioned earlier some areas were already part of mature local networks but were new to this way of working. The importance of local system support and facilitation was emphasised by many:

'I think that we've got really good healthcare partners who have been fabulous at working with us... they have been you know in the bedding system that we've adopted so that we can really go to the hard-to-reach groups in the demographics that were highlighted as the ones we really needed to target I think if there hadn't been... we would have really struggled...' (Local Commissioner, NHS England).

In qualitative interviews some practices reported already working with local settings, mainly schools, at the commencement of the initiative, but it was felt that the initiative had helped support approaches to other local settings and health care professionals. In some areas funding was allocated to commission health visitors and early year settings to supervise toothbrushing. It was perceived that the support of the oral health team, oral health improvement network, local dental committee or community connector had been helpful in facilitating links and engagement, as exemplified by the following comment:

'In [Starting Well locality] they already have an oral health promotion team so we were coming along and became part of that so our practices find it very easy to engage [...] in [Starting Well locality] that was less so they don't have a dedicated oral health promotion programme or people who work in oral health promotion... that brings it a slightly different dynamic you have to start educating the local authority about what the scheme's about...' (Local Commissioner, NHS England).



RESULTS

Local systems to signpost families to dental practices were at various stages of development at commencement of the initiative and remained so. Having a dedicated local oral health team, usually from local councils, was reported to greatly facilitate this:

'We have an oral health team who are really active so they will signpost mothers and children to the practice so getting the numbers it hasn't been too difficult [...] we have really good contacts with our local nurseries...' (Dental provider).

- **Health visitors and early years**

Some practices had been working with health visitors and reported that they were key in providing advice and referring patients as they were in direct contact with parents of young children, especially those who were not habitual regular attenders. Some of the challenges mentioned were the lack of health visitor's capacity to support the initiative. Some comments were:

'The practices tell us that they are now using the health visitor red books now so I think that will help the communication between the health visitors and the dental practices in terms of the health visitors being able to follow up with parents whether they are actually attending' (PHE Consultant in Dental Public Health).

'I think the challenge, health visitors the nought to 19 staff are not employed by [SW locality] they're actually employed by [Care Trust's name] so if you want to make any changes or if you want to ask the health visitor to do a little bit more it's not as easy because [...] they will only work to what has been agreed to provide so I think that's been a challenge' (PHE Consultant in Dental Public Health).



A few practices reported making contact with midwives and baby clinics, but most felt that making such contacts had been challenging. Some felt that weigh-in sessions could provide an opportunity to approach mothers of young children to give talks and information on diet and dental access.

'I actually... had a meeting with a range of midwives and gave them flyers explaining what Starting Well was and encouraging them to give them to parents as soon as they have their newborns but we didn't actually get much back from that to be honest' (PPC).

'We also asked if they wanted us to liaise with the health centres where babies are going for the weigh-ins and things like that we've asked if we could have maybe one of the rooms there and when they come in then if they wanted to see you know the dentist we could quickly give them some oral health education and even look in their mouths if they wanted us' (PPC/Dental provider).

Some practices reported establishing links with nurseries to encourage DA. For instance, one practice mentioned the support given by one of the headmasters:

'In our area we worked with a nursery across the road and the headmaster there was very keen for his children to come and see us and he literally had to force his parents to bring the children here' (Dental provider).

- **GPs and pharmacies**

A few practices reported links with pharmacies and GPs. There were views that the SW13 initiative has helped to enable the link with pharmacies. Linking with GPs, however, had been more difficult. Some comments were:



RESULTS

'The pharmacy however they were very good and helpful and they're happy to work with us... it's overall good the only thing I think we need to work on is to get into better contact with GP' (PPC).

'I went to GP practice as well and I didn't have very good feedback from them at all they don't seem very interested' (PPC and Dental provider, joint interview).

'The pharmacies have started their community projects are going to be talking oral health or thinking about oral health in smile month which is coming up and so now we're linking the practices into the local pharmacies to support that so that I don't think would've happened if we hadn't had Starting Well so it's those sorts of movement to get certainly in primary care people working together better (Regional Dental Adviser, Health Education England).

- **Community centres and places of worship**

Some had made links with community centres and places of worship which was regarded as helpful in approaching parents and carers of young children to promote oral health and DA, as shown in this comment:

'...we were already doing programmes in the community [...] we go to the local mosque and we give them some information about oral hygiene and diet advice... sometimes those children won't necessarily see the dentist regularly so we've got an opportunity to give information there...' (Dental provider).

- **Schools**

Most practices reported working with schools to give talks and organise tooth brushing clubs, some practices, however had not been successful. Having a previous relationship with schools facilitated the work. Tooth brushing clubs were



beneficial as for some children it might be the only way to have contact with a dentist. Some comments were:

'We're interacting with the school it's just very close to us and I think we're the only practice that has had success with the schools because they think the schools have struggled to follow the programme' (PPC/Dental provider).

'There are so many children that didn't even know how to use a toothbrush... I think the teachers were saying the one time of day that they brush their teeth at school may be the only time they're brushing their teeth... which is worrying but I'm glad we can do something to help...' (PPC/Dental provider).

4.5.1 Challenges approaching local settings

The reported ease with which practices were able to engage with other parts of the local health system was variable. Practices reported they would like to have had more involvement with local settings, but the importance of facilitation or support was highlighted:

'Having access to more schools, more interaction with the school it'd be great to have a bit more communication, but you know like I said the school has not been so responsive...' (PPC/Dental provider).

'It would be really useful if as a health community we could work together... I know the pharmacists are meant to be trained now to give certain dental advice and when I've been into my local pharmacy, they didn't know about it [...] if we could have a space in the social centres, the childcare centres to help so that if we did a clinic up there or PPC could set a base up there... that would've been really good...' (Dental provider).



RESULTS

Awareness of the initiative was one of the main challenges in approaching local settings. Although some practices had tried to increase awareness in the community by using local media, e.g. radio or newspapers, it was felt that a collective voice was needed. An engagement event between practices and local settings was suggested as a mean to introduce the initiative and to help establish the communication. Sending letters to inform potential local partners about the initiative or having a familiar local identity for the initiative would have been helpful. Some comments were:

'... the schools and nurseries ... they don't even know what the Starting Well initiative is, there has been resistance with trying to get in to the schools to do visits because they don't know what we're about [...] it just would've been a lot more helpful if they already knew about it...' (PPC).

'...dental practices we feel quite passionately about trying to get the message across but we do perhaps need some extra support from the health authority to liaise with local doctors maybe if they were sending out a letter, we have Public Health and I know we've tried to liaise with them we've tried to engage with the newspaper and with the radio but because we're one single voice as a single dental practice there's not a collective voice...' (Dental provider).

Besides increasing awareness of the initiative, challenges in working with schools included lack of engagement and support from schools, and school organisation. One practice commented that they were given a list of schools and nurseries to approach which facilitated the link; however, information about the initiative



should have been provided in advance. There were also some schools interested in taking part in it but they were not part of the allocated list. Comments included:

'It's been a struggle I feel like we're constantly bombarding the school they don't always reply... I've heard from other people, other dental officers that have been going in, that they wanted other things they wanted more toothpaste, things like that but we're trying to get through to them and they're not replying so yeah things have been slow because of that the communication is not great' (PPC/Dental provider).

'One of the things they [The local team] have done well is they've given us a list of schools that we're responsible for... that's been really good that we haven't had to chase that up ourselves that is already written... but it would be easier I think if they just knew a practice was responsible for them if we could've met them before we'd be able you know take our diaries with us and book in some visits there...' (PPC).

4.6 Role of PPCs, skills and Leadership

Interviewees considered that the SW13 initiative had highlighted the benefits of developing skills across the whole team, for example tasking a dental nurse with taking a lead role to drive preventive practice and increase uptake of care by local children. It was felt that, although utilising the skills of other members of the dental team might be challenging, it could also be a cost-effective way of delivering care. Some comments were:

'I think there should be more places for people like "PPC's name" because "PPC's name" is much better at sometimes delivering that message... she's a bright person and she



RESULTS

understands the community and she can give that message just as well as we can...'
(Dental provider).

'I think sometimes the dentist likes to do it themselves but that's not always a cost-effective way of actually delivering the care so by training and upskilling other people in the practice to be able to do it has created some capacity but I think that challenge has always been... the Starting Well 13 because there's been a payment attached I think it's been easier to actually persuade them about the benefits of utilising other members of the team' (Postgraduate Dental Dean for Health Education England).

The role of the PPC was regarded as key for successful delivery, for example organising activities and ensuring that other members of the dental team contribute to the delivery of the initiative:

'I think "PPC's name" has made it successful I think how she has organised it and got everyone else on board I think the champion is a big part of that, having someone that's enthusiastic...' (Contract manager).

'PPC's name" was very helpful she did a lot of work and actually she was the best type of person to get involved in a programme like that, she was pestering us all the time with the audit with everything... I think it's very important every practice that works in a programme like that to have somebody that's so engaged and so passionate about the programme...' (Dental provider).

PPCs were from different backgrounds, e.g. dental nurse, dental provider and practice manager. While some had volunteered to take the role, others were appointed. Generally, PPCs mentioned that participating in the initiative had been



a good experience. For some, taking on their role had gone smoothly but for others it proved difficult. Some PPC, especially dental nurses, reported previous experience with prevention activities which facilitated their role. Local teams, on the other hand were concerned that differences in professional background and PPCs lack of experience in going to the community might challenge their role. Some comments were:

'I wouldn't say it was easy because it was all new to me as well but I really enjoyed it at first and if I know I'm making a change in someone's life then it motivates me even more and lot of our staff feel the same way so if they know that they can make even a slight change in a patient's life then that will motivate them to take an extra mile' (PPC).

'... with all the challenges that I've explained we've managed it and we would like the programme to succeed but it has been quite challenging with regards knowing exactly what to do, we've had to spend quite a lot of time working things out...' (PPC/Dental Provider).

'Prevention champions have not started at the same place, have struggled to understand what their role is and there is an expectation of them, they are educated professionals but at different levels and that has to be acknowledged... I think the learning from this is the amount of support that they actually need...' (PHE Consultant in Dental Public Health).

Some PPCs felt very well supported but others expressed ongoing uncertainty about their role and a desire for more support and feedback on their delivery. Having guidance in the form of a toolkit, a training day or a national meeting for PPCs would have been helpful. For example:



RESULTS

'An annual get together would probably be beneficial [...] I think speaking with the commissioners and people as well just though they can let you know if you're on track and everybody give ideas and just get that you know just to make sure that you are doing the right thing just a bit of a second opinion, I think that would be beneficial to me' (PPC).

'What I think is missing which would be a good facilitator is a package or a toolkit for the prevention champions I know there's guidance out there I know but unfortunately the guidance it just tends to go out to the providers... so a facilitator for future would be to have a toolkit ... clearly outlining their role giving all the modules and knowledge that they need to undertake the role and giving them a visual almost YouTube video type instruction on how to submit the data...' (PHE Consultant in Dental Public Health).

Main challenges reported by PPCs were the workload and lack of time to develop the activities. However, the support of the practice lead, principal or the practice manager was helpful in allowing the PPC to have dedicated time for this role. Some PPCs had received considerable support from the dental team but others had struggled. Another challenge mentioned was that nurses who are taking the role as PPC might feel they lack the authority to ask other members of the dental team to carry out the activities required. Some comments were:

'Management support is something that maybe the other practices are lacking a little bit whereas I've got full support here... but I know the girls that are struggling are from big corporate practices where maybe the managers are not in the practice...' (PPC).

'...as far as myself and "Dental provider's name" the principal dentist, we've got this information and sometimes relaying it to the other members of the team the morale it's



been you know a bit slow... I think that's been a challenge trying to get everybody else on board' (PPC).

'The audit was quite difficult at first because you know they see me as a nurse and... I was sort of checking up to make sure that they were doing their job properly so at first... I just felt like it wasn't my place to check up on a dentist... that was slightly difficult at the beginning, but I do it every three months now and it's not a problem...' (PPC).

Some local commissioners expressed concern about PPCs not having enough support from the practice and that there might be a lack of leadership and reliance upon the PPC. It was perceived that PPCs from corporate practices might have needed more support:

'The main challenge I think from our perspective has been in relation to providers signing up to the scheme and not appropriately enabling the oral health champions to do the work so this will be the oral health champion is daily brought into conflict with their GDS role they haven't got the space within their working day to do the Starting Well role...' (Local commissioner, NHS England).

'I think the corporates operate this delegated model where sometimes there is a complete lack of leadership and there is a reliance upon the champions to know exactly what they're doing and to be proactive [...] I think they have needed a lot more support from us and they were looking to us for that support whereas I think the non-corporates look to their providers for the support and they got much more support from their providers and much more direction' (PHE Consultant in Dental Public Health).



RESULTS

Local teams mentioned that the role of a PPC might have been subtly different in practices and that ownership of the initiative by providers and managers and selecting someone with the right skills and authority for the PPC role influenced the development of the initiative. Turnover of staff was a challenge reported by some, including loss of the PPC. Larger practices or groups of practices were felt to have the advantage of a larger workforce from which to select individuals to occupy the role.

4.7 Monitoring delivery and progress

Measuring activity was different to mandatory services and this aspect was also at times challenging. From the outset those designing the programme were aware that the additional reporting requirement was a risk area and consequently investment was needed in providing support for practices and commissioners. Commissioners were, however, reassured that there was a substantial amount of data which could be gleaned from standard dental contract reporting. Some comments were:

'I think the practices will have a challenge around you know anything that's new and because it's so short you haven't got time to invent the change really ...so we're probably going to get lots of queries about how do you fill in this spreadsheet and do I need to do this can I do this and this kind of thing' (PHE Consultant in Dental Public Health).

'Dental information is quite well served by the NHS BSA...who compiles all dental information centrally so we have a good database...much better than most other health services actually' (NHS Central team).



The initiative presented providers with both additional workload and new types of task. Many providers reported the requirements as burdensome. While the requirement for data submission was mandatory there was not a financial penalty.

Some comments from dental practices included:

'...it [The audit] takes a lot of time lot of energy and I think it's much better to spend that time on actually seeing patients, treating patient delivering the message [...] the actual technicality of the audit hasn't been clear I don't think was necessary this sort of detail or even if it was necessary can be simplified very quickly done' (PPC/Dental provider).

'I think the biggest challenge is trying to do that data collection... because getting the prevention message across for the dentist to do what they need to do is fine it's the additional having to scribe having to collect the data...' (PPC).

'I don't think many of us got them [the submissions] straightaway but I think we're a lot better at you know in submitting all the data now at the moment I found it okay' (PPC/Dental provider).

Commissioners were aware that some practices might be struggling with delivery but were not necessarily reporting this. They were principally reliant on the specific data submitted by practices and this proved problematic for many practices, at least at first.

'I think they didn't know where to start... a couple of the practices did their audit without us having to do anything I think some of the practices started their patient questionnaire, so they were able to do the basic stuff... without too much help and facilitation...' (PHE Consultant in Dental Public Health).



RESULTS

Some local teams mentioned the challenge of not knowing whether key information was getting to all members of the dental team if they were reliant upon dissemination via one member and there was concern that communication was not good within some practices.

The submission of monthly returns detailing the commissioned activities was very haphazard. By the end of the programme 16 (14%) practices had never submitted a monthly return; in nine areas all practices submitted at least one return. A similar picture was apparent for the quarterly Delivering Better Oral Health audits but there was an ongoing number of patient surveys submitted.

In one DCO the requirements for data submission were amended to allow dental teams to have a greater focus on patient care delivery. Some interviewees suggested steps to make data submission easier for providers, such as reducing the frequency from monthly to quarterly, reduce the amount of data collected and to simplify the patient questionnaire. Some suggested to make the patient questionnaire available in a range of languages.

Commissioning, supporting and monitoring the initiative was also an additional pressure on heavily-committed commissioners and the nature of the service required a different approach to that established for routine (mandatory) services. Having shared ownership with partners potentially lessened the workload. For instance, where there had been active support from PHE, LA, HEE and LDN chairs, it was described as very helpful. Some comments were:



'It would've been nice if we had the capacity to go out to each practice and see the practice see how it's working in practice and be able to have a nice separate conversation with each champion but unfortunately ... we've been trying to manage this on top of the other workload' (Local commissioner, NHS England).

'It is resource intensive because... it's just added to what we do we've not had more resource to do it... but what's been very helpful and I think again this is good the way it's been set up nationally is the role of Public Health England so they're very pivotal to what we're doing... also Health Education England have been very proactive around the training... and also the local authority input is very important so they are creating the environment to say locally this is a big priority for us... so it's left us really just having to worry about in commissioning terms just organising the process...' (Local Commissioner, NHS England).

Observation at meetings between local and national teams and at meetings of local networks emphasised that difficulties with data returns were often raised by providers and that there was considerable support needed at all levels to help providers overcome these. One perspective that was helpful during early implementation of the programme was that this was a pilot and therefore the data collection requirements were greater than might be the case were the programme to be rolled out.

4.8 Perceived benefits towards the end of year 1

Generally, interviewees were positive about the benefits of the initiative and that it had helped to improve prevention delivery. Dental practices felt that the SW13



RESULTS

initiative had brought benefits for both, patients and practices. Particularly, it had helped to reinforce and prioritise prevention, increase awareness, engage with the community and improve children DA.

For instance, it was perceived that the SW13 initiative had increased awareness of the importance of oral health and that patients were more engaged in behaviour change:

'I do think we've seen an increase in the under-fives... and what has been a real eye opener is perhaps because these are not patients who we saw regularly ... you realise these people don't know any of this information so when they come back again in three months' time you can see suddenly they've changed [...] or they come in and they bring their lunch box and they go 'is my lunch box healthy this time'... and they get excited... (Dental provider).

It was also perceived that the initiative had increased awareness of 'dental check by one' and had encouraged families to attend:

'I know with my receptionist when they book in a family it's always do you have any more children who need to come in so they always try and encourage families rather than just parents to come in so our numbers are improving with children' (PPC).

The local partnership had helped to increase awareness in the community and to reinforce prevention message:

'I think [Starting Well] it has complemented a lot of the general work we do through "Starting Well locality" through our community links but also we've noticed like more



and more parents are understanding the messages because they've been getting it from different places so not just from the dentist but the health visitors have been giving the same messages...' (Dental provider).

The SW13 initiative had also helped to establish a relationship with local partners and provided a verifiable way of approaching local settings:

'I think what the big thing is that prior to the Starting Well programme we were kind of doing it and there was no formal way of approaching people, suddenly by being under the Starting Well umbrella it gives us a more verifiable way of going out... It was just like saying Oh I'm from "Practice's name" but then it's a bit better saying I am part of Starting Well programme...' (Dental provider).

It also helped the dental team to approach and integrate with the local community. It was mentioned that working with the community had been rewarding. Some comments were that it "makes a practice look better", "patients are grateful" and "it has been good for staff morale":

'...it's like a community bond especially when people from the community are coming in and recognise you from visiting or being at the doctors [...] and all the mummies will talk about it saying oh that girl come to our school and then went oh yeah she's a really good dentist and they bring their children...' (PPC).

'I think it's been good for staff morale because it's made people feel like they're achieving something over and above what they were doing before and you know... making a positive contribution to people's lives I think that has certainly something that's come across and that's been helpful I think from as a provider' (Dental provider).



RESULTS

For some local teams achieving an integrated system and maintaining links with the community and local partners would bring the initiative to a successful completion. Some comments were:

'... our staff being so on board and enthusiastic about it [...] So the team enjoying with the extra duties [...] And part of it being successful as well is giving everyone else who works here seeing them enjoy it so that's a mark of success as well seeing that we are doing well at it and it's something it encourages the whole team...' (Joint interview with PPC and Practice manager).

'I think the quality of the consultation, that prevention consultation will improve that's what I would want to see in terms of you know a successful outcome really and for that to be sustained post the programme [...] And I'm hoping that the links that they've developed with the health visitors etc will again be sustained post the programme' (PHE Consultant in Dental Public Health).

Some practices considered that the initiative was already a success as shown in this comment:

'I guess the actual programme has been successful already we've managed to implement every part of what they've asked for in the guidelines, a couple of starting hiccups along the way but now it's just a part of "Practice name"... it's automatically done everybody knows what it is and they know it has to be done and it's just done really so yeah I guess it's successful already' (PPC).



4.9 Robustness of the programme and challenges towards the end of year 1

At the time of the second stage of the interviews, participants felt that it was still early to see an improvement and anticipated that it might be difficult to measure success as the initiative had been running only for a short period of time:

'I think it's difficult in the short term to see the benefits because a lot of those elements it's more longer term... I'm not expecting to see in the timeline for the programme huge impacts necessarily on DMFTs... but you can see things like access uptake of fluoride varnish and... from the information we're collecting you can see that they are reaching out wider outside of their practice...' (Local Commissioner, NHS England).

'I think 12 months is not long enough of a period to document these changes because some patients may not return to the dentist for nine months for 12 months, so to properly assess all the patients that we see I think it would take at least two years and to see if there was any improvement but I think from a dentist's point of view most of the indicators will be of what's happening in the mouth' (Dental provider).

There was a perception that the initiative had a bigger reach in other age groups as some practices had been seeing the whole family, and that there might have been changes within the practices and in working with the community that might not had been quantified and recorded. Some comments were:

'There have been definite changes it's not something that... has been quantified on an audit... but we know that's made a difference [...] they've made an improvement in these



RESULTS

families and they are new families to our practice so definitely I think I can definitely see a difference in the health message and that but that's more health messages that isn't necessarily me drilling their teeth it's about perhaps "PPC" giving the message or even me...' (PPC and Dental provider, joint interview).

'I think it's really good I'm really enthusiastic about it and I do think eventually it's working, it's just difficult to actually measure that... we've got good feedback from patients there but it's really difficult to assess whether it's working... in the practice it seems to be working really well and it's definitely a job that was needed' (PPC).

'I think probably that things are happening in the practices but we perhaps... the information systems we've set up probably aren't capturing it as well or whether it will eventually capture it [...] I suppose we just perhaps need to assure ourselves a little bit more that even if the data doesn't tell us at the minute, that we have got some feedback on an individual basis from practices... something that sets out what they're doing what they've achieved and what their plans are going forwards now... (Local Commissioner, NHS England).

However, challenges in data collection made difficult to assess the impact of the initiative as data might not be an accurate reflection of the actual work of practices. For instance, there were some practices capturing data only on paper. There were also concerns that it would be difficult to separate outcomes for those areas that were running two initiatives at the same time. These will be further discussed in Chapter 5.

In general, practices were of the view that the initiative should be long term:

'... I think definitely it should be a long term it should be part of their main NHS dentistry programme just to always focus on the young you know treat them while they're young get them into good habits and we won't need to do so much later on I think it'll benefit NHS dentistry' (PPC/Dental provider).

'... So all the hard work that's been put into it because it's a pilot scheme if it's decided not to take it any further it would be quite you know for everyone to get on board and then say we're not doing that anymore so I think it really does need to carry forward...'
(PPC/Practice Manager).

4.10 Generalisability of findings

Some interviewees felt at the outset that the programme was robust, with strong aspects that can be applicable to other areas and other groups of age. Concerns were raised, however, over the affordability of the programme and associated difficulty in commissioning the services at scale. Some comments were:

'I think that the way the programme has been developed and the implementation toolkit it's almost exactly what NHS England commissioners have been looking for a scheme that has everything that you could possibly need to make it work. There's a business case in there there's data collection tools there's a communications plan there's launch event guidance there's an evaluation plan there's everything you possibly need it's easy to simply take it down change the name change the locality and then launch it somewhere else so it is very easy to replicate' (Local Commissioner, NHS England).

RESULTS

'It's a good model the only thing that would stop us rolling it out further would be financial constraint...otherwise I think it would work just as well in other areas of (Region name)' [...] it's just a question of finding the money really' (LDN Chair).

In follow up interviews, some local teams considered that the initiative can be easily replicate, but it needs to be adapted. Others were of the view that it might not be possible to replicate due to the investment in capacity and time. Main concerns of local teams were, however, the sustainability and financial viability to continue after the initiative finishes and how to maintain this as a priority:

'So our challenge is how to make this not just a three year programme but something that's sustainable and we can make those improvements for the local people ...in a manner that actually continues after the three years and some of that is about how we do it the efficiency manage costs and also the culture so that people expect it to continue' (Local Commissioner, NHS England).

'... actually the project's never finished it's about the practices changing their culture and changing their behaviour so that prevention becomes the norm... and they don't have to say well we can't do that because we don't get any UDAs it's not part of our contract to do that we don't get paid for prevention, once we've actually developed a culture where prevention is part of what they do then I think we'll have achieved our job' (Postgraduate Dental Dean, Health Education England).

Participants agreed that in order to replicate the initiative, there should be availability of resources, capacity and a more simplified system in place for data collection and processing. Having a more flexible commissioning where



prevention is part of the contracts and an integrated system with local healthcare partners was suggested as shown in this comment:

I think if NHS England recognised that a dental practice can support prevention messages and if they if in the future when they look at the new dental contracts if they could actually put in there some indicators that what they would expect from a prevention focus in practice I think some principals who hold contracts with NHS England would do it more because while it's not part of a contract they think they only have to do A B and C whereas if it's mentioned in the contract that we would expect you to be a prevention focussed practices... (Postgraduate Dental Dean, Health Education England).

4.11 Key lessons and Summary of main process

Key lessons are summarised in **Table 4.13**. Main process, outcomes and barriers identified for the delivery of the SW13 initiative are summarised in **Table 4.14**.



RESULTS

Table 4.13. Main key lessons identified from the Starting Well 13 initiative.

Feasibility
<ul style="list-style-type: none"> • There is potential in dental practices to undertake oral health improvement activities and there are likely to be passionate PPC within dental teams. • There is untapped capacity among dental care professionals to take on leadership roles within practices for such activities. • With support and internal leadership, practices are able to adopt a more preventative focus.
Facilitators for delivery
<ul style="list-style-type: none"> • Dental teams providing these services require training, including leading change in clinical practice. • Practice oral health improvement networks may help support dental teams. • Initiatives to ensure that children from higher risk backgrounds make use of dental services require support from a range of local partners such as local authorities and CCGs. A system-wide plan for delivery with identified roles and responsibilities would support this. • Localities where the commitment to oral health is shared across the health and social care system seem to be those where these programmes have greater chance of successful implementation. This may require local system development, including clear messages about the programme and expectations of local agencies. • Dental teams may struggle with new ways of working and not have local system contacts. Facilitation and support may be needed to help develop contacts with local partners and help design appropriate interventions. • Commitment from dental providers is key and commissioners need assurance that the required resources will be applied to deliver the programme.
Commissioning and monitoring
<ul style="list-style-type: none"> • Commissioning of these programmes is not resource neutral in terms of commissioning capacity, requiring considerable facilitation and monitoring to ensure delivery. • The effort required in collecting and collating large volumes of additional data for those in charge of the monitoring and assessment of progress can be considerable. Routinely collected (FP17-derived) data alongside engagement with practice leads and support from public health partners to assess change at population level may be more efficient. • Ensure that the providers are clear over which contract numbers should be used to report activity and that the contracts are identifiable in data to avoid duplications/issues. • Some measures, such as reported delivery of best preventive practice, can become rapidly saturated and other ways to evidence provision of high-quality preventive care might be considered.

Table 4.14. Process, outcomes and barriers identified from the delivery of SW13 initiative in dental practices.

Process	Outcomes	Barriers/Facilitators
PROCESS I: Improving prevention		
<ul style="list-style-type: none"> • Prevention advice within the practice was wider, e.g. included diet, dental attendance. • The whole dental team was involved in delivering prevention advice, e.g. including receptionist. • Developing of materials and activities for oral health promotion and education within the practice, e.g. written advice, leaflets, visual aids, internal toothbrushing clubs, kids club during holidays, one to one support to patients. • Use of social media, e.g. to advertise the programme and the practice activities. • Upskilling the dental team. 	<ul style="list-style-type: none"> • Increase awareness of the importance of oral health and dental attendance in both, all members of the dental team and patients. For example, displays were successful in having an impact on the patient. / Good feedback from patients. • Development of new skills in members of the dental team. • Increase staff morale as it contributes to people's life. 	<ul style="list-style-type: none"> • Necessary to support dental practices through training, e.g. clinical leadership. • Practice oral health improvement networks may be able to support dental teams. • Necessary to make links with local settings, especially, health visitors to reach mothers of young children, pregnant women. • Main barriers were parents' attitudes and behaviours; language and cultural barriers.
PROCESS II: Taking on new patients		
<ul style="list-style-type: none"> • Advertising and facilitating access. • Prioritising young children. • Increasing capacity to allocate the whole family. • Open days. • Having a referral process. • Encouraging parents of young children, pregnant mothers. 	<ul style="list-style-type: none"> • Increasing awareness of dental attendance at early years. • Whole families attending. 	<ul style="list-style-type: none"> • Encouraging parents to bring their children can be challenging. • Ensuring that children from higher risk backgrounds make use of dental services require support from local partners e.g. local authorities and CCGs. GPS, pharmacies and midwives might be able to refer patients. • Some practices might not have the capacity to allocate families, e.g. limited UDAs activity. • Open days can be successful for some practices but might take time to organise, practices might struggle in encouraging patients to attend.



RESULTS

PROCESS III: Engaging with the community		
<ul style="list-style-type: none">• Linking with local settings and health care professionals: schools, nurseries, baby weighing clinics, community centres/ mosques.• Working in partnership. For instance, local authorities can provide support. Health visitors are important in supporting prevention as they are in contact with parents of young children and hard to reach patients. They can also refer patients and might be able to book appointments.• Oral health team/Oral health improvement network can provide support in establishing a link between dental practices and the community.	<ul style="list-style-type: none">• Increasing awareness in the community.• Patients can have a better understanding of the prevention message and reinforced it.• Integration of the dental team with the community.• PPC enjoyed going out to the community.	<ul style="list-style-type: none">• Necessary to support practices in making links with the community and develop contacts with local partners.• Improve partnership working and involvement with health settings, e.g. weaning and weigh-ins sessions can provide a good opportunity to approach mothers of young children, provide advice, signposting and provide information on how to access dental services.• GPs, pharmacies, health visitors are in contact with parents of young children and might be able to provide information on dental access.• Having a better communication with schools and therefore more access to provide talks and oral health education.• Training and funding can be helpful.

CHAPTER FIVE

5 DISCUSSION

The purpose of this research was to explore child DA and to evaluate an NHSE&I initiative, SW13, in order to improve this. The purpose of the evaluation was to assess whether the objectives of this particular initiative were met, and the processes used to achieve them. The initiative aimed to improve oral health in children under 5 years and to encourage DA in 13 ‘high priority areas’ in England. These were localities with high levels of deprivation, disease levels and no improvement in the prevalence of caries in recent years. The initiative looked to support dental practices to have a more preventive focus and to engage with the community. It had two modes of delivery, SW and Advanced SW, the latter being required to engage with other organisations in the local health and social care system. The duration of the initiative varied in the 13 local areas, depending on the availability of local funding. Some practices started to report data in February 2018; the initiative officially ended in March 2020.

The evaluation used both quantitative and qualitative methods. Qualitative research looked to include the perspectives of those involved in the initiative such as NHSE&I central team, NHSE&I local commissioners, PHE consultants in dental public health, LDN chairs and dental practices. The SW13 was considered to be a pilot, and while it is still running in some areas, alongside this the NHS SW Core which aims to increase



DISCUSSION

dental access in children 0 to 2 years old and promote a greater focus on prevention, has started to be implemented.

The evaluation methodology was based on the Donabedian model, looking at the structure, process and outcomes. The Donabedian model has been used to assess quality of health care (Gardner *et al.*, 2014) and has the advantage of being able to be adapted to different situations (Bradford *et al.*). The evaluation focused mainly on the processes to achieve the outcomes; evaluating these is important as it determines to what extent a programme or intervention was implemented as planned and to identify barriers and facilitators (O'Connor-Fleming *et al.*, 2006; Yusuf *et al.*, 2015).

At the beginning of this research, there were a total of 112 practices taking part in the initiative; some practices joined later but were not included for the evaluation. Main findings revealed that the SW13 initiative was considered ambitious and an opportunity for different parts of the health system to work together in a coordinated way. It enabled dental practices to drive a more preventive approach and engage with the community. The role of the PPC appeared to be crucial. Local authorities and local commissioners were identified as key to facilitate links between dental practices and the local community. There were, however, training and development implications as well as commissioning capacity challenges. The programme was more complex to provide and monitor than routine NHS dental care requiring dental teams to acquire new skills and develop new relationships with local partners which was challenging for some dental practices. The additional activity data requirements proved burdensome to provide, resulting in information gaps. One significant factor was the presence of other initiatives seeking to improve child DA and oral health and the extent to which

they were linked with the programme. These themes will be discussed along this chapter.

Children's oral health has been an area of significant policy interest and investment in England, as such the improvement of oral health and disease prevention has been a priority for The Department of Health and Social Care (2019), and the focus of Parliamentary debates (House of Commons Hansard, 2018). A number of interventions, at both local and national level, have been developed to promote oral health (Watt, 2007). **Figure 5.1** shows the upstream and downstream approaches for oral disease prevention. In terms of children's oral health, a broad range of interventions and policies have been advocated such as water fluoridation, the levy introduced on soft drinks, legislation on food labelling and the promotion of oral health in schools (Watt, 2007). Another example is the SW13 initiative which was introduced in response to the challenge of improving children's oral health.

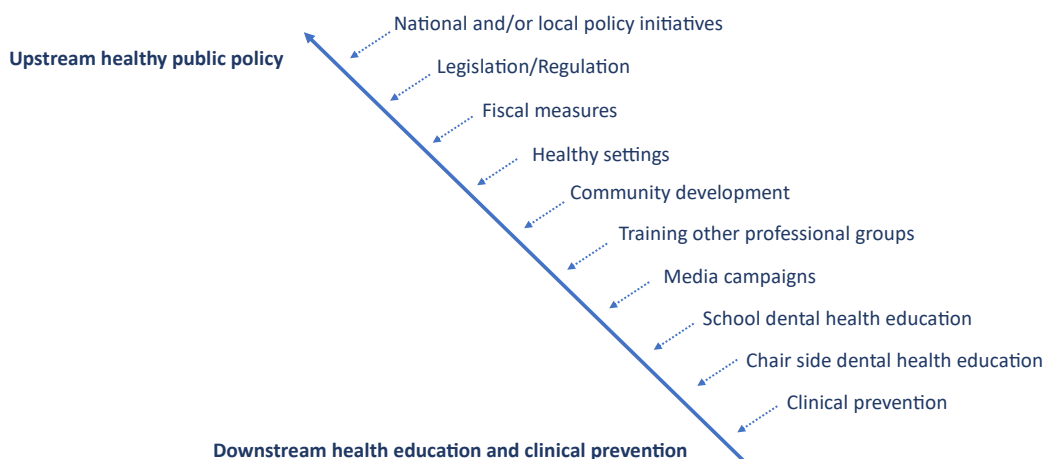


Figure 5.1. Upstream and downstream actions for oral disease prevention. Adapted from Watt (2007).



DISCUSSION

Prevention of oral diseases can be largely achievable, but it is important to promote and implement adequate preventive approaches according to the population (The Lancet, 2009). A number of interventions aiming at oral health improvement in children, including the SW13 initiative, have focused on the promotion of oral health and change behaviour (Adair *et al.*, 2013). In 1986, the Ottawa Charter identified as one of the key areas of health promotion the re-orientation of health care services towards disease prevention and promotion of health (WHO Europe, 1986). There has been, however, a lack of quality evidence on the effectiveness of oral health programmes and interventions which is necessary to provide guidance for the delivery of oral health services, implement best practice and to inform as to the development of policies (Kay and Locker, 1996; Watt and Fuller, 1999; Watt *et al.*, 2001). Therefore, one of the aims of this research was to explore the potential role of dental services in promoting DA and improving oral health outcomes through the evaluation of the SW13 in order to inform NHS dental commissioners in the development of oral health interventions.

Qualitative findings suggested that the SW13 initiative was well received, and it was considered a priority in all the 13 areas. Nevertheless, it was highlighted that there were other areas not included in the selection that would have benefit from the initiative. In some localities the SW13 was offered to all dental practices and in some others local teams identified areas that were a priority within their locality. There have been some controversies on whether targeted programmes would reduce inequalities. Authors in favour of universal interventions (Batchelor and Sheiham, 2002; Watt, 2005) have argued that approaches to the whole population would increase the number of cases prevented compared to an individual approach. Other authors have claimed that universal approaches might benefit more those who are wealthier,



increasing the inequality gap (Tickle, 2006; Shaw *et al.*, 2009) while targeted approaches can improve health bringing those from poorer backgrounds to a more comparable level (Shaw *et al.*, 2009). The implementation, however, of a targeted or universal approach will depend on the type of intervention and local circumstances. For instance, evidence suggest that in areas of high level of disease targeted interventions are more effective, in contrast, the effectiveness of a target approach might be limited when good oral health behaviours are already in place (PHE, 2015).

One of the main objectives of the SW13 initiative was to drive a more preventive focus in dental practices. Dental professionals can play an important role in improving oral health and reduce inequalities by having a prevention focus-orientated in dental practices along with oral health promotion. Dental teams can provide health education and empower patients by giving them the guidance and support to have the confidence to be responsible for their oral health and engage with patient behaviour change (Watt and Fuller, 1999; Watt *et al.*, 2014; Asimakopoulou and Newton, 2015; Banerjee, 2017).

Qualitative research for the SW13 intervention suggested that practices were keen to deliver prevention and were of the view that the initiative provided the opportunity to reinforce and prioritise prevention by dental teams. Among the activities monitored, practices were required to designate a PPC champion, implement a DBOH audit and improve against it, have an action plan, provision of preventive advice and preventive interventions e.g. fluoride varnish applications, follow-up for children referred from the practice for extractions under GAs and encourage DA by young children.

Processes reported to achieve the delivery of prevention included the financial support to allow practices to devote more time to preventive activities, the support from the



DISCUSSION

NHSE&I local team, networking, educational training, resources, having a committed PPC and the support of the members of the practice. Although some practices were already performing preventive activities before the intervention, they were of the view that the DBOH audit had helped to monitor and deliver prevention, although some felt that the audit can be simplified. It was reported that having an action plan was helpful in planning the activities and giving structure to the delivery and monitoring of the initiative. Some practices were developing in-house activities e.g. toothbrushing clubs, leaflets, displays, but it varied across dental practices.

The lack of reporting data from some practices, however, suggested that they might have been struggling to deliver the activities; by the end of the initiative, 14% of the practices had not submitted a single monthly return. Although, data from monthly submissions suggested engagement with the activities from those practices that submitted information, this might not have been so; the submission of required data did not necessarily indicate compliance with the required activities though a failure to submit data was more likely to indicate a wider lack of compliance. As an example, 92% of practices that submitted information reported to have completed a baseline DBOH but this proportion was 79% of the total dental practices.

Nevertheless, prevention delivery can vary across dental practices, as suggested by studies, and most of the time is not evidence-based (Witton and Moles, 2013). Fox (2010) identified that for most dentists, prevention was part of their work, mainly providing advice one-to-one at the chairside and through posters and/leaflets but identified that there is a lack of evidence of the perceptions of dentist about the delivery of prevention in practice (Fox, 2010a). Some views from the qualitative research were that prevention could be improved by incentivising dental providers. It has been



previously argued that remuneration has been focused on the number of patients which encourages treating patients on a more regular basis and perform more invasive treatments (Banerjee, 2017). It has been suggested that remunerating dental professionals by incentivising dental care could encourage a change in the practice towards prevention (Watt *et al.*, 2004) as well as the development of oral health promotion interventions in practice (Olley *et al.*, 2011). There were also some views from the qualitative research that the SW13 initiative could provide some learning to new ways of contracting.

New ways of remunerating dental activity in England have been developed during the past years (Goodwin *et al.*, 2003; Newton *et al.*, 2006; Hulme *et al.*, 2016; Rooney, 2018). In 1998, Personal Dental Services (PDS) were established (Hill *et al.*, 2003; Newton *et al.*, 2006) and in 2002 the Department of Health in its 'Options for Change' report proposed a dental health service reform based on PDS that looked to improve access and highlighted the use of prevention in dental practices. Before this, children used to be registered under a capitation scheme but there were opinions that this system discouraged registration of young children (Morrison *et al.*, 2000). The current dental contract, based on Units of Dental Activity (UDAs) payment was introduced in 2006 (House of Commons Health Committee, 2008). Initially, it was thought that payment for clinical treatments based on UDAs would re-orientate services towards prevention, allow for seeing children before disease and reward the recruitment of young patients at early ages (Brocklehurst *et al.*, 2013); but it has been argued that this way of payment is encouraging intervention instead of being focused on prevention, and that it does not reward quality but quantity (Banerjee, 2017), which has caused stress and anxiety for NHS dentists (Holmes *et al.*, 2015b). There are



DISCUSSION

views that this contract lacks prevention activity and that it does not financially reward prevention activity (Holmes *et al.*, 2015b).

The NHS independent review by Professor Jimmy Steele (Steele, 2009) highlighted that there was a need for a new approach and remuneration system based on prevention, pointing out that commissioning of dental services has not incentivised quality. Following this, there was a commitment from the government to introduce a new prevention-focussed NHS dental contract (NHS Business Services Authority, 2020) aiming to improve oral health and increase NHS dental access. The new reform is focused on two measures; capitation to increase a preventive focus and non-capitated activity for any necessary clinical treatment. Different pilots began in 2011 (Department of Health and NHS England, 2017). In 2015 the prototype remuneration model was introduced, and different versions of a possible new system have been tested by a small number of practices (Department of Health and NHS England, 2017).

An important aspect of the SW13 intervention was the improvement of DA by young children. Qualitative research suggested that the initiative has helped to increase awareness of the importance of early attendance in both, members of the dental practice and parents of young children. It had been anticipated that practices might not have the capacity to see older siblings of young children as the initiative was only focused on children 0 to 5 years old. However, practices that were interviewed reported having the capacity to take the whole family on as new patients. Involving the whole family is important, as during the early years of a child, engagement with parents can be most effective to establish and result in better oral health outcomes in adulthood (Sarri and Marcenes, 2012).



All practices submitting monthly data were taking on new patients - 86% of the total dental practices participating in the initiative. Among the process to improve DA, practices reported that they were advertising and providing information about the practice in local settings. Most of the practices organised open days, for some they were very successful, although this varied among practices. Among the barriers to improve DA, a few reported that having a limited UDAs capacity might be a challenge, and a number of practices reported difficulties in encouraging DA. This will be discussed later in this Chapter. Although the majority of practices were already taking on young patients before the initiative, there were expectations at the outset that practices would see more children from high-risk groups and children referred from health or social care professionals, especially for the case of Advanced practices. Nevertheless, the local system to signpost families to dental practices were at various stages of development across areas and only a few of them already had a system in place before the initiative. It was felt that having a dedicated local oral health team can facilitate links and signposting patients. Some other practices, however, were positive about the number of children attending and there were some views that the initiative was having a bigger impact as practices were encouraging the whole family to attend but it was not recorded for the initiative. Some interviewees thought that children identified from local settings such as schools might be attending other practices that were not part of the SW13 initiative. It might have been possible as some studies have reported that parents might take their children to a dentist in more affluent areas (Davies, 1999).

Data from SW13 monthly submissions indicated that Advanced practices were unsure about identifying a high-risk group and were struggling to see patients signposted from adopted settings. Although, some areas reported a high number of patients taken from



DISCUSSION

the high-risk locality, only 30% of dental practices clearly stated they had identified a high-risk group. The initiative also monitored dental practices on the number of children seen after being referred for GA, but some practices interviewed reported to be prevention orientated and rarely referred patients for extractions under GAs. These findings suggested that emphasis should be on ways to identify and support high risk patients, as it can be challenging. A study by Olley *et al.* (2011) reported that children at high risk of dental disease and from poorer backgrounds do not follow dental care after tooth extraction under GA and identified that support for this group is poor. The study reported that the majority of parents would like to have support in finding a dentist for their children or through an oral health programme. However, non-regular attenders were less likely to request help.

The majority of practices in this study reported difficulties in engaging patients and supporting behaviour change. Among the reported barriers were non-regular attendance, patients attending only for emergencies, a mobile population, cultural barriers, language and parents' attitudes. For instance, it was mentioned that it can be difficult to provide advice to parents, e.g. sugar consumption and breastfeeding, due to cultural barriers. Difficulties in engaging parents, cultural and language barriers have been also seen in other interventions (Evans *et al.*, 2013; Holmes *et al.*, 2013; Simons *et al.*, 2013). A study from Witton and Moles (2013) suggested that some dentists might not feel trained to deliver the national guidance on prevention and that it can be difficult for some to provide advice to patients from different backgrounds. In addition, hard to reach families most of the times present health problems which might affect their engagement (Macpherson *et al.*, 2010).



Unfortunately, it was not possible to interview parents due to time limitations. However, findings from an intervention aiming to improve DA reported as barriers for parents in accessing dental care for their children, difficulties in finding a suitable dentist e.g. a trustworthy dentist and a child-friendly dental services, dentist not accepting NHS patients, low perception of need and previous negative experiences (NSMC, 2010). A study reported that some of the challenges that parents faced in supporting the oral health of their child were parental skills, child behaviour, pressure from other parents at school, cultural factors at home, lack of time due to long working hours and large families, factors related to the dental system and unwillingness to look for further dental care for their child (Olley *et al.*, 2011).

Achieving good oral health depends on individual behaviour (Banerjee, 2017), in children it is the responsibility of the parents. The dental team, however, can play an important role in supporting parents to have the capability to make changes by giving them the necessary, timely and correct information, the opportunity for change and motivation (Asimakopoulou and Newton, 2015). Nevertheless, achieving behaviour change towards prevention in practice might be challenging for the dental team. Asimakopoulou and Newton (2015) discussed the three necessary aspects of behaviour change, capability, opportunity and motivation (Michie *et al.*, 2011). The authors point out that dentists need to have the “capability” for which it is necessary to support them to have the confidence to advise patients; the “opportunity” by having the resources and the time to discuss with patients, and “motivation” to engage in patient behaviour change; and that in order to achieve this, it is necessary to have the necessary education and training (“intervention functions”) but also highlight the importance of having guidelines and policies (Asimakopoulou and Newton, 2015).



DISCUSSION

Watt and colleagues (Watt and Fuller, 1999; Watt *et al.*, 2014) also agree that in order to produce a change in dental teams there needs to be the appropriate knowledge, attitudes and training skills in both practice-based and communication with patients, but also in partnership working and advocacy (Watt and Fuller, 1999; Watt *et al.*, 2014); and concluded that remunerating dentists, a continuous professional education and a supportive professional network could encourage changes in the dental profession (Watt *et al.*, 2004). The authors also emphasize the importance of both understanding the needs of the local population and a shift in perspectives from looking at individual to the wider population (Watt and Fuller, 1999; Watt *et al.*, 2014). Weston-Price *et al.* (2020) are of the view that oral health promotion delivery also depends on having the adequate knowledge and skills. A study by Witton and Moles (2013) on the barriers and facilitators to deliver the guidance "Delivering Better Oral Health" in dental practices identified insufficient staff, facilities and time as barriers to delivering the guidance.

The SW13 initiative was seen as an opportunity for practice development. Practices were of the view that the SW13 helped to make some changes in dental practices. For instance, the involvement of the whole dental team in the delivery of prevention advice, including receptionists. Monthly meetings within the practice were useful to share ideas with other members of the dental team. In some areas it was reported that the initiative created a kind of competition among dental practices which encouraged them to share ideas for delivery. This sense of competition among dental practices has also been seen in other studies which might come from the idea that dentistry is a competitive business (Holmes *et al.*, 2013).



Training was useful to reinforce the knowledge and give more confidence to the dental team. The learning modules, nationally designed and provided by HEE, were regarded as very useful, although some were of the view that they could be summarised. However, the importance of timely and continuous training was highlighted. Ramsdale and Landes (2014) suggested that improving the knowledge and skills of the dental team can increase job satisfaction and staff retention and consequently patient retention. Training staff is also important to disclose a clear and consistent message in promoting early dental registration (Morrison *et al.*, 2000).

Networks can also support practices in making changes (Watt *et al.*, 2004). For instance, a study reported that dentists usually look for help and support in friends and colleagues (Iqbal and Glenny, 2002). Views from the SW13 were that local meetings were helpful for sharing learning and networking between practices and health services but the need of ongoing support through these meetings was highlighted. Cooperation and support between practices was beneficial, particularly as there was a wide variety in skill and experience among PPCs. However, the level of success and participation varied across local areas which might be due to the different formats across localities. For instance, in some areas local meetings were coordinated by PHE Consultants in Dental Public Health or LDN Chairs; in others they were incorporated into other meetings such as LA oral health meetings. Some localities set up a WhatsApp group to share ideas and to provide support among dental practices. Nevertheless, some of the challenges in setting up a network were a lack of direction and local ownership. Some areas had already a mature local network, but others were new to this way of working.



DISCUSSION

An important aspect to achieve a change in dental practices is having effective leadership (Hebbal *et al.*, 2012). This is important for every member of an organisation or team and not only for those holding a leader role (NHS Leadership Academy, 2011). The NHS leadership framework is formed of seven important domains required for the quality of delivered services. Each of these domains has elements of leadership behaviour needed to improve health quality and safety. These are:

- Demonstrating personal qualities
- Working with others
- Managing services
- Improving services
- Setting direction
- Creating the vision
- Delivering the strategy

Hebbal *et al.* (2012) points out that having an effective leadership is an important attribute for dental practitioners as it is necessary for practice development, overcoming challenges and to lead innovation and change in the practice, but also it is important in making links with other health care professionals. Hebbal also points out that dental professionals should not only look into oral health issues but also play a role in the community. Grocock (2020) is of the opinion that there is a duty on dental professionals to take a leadership role in an effort to improve oral health and patients' clinical safety; and highlights that taking a leadership role in dentistry is essential for leading the dental team, leading patients to improve oral health and leading the community and health system to improve the oral health of the population. However, the authors assert that dental professionals might require leadership development, training, motivation and support (Hebbal *et al.*, 2012; Grocock, 2020). Learning from previous interventions have reported that projects that are clinically led and owned in



dental practices have the potential to empower dental practitioners (Brocklehurst *et al.*, 2013).

The SW13 initiative required practices to identify a prevention champion to support the delivery of the initiative, for instance reporting of information, supporting the implementation of DBOH, organising meetings within the practice, attending local network meetings, among other activities. Generally, PPCs mentioned that taking part in the initiative had been a good experience and were enthusiastic about the initiative, though, it was challenging and some struggled to develop their role. There were perceptions that corporate practices might have needed more support.

The importance of having an enthusiastic PPC was highlighted as a main facilitator for the practice to succeed. However, main challenges for PPCs were the workload and lack of time to develop the activities. On the other hand, previous experience with preventive activities and the support of the practice, mainly the practice lead, principal or manager were the main facilitators. The fact that PPCs were from different professional backgrounds, the differences in their role among practices and the level of support of the whole dental team influenced the development of the practice. Champions who received enough support from their practice had better perceptions about the initiative.

Having the engagement of the whole dental team is essential for the development of the practice. The principal can lead and coordinate, but it is also important to have a team approach and to delegate roles and responsibilities which can make it easier to implement a change in dental practices. In contrast, the lack of engagement of the dental team can be a barrier (Watt *et al.*, 2004; Watt *et al.*, 2014). It has been suggested that dental teams could be more effective by utilising skill mix and that some



DISCUSSION

dental treatments and oral health promotion could be delegated to dental hygienists, therapists or a dental nurse (Hulme *et al.*, 2016). The “dentist time” can be seen as “expensive” (Watt and Fuller, 1999) and by delegating, dentists could have more time for complex treatments (Harris and Haycox, 2001).

There were some views from the SW13 that the delivery of prevention advice could be delegated to dental nurses. The idea of skill mix has been advocated during the last decades in the UK (Department of Health, 2012). However, there is a need for models to use the skills of other members of the dental team in the best possible way (Hulme *et al.*, 2016). A study in Scotland about the view of extended duty dental nurses on taking on roles undertaken by GDP reported they can supplement their role in general practice but they need to have training and support (Gnich *et al.*, 2014).

Similarly to this study, it has been reported that factors contributing to the success of this type of programmes includes the input of dental public health, good communications within the network and financial resources; and that having a project manager, access to resources and good communications are important aspects in delivering the initiative (Brocklehurst *et al.*, 2013). It has been suggested that having the support and advice of a local lead in oral health promotion might help the implementation and development of a programme or intervention (Holmes *et al.*, 2013). The need to improve confidence in NHS dental services, the provision and capacity of dental care has been also recognised in a previous intervention (NSMC, 2010). A qualitative study identified that some of the factors influencing change in dental practices were financial factors; individual factors such as attitudes, regular attendance; organisational issues e.g. staff loyalty, staff meetings, an open communication and access to training (Watt *et al.*, 2004).



Another aspect of the SW13 initiative was the requirement for Advanced Practices to make links with the community and the health and social care system. This component of the initiative was regarded as important to deliver a coordinated preventive message, increase awareness and reach high-risk patients. Some practices had been already working with local settings, mainly schools, but the SW13 initiative helped to approach other local settings and health care professionals. Data from monthly submissions showed that dental practices engaged with a number of local settings, but the level of involvement varied across local areas. Among the facilitators, it was felt that the SW13 provided a verifiable way of approaching local settings, the role of NHSE&I local commissioners and LA public health teams were key in enabling local links. It was also perceived that the support of the oral health team, oral health improvement network, local dental committee or community connector could facilitate links and engagement. However, lack of awareness about the intervention, communications, lack of response and engagement were some of the challenges. Previous interventions have also highlighted the importance of making links with other care providers or a professional network (Brocklehurst *et al.*, 2013). An intervention using a community engagement approach identified trust as essential to establish relationships and success, as it can make participants enthusiastic (Witton and Smith, 2019).

Making links with local settings is essential so that local partners can advise and refer patients to dental practices. Oral care advice can be provided by health visitors, teachers, pharmacist and primary care team (Watt and Fuller, 1999). For instance, pharmacies might be able to inform and refer patients looking for oral pain medication for their children as they might not have an appropriate contact with dental services. A study in London showed that the majority of parents visiting pharmacies looking for



DISCUSSION

pain medications for their children were due to oral pain (Muirhead *et al.*, 2018). Having both an integrated network with a range of skills and facilitating access for children with highest needs are necessary to meet effectively the need of children's oral health (Simons *et al.*, 2013). There is some evidence of effectiveness that providing training to health, education and social care professionals can help to deliver oral health interventions in their daily role (PHE, 2015). Health care professionals also play an important role in supporting patients, for instance, a study has suggested that parents who are not regular attenders often rely on health visitors and general medical practitioners for oral health information (Nayee *et al.*, 2018).

Health visitors were seen in this study as key in providing advice to mothers of young children and referring patients. In some areas funding was allocated to commission health visitors and early year settings to supervise tooth brushing. Some practices reported to have successfully linked with health visitors, but the engagement varied across local areas. Having a referral system in place might have facilitate this link; the importance of having a formal referral system for health visitors has been also identified in previous studies (Bentley and Holloway, 1993). Health visitors can play an important role in encouraging families to adopt healthy behaviours in young children, including DA (Bentley and Holloway, 1993); they are in contact with parents during the development of their child and could provide early advice to avoid dental decay in the future. Also, it is believed that parents rely on health visitors for advice (Morrison *et al.*, 2000) which parents can see as acceptable for the mother and the child (Quinn and Freeman, 1991).

Perceptions from the SW13 qualitative research were that capacity might be one of the challenges for health visitors in providing dental advice. Some studies on the



perception of health visitors towards oral health advice (Quinn and Freeman, 1991; Oge *et al.*, 2018; Weston-Price *et al.*, 2020) have shown that health visitors are in favour of the inclusion of oral health advice in routine health visits, and are willing to deliver such advice. However, training is needed for them to acquire such knowledge and skills in order to deliver oral health promotion and the recommendations of DA. In a study by Oge *et al.* (2018) only half the health visitors taking part in the study were recommending a first visit before a year old. Studies involving health visitors have been successful in encouraging DA (Yuan *et al.*, 2007). There is evidence that the integration of oral health advice into home visits by health and social care workers, targeting high risk families can improve oral health. However, it requires capacity and continuous training (PHE, 2015).

A few practices reported making contact with midwives and baby clinics, but for others it was challenging. Some felt that sessions for weighing a child could provide an opportunity to approach mothers of young children to deliver advice e.g. diet and how to access dental services. Only a few practices that were interviewed reported to have links with pharmacies and GPs but it proved to be challenging mainly due to unawareness of the initiative and a lack of response.

Most practices reported working with schools to give talks and organise tooth brushing clubs. The use of schools to promote health is advocated by WHO (2020). Schools are ideal settings to promote oral health (Kwan *et al.*, 2005; Stokes *et al.*, 2009) as they overcome the barriers on accessing preventive care (Evans *et al.*, 2013). There were positive views from dental teams towards toothbrushing at school as a way to put children into contact with dental professionals. As in this study, other initiatives based on toothbrushing have been seen as an opportunity to reach children who are



DISCUSSION

not regular attenders and a way to introduce dentist to children in a more informal way (Yusuf *et al.*, 2015). Previous studies of interventions based on school programmes in deprived areas have shown that they are well accepted, have helped to increase awareness in children and provide a “positive image” of the dental team (Evans *et al.*, 2013; Yusuf *et al.*, 2015).

Some SW13 practices had already an established relationship with schools which facilitated the work. However, the lack of engagement and support from schools, e.g. due to internal organisation, delays in response, were among the challenges faced in some areas. Providing information in advance to schools might have facilitated to establish a link. A practice reported that they were given a list of schools to approach which facilitated the link. Other interventions promoting oral health in schools have also showed that having a previous close relationship between dental practices and schools can facilitate the development of initiatives (Ramsdale and Landes, 2014). Similarly to this study, other studies have reported that organisation of the schools e.g. flexibility in time (Yusuf *et al.*, 2015); partnerships, resources and priorities influence the level of engagement (Stokes *et al.*, 2009). Underestimation of time that is required to engage, communications and limited resources are barriers in maintaining a relationship with schools (Yusuf *et al.*, 2015; Witton and Smith, 2019).

The SW13 initiative also helped the dental team to integrate with the local community. This was felt to be rewarding. Dentists might have influence in the local community and play an advocacy role through organisations as they are trusted and respected (Watt *et al.*, 2014; Grocock, 2020). Qualitative research for the SW13 suggested that dental practices were enthusiastic about going to the community, although the need to facilitate the link with local settings was highlighted. Previous studies have also



reported that dentists enjoy working outside the dental practice (Yusuf *et al.*, 2015). As discussed earlier, dental teams can play an important role in the promotion of oral health in the community, for instance by raising awareness of the importance of oral health, although it might be argued that awareness is likely to be temporarily and limited to a number of people within the community. Furthermore, there is not enough evidence on whether oral health promotion activities performed outside the dental practice have an effect on behavioural change, especially in the long term (PHE, 2014).

In terms of challenges in approaching local settings, awareness of the initiative was probably the main challenge for SW13 practices. It was suggested that providing information by letter, or having an identity card, an engagement event can help to establish communications. There were some views from the qualitative research that the initiative would have benefited from social marketing; it might have been useful as research from previous interventions has shown it helped to increase awareness (NSMC, 2010).

Partnership at both, national and local level was important to support the delivery of the SW13 initiative. A range of local partners such as local authorities, local dental networks, PHE local teams, health visitors and early intervention teams were identified as key in delivering the initiative. Anticipated challenges were engagement of stakeholders due to other commitments and priorities and managing local expectations. Similarly to these findings, a previous intervention identified that having an equal partnership and work, mutual benefits, clarity on expectations and communications are facilitators to achieve success (NSMC and NHS Kensington and Chelsea, 2010). The role of local authorities was key to give the SW13 initiative the



DISCUSSION

priority in the local area, provide the environment and facilitate delivery. In some areas, meetings were incorporated to the LA agenda. Some local teams had an established relationship with local authorities, in some other areas, the SW13 enabled this link, but the level of support varied across local areas. The role of PHE Consultants in Dental Public Health was also regarded as key in supporting the delivery. In some areas, consultants were closely involved for instance in the recruitment, engaging practices, networking, chairing local meetings but again, the level support varied. Having the clinical leadership of PHE Consultants in Dental Public Health and LDN chairs was key in engaging and motivating practices. Only a few local teams reported to be working with HEE at local level which input was regarded as crucial in supporting practice leadership and networking.

There were positive views from local commissioners about the recruitment process, commissioners were pleased with the level of uptake from dental practices. The launch events, which were designed to introduce the initiative to dental practices were generally regarded as useful and successful for both, local teams and dental practices. However, the importance of having key details about the initiative was emphasised. Generally, local teams followed the national criteria for practice selection but there was local variation. Some developed a procurement criterion, others targeted priority areas while others offered the initiative to all practices. The SW13 provided an opportunity to establish or reinforce a relationship between local commissioners and dental practices. Some of the facilitators identified for the recruitment process were the commitment from dental practices, a clear understanding of objectives, relationship management and the financial reward offered to providers. The support of PHE Consultants in Dental Public Health, where this support existed, also facilitated the recruitment. However, having a greater awareness of the initiative before recruitment

would have helped. Practices might have declined to participate due to reasons such as experience with previous programmes, concerns about delivery, staff capacity, internal practice issues and perceived insufficient funding, as suggested by the qualitative research.

Nevertheless, monitoring this kind of initiative brings challenges in data collection and capacity, for both dental practices and local teams. For local teams, the commissioning, supporting and monitoring the initiative presented an additional pressure and workload. However, having a shared ownership with partners potentially lessened the workload. It was reported that the support from PHE, LA, HEE and LDN chairs, where they existed, was helpful. For dental practices, it brought an additional workload, mainly for the PPC to adapt to new ways of working, especially when reporting data. It was identified that having guidance in the form of a toolkit, a training day or a national meeting for PPCs would have been helpful.

Regarding acceptability of the initiative, there were positive views from dental practices and local teams about the benefits of the programme in that it would help to improve the delivery of prevention. In terms of quality, participants agreed that training and resources were very useful. Nevertheless, it was apparent that practices needed a continuous support in the form of both, resources and feedback. Unfortunately, due to unavailability of funding the initiative was not able to go forward in some of the 13 areas. The sustainability of the programme, mainly due to financial constraints, had been recognised as one of the limitations from the outset of the intervention.

The patient questionnaire suggested that dental teams were engaging in preventive advice and support to the patient. However, dental teams reported difficulties in completing the number of questionnaires required. There might be difficulties for



DISCUSSION

parents filling out the parent survey as some might not feel confident or English not being their first language, or due to illiteracy as reported in a study by Macpherson *et al.* (2010).

In terms of the initiative effectiveness, it might be hard to prove whether the initiative increased substantially DA and preventive treatments due to the short duration of the initiative; moreover, difficulties in data collection did not allow to have enough evidence of its impact. A financial penalty might have helped to ensure data submission by dental practices, although it might have not been feasible e.g. due to the differences among SW13 areas. The initiative demonstrated, however, that practices were keen to deliver prevention, make changes in dental practices and to engage with the community. Another aspect that made it also difficult to determine the general effectiveness of the programme were the differences among localities in terms of implementation and its development, due to the fact that what may work in one locality might not work in another. Another point to consider was the presence of initiatives seeking to improve child DA and oral health which were already in place. Where these existed, they seemed to have complemented each other in improving their effectiveness. However, it must be considered that the evaluation of the SW13 focussed on process and short-time outcomes and it was not possible to assess longer-term oral health outcomes and behavioural change. The initiative might have increased awareness and knowledge of the importance of oral health and DA but changes in behaviour required long term.

Practices were of the view that the initiative should be long term. Some local teams considered that the initiative can be replicable, but it needs to be adapted, while others felt that it might not be possible to replicate due to the investment in capacity and time.



Main concerns were the sustainability, affordability and commissioning of this kind of services. For instance, there were concerns on how the changes produced in dental practices would be maintained as a priority after the initiative finished.

Nonetheless, evaluating oral health programmes can be challenging. It is thought that the lack of evaluation of health promotion interventions might be due to difficulties in evaluating complex interventions, lack of funding but also to a lack of criteria to assess their effectiveness (WHO Europe, 2001). Data unavailability, e.g. due to lack of compliance with requirements for data submission, might also limit the assessment of an intervention. Other challenges identified in evaluating programmes are related to quality of outcome measures, timescale to assess changes, unfamiliarity with the use of evaluation methodologies and frameworks, and the need of partnership between health practitioners and academics to conduct the evaluation (Petersen and Stella, 2004).

Evaluation should be part of the planning process and there needs to be the adequate funding for its implementation and development. The WHO (1995) suggests allocating a 10% of the total programme resources. Another important aspect of an evaluation is to have the appropriate outcome measures and timescales. Outcomes of health promotion interventions are focused on measures of health literacy such as health-related knowledge, attitudes, intentions, skills and empowerment but as discussed earlier it is important to consider that oral health promotion interventions do not have an effect on dental caries in the short term. It has been argued that the evaluation of health promotion interventions should consider other factors such as psychosocial and cultural, rather than only focusing on impact outcomes (WHO Europe, 2001). An economic evaluation, e.g. cost-effectiveness evaluation or cost-benefit, can be helpful



DISCUSSION

in determining the efficiency of an intervention (Clarke, 1999; Mertens and Wilson, 2012). Nonetheless, resources, time and training support are necessary to improve the quality of evaluation of oral health promotion interventions (Watt *et al.*, 2001).

Public health interventions can be complex, and it might be difficult to distinguish the intervention from others. However, having a multicomponent approach can be more successful in health promotion than single initiatives (National Institute for Health and Care Excellence, 2016; Witton and Smith, 2019). A mixture of public health approaches can help to prevent disease at both individual and community level (Watt, 2005).

Previous interventions have also focused on dental practices to promote oral health and DA in young children (Brocklehurst *et al.*, 2013; Ramsdale and Landes, 2014). An example is an intervention in the North-East (Ramsdale and Landes, 2014) promoting oral health and access to dental care in community settings (e.g. children centres, nurseries). This intervention used dental nurses from practices who were trained as oral health promoters. However, it was not clear whether the intervention helped to improve dental access. It was reported that there were difficulties recording data which might have limited the evaluation. Learning from this intervention suggested that there needs to be clear aims and objectives, the identification of a target group based on needs and appropriate training. Having a robust system in place to record the number of patients attending might have helped to determine the effectiveness of the intervention. Another example is a pilot in the North of the country (Holmes *et al.*, 2013) using dental teams to perform preventive activities and oral health education in community venues. It also identified as learning points the importance of monitoring, training for dental practices, resources and funding.



Nevertheless, it has been argued that oral health promotion can improve knowledge but many of these interventions might not achieve a behavioural change (Whittle *et al.*, 1994; Passalacqua *et al.*, 2012; Ramsdale and Landes, 2014; Fadl *et al.*, 2016). Public Health interventions aiming for behavioural change have been appealing to policy makers, however, if not designed carefully, they can have an unequal impact on the population (Baum and Fisher, 2014; Qadri *et al.*, 2018). “Lifestyle drift”, is the term referring to the tendency for policy initiatives to recognise the need to take action on upstream social determinants of health but only to drift downstream to focus on individual lifestyle factors based on behavioural change, therefore they become an individual target (Popay *et al.*, 2010; Carey *et al.*, 2016; Williams and Fullagar, 2019).

It has been claimed, however, that oral health will not be sustainably improved by relying only on interventions based on oral health behaviours and that there is a need for effective public health approaches for disease prevention and health promotion that consider the determinants of oral diseases (Watt, 2005; Watt, 2007; Baum and Fisher, 2014). Having the knowledge and skills might not be enough to change behaviours, however, health promotion can help to make healthy choices for which policies can advocate (Watt and Fuller, 1999).

Among other interventions to improve DA, it has been suggested that the use of mobile dental units can put children in contact with dental services, but studies suggest it is not a feasible option for a long term due to aspects such as planning, funding, and management (Douglass, 2005; Simons *et al.*, 2013). Dental health education is also used to improve oral health; however, it could increase inequalities at the community level, as the more affluent might follow the advice compared to those less affluent (Shaw *et al.*, 2009). Nonetheless, there is not enough evidence of their effect on oral



DISCUSSION

diseases (Stein *et al.*, 2018) and it has been claimed that oral health education alone is ineffective if measures such as fluoride exposure are not included (Witton and Smith, 2019). Another intervention using a registration campaign reported that awareness was increased as well as new dental registrations, but only one third of those registered became actual patients. It was speculated that it might have been due to issues recording contact details and a misunderstanding of the campaign (NSMC and NHS Kensington and Chelsea, 2010).

Nevertheless, dentistry has been one of the services most affected by the COVID-19 pandemic. Practices temporarily ceased routine dental care from the 26th of March 2020 and although dental services resumed on the 8th of June 2020, it was estimated that only around a third of practices were able to continue their activities (Armstrong, 2020). The temporary interruption of face to face dental care, the higher cost of PPE and fewer patients as consequence of lockdown, have made practices face difficulties in maintaining their financial sustainability (SLWG, 2020; Westgarth, 2020). A survey by the BDA found that only 8% of practices participating in the survey would be able to maintain their financial stability in the long term (Armstrong, 2020). While it had been speculated that dental practices on the high street might not be able to continue in 18 months' time, an investigation (into the resilience of mixed NHS/Private dental practices following the first wave of the COVID-19 pandemic) found no evidence of this. It stated, however, that support for dental practices was needed (SLWG, 2020). A report on the impact of COVID-19 on dental practices identified the financial impact as severe and that infection control measures requirements will limit capacity and pace of recovery (Palmer *et al.*, 2020).



The economic and social impacts of the lockdown have also increased the vulnerability of more disadvantaged patients. Although urgent dental care centres were set up for those who needed urgent clinical dental treatment, the media raised concerns that there was a number of patients that needed dental care and were unable to find treatment; and that these difficulties in accessing dental care already existed in some places in the country but have been worsened by the pandemic (BBC News, 2020); bringing also a higher demand on dental extractions and waiting times (BDA, 2020a). Factors such as the “lockdown diet” (i.e. sugar-laden food more likely to be consumed during isolation), the suspension of public health programmes to prevent tooth decay, suspension of dental check-ups and limited capacity in dental practices to perform treatments have increased oral health inequalities (BDA, 2020b; Waite, 2020).

The pandemic has changed the way dentistry is delivered. The situation has changed at a constant pace and there has been a range of opinions on how the dental profession transitions from lockdown to “revival”, both practical and financial (Westgarth, 2020). There are now stricter infection-control requirements e.g. including limitation on aerosol generating procedures, fallow time requirements, besides the shortages of PPE and kits that are now required have increased the cost of attending patients (Westgarth, 2020). In addition to this, practices face also challenges in achieving targets. A debate in the House of Commons on the impact of COVID-19 on dental services highlighted the challenges that dental practices are currently facing and emphasizes the need for support (House of Commons, 2021).

Remote consultations could provide an opportunity to deliver advice (Waite, 2020). For instance, a study reported that patients considered that the use of ‘teledentistry’ was useful to save time, the majority of patients said they would use it again in light of

DISCUSSION

COVID-19 (Rahman *et al.*, 2020) . Advantages are that patients can have access to care in early stages, reduce the need to take time off from work, reduce travelling cost and reduce long wait list, and most importantly to avoid the spread of the disease. It can be useful in the initial stages when taking a patient history to then have a second face to face appointment. However, its use has been limited; and it might not be convenient or acceptable to some patients, e.g. those who do not have access to a communication device or internet. Besides, clinical examination cannot be performed.

The COVID-19 pandemic has increased the challenge in reducing the burden of disease and the focus on prevention. Sara Hurley, the current Chief Dental Officer in England, is of the view that COVID-19 has been an opportunity for a change in oral health care provision (Hurley, 2020) and it might also facilitate a change for flexibility in commissioning. The Chief Dental Officer points out the need to prioritise access for vulnerable and marginalised patients and the sustainability of urgent dental services for those who do not attend regularly. The Chief Dental Officer also talked about the importance of supporting patients in understanding the benefits of minimally invasive oral care (Banerjee, 2017). Nevertheless, changes in policies are needed. The current chair of the BDA England Community Dental Services Committee, Charlotte Waite, argues that this is the time to focus on prevention and points out that support and action from government is needed; advocating prevention as the focus of the dental contract reform (BDA, 2020b; Waite, 2020).

5.1 Limitations

It is plausible that a number of limitations could have influenced the results of the evaluation. There is the possibility of information bias mainly related to issues with partial data submission by dental practices and data management. Information bias



refers to any systematic difference from the truth which might arise during the collection, recording and handling data (Catalogue of bias collaboration, 2019). Challenges in data collection made it difficult to assess the impact of the initiative as the collected data might not be an accurate reflection of the actual work of practices. For example, there were some practices that did not make any monthly submission. In addition, the missing data did not allow to evaluate the SW13 as a consistent programme. Although data were managed and summarised as accurately as possible, there might have still been the possibility of errors when both submitting and summarising these.

As previously mentioned, due to the short period of time of the initiative, it was hard to prove whether there was a substantial improvement on DA and preventive treatments. Additionally, the short duration of the initiative did not allow to see longer-term oral health outcomes such as a difference in caries prevalence and behavioural changes. Besides, secondary objectives such as activity in older children and adult care activity were not measured. Qualitative research, however, suggested that some practices were seeing older siblings and whole families. Nonetheless, it has to be considered that the intervention focussed on the processes and short-term outcomes. Although its effectiveness in improving DA might have been limited, findings showed that, first, the initiative increased knowledge and awareness of the importance of oral health and DA, especially at early years, in both parents and the whole dental team; and second, that practices were keen to deliver prevention and make changes in dental practice as well as to engage with the community. It also provided learning on the implementation of this kind of programmes.



DISCUSSION

Another important point to consider is that the proportion of practices participating in each locality was small which also limited the ability to observe any effect at population level, either in caries prevalence or in the impacts of poor oral health such as referral to secondary care services for extractions. There were some practices that joined at a later stage but were not included in the evaluation since the number of practices that initiated the programme was taken as a baseline. However, it is unlikely that this would have affected the overall results.

It was also hard to determine the general effectiveness of the intervention due to differences among localities. For instance, there were some localities that made significant modifications to the initiative, in terms of the implementation and the development of the programme, and what worked in one locality might not work in another. Nonetheless, all SW13 practices looked to deliver the same outcomes and it could be said that they were similar enough to make a general assessment, even though facilitators and barriers might have been different. Similarly, in some areas there were other interventions or programmes running along with the SW13 initiative making difficult to separate outcomes. These factors possibly being referred to as pollution. Nevertheless, where other programmes and interventions existed, they seem to have complemented each other improving their effectiveness.

Owing to the small number of dental practices participating in the programme, compared to the total number of dental practices in SW localities, it was anticipated that there might not be enough power to perform a statistical analysis such as a matched-pair analysis (comparing the study group with a comparison group) or an interrupted time series analysis (a regression analysis which tracks a long-term period before and after a point of intervention to assess its effect). Another approach that



could have been taken is to make the assessment at local level as practices were cluster, but as mentioned before, the number of participating practices was small. Besides, these statistical analyses would have been more appropriate if larger changes in dental access had been seen by the first year of the intervention.

The evaluation was limited in terms of resources, this mainly restricted the ability to demonstrate the feasibility and effectiveness of the intervention. Despite that the evaluation focused on the processes, a cost effectiveness analysis, which compares the cost and health effects (outcomes) of an intervention (Mertens and Wilson, 2012) would have been necessary to assess the financial benefit and determining whether it can provide value for money. However, further data on cost estimates would have been required which might have been difficult to obtained due to the complexity of the intervention. Nonetheless, a cost-effectiveness evaluation would be appropriate as part of a future study if these types of programmes are considered to be made more mainstream.

Another point to consider is that there was no patient and public involvement in the design of the evaluation, nor was the evaluation designed and conducted from a wholly neutral perspective as the evaluation team either had a background in the field or had, arguably, a professional interest in the outcome. As examples, the bespoke data collection from participating dental practices was dependent upon returns designed by a NHSE&I and PHE with input from the researcher and supervisor. As mentioned before, other data were acquired from standard FP17-derived data sets collated by NHSBSA. In both cases the data collected was substantially restricted to the interests of commissioners. The data analyses were primarily determined by the researcher



DISCUSSION

with input from the supervisor, NHSE&I and PHE, and the conclusions reached were also subject to suggestions from these sources.

Qualitative research might be also subject to bias (Noble and Smith, 2015). First, the selection of interviewees and content of interview schedules was primarily decided by the researcher with input from NHSE&I, PHE and the supervisors, whereas the collation and synthesis of findings was led by the researcher, who has a background in dentistry. Therefore, there might have been the risk of researcher bias as the research process and interpretation of results might have been influenced by the researcher's perceptions. However, to avoid this, qualitative codes and themes were revised by the supervisors to check agreement and coherence and therefore ensure reliability. Second, some caution has to be exercised in interpreting these findings as the programme was undertaken with volunteer dental practices which might not be reproducible with other practices. Qualitative research might only represent personal views of interviewees and sensitive matters might not have been discussed by some. Besides, the study relies on participants having accurate recall. Therefore, the risk of participant bias and recall bias might have affected the validity of the research.

Despite both quantitative and qualitative elements of the evaluation of SW13 may have been subject to biases discussed above, which may have influenced the findings, the number of interviews and the wide range of participants in terms of roles within the initiative allowed to have a broad range of views and perspectives. The evaluation used both quantitative and qualitative studies which complemented each other. Besides the use of two methods of qualitative data collection, qualitative interview and observation of meetings, served as a form of validation.



It would have been helpful to interview local partners such as local authorities and health visitors to capture the views on how they devise effective partnership working in order to have an integrated health system. Similarly, a focus group with parents could have resulted in a better understanding of the barriers faced by patients in taking their children to the dentist and their views regarding of these types of programmes. A follow-up interview with dental practices to capture final perceptions at the end of the programme would also have been helpful. Nonetheless, limitations in both, resources and time, did not allow for this.

A third stage of qualitative interviews with local commissioners had been planned to capture final views after completion of the initiative. Unfortunately, it was not possible to carry out the interviews due to the disruption caused by the COVID pandemic within the timescales of the study. However, draft findings were circulated to NHSE&I local commissioners in December 2020 and a national meeting was attended where final views about the programme were discussed.

CHAPTER SIX

6 CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The present PhD research aimed to explore first, DA in young children in England using data from national surveys and NHS England dental statistics; and second, to explore the potential role of dental services in promoting DA and improving oral health outcomes through the evaluation of a new NHSE&I dental initiative: Starting Well.

Surveys in the UK suggest that a great percentage of children in England, Wales and Northern Ireland visit the dentist, but there have not been substantial improvements during the past ten years and only a small proportion of children are taken, as recommended, to the dentist in their early years. Therefore, a series of preliminary statistical analyses were carried out with the following objectives. First, to report the prevalence and severity of dental caries experience across categories of deprivation in England, Wales and Northern Ireland; and compare the magnitude of inequalities between countries. The analysis showed that there are still inequalities in dental caries in children with those from more deprived backgrounds reporting higher prevalence and severity in the three countries; but despite lower levels of disease in England, inequalities were greater than in Wales and Northern Ireland.



CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The second objective was to describe variations in DA rates in children aged 5 years and under across local authorities in England and its association with area deprivation. A further analysis focused on child DA by the age of 1. Rates of DA in children were generally low with substantial variations between LAs. The rate of DA in children aged 5 years and under was 40%, ranging from 17 to 68%. Only a small proportion of children (around 3%) visited an NHS dentist before their first birthday; more deprived English LAs (upper-tier level) were, unexpectedly, more likely to report higher DA rates. Nevertheless, DA was only partially explained by deprivation at LA level.

The third objective was to describe the shape of the relationship (whether linear or non-linear) between local deprivation and DA in children aged 5 years and under in England and to examine the modifying effects of covariates. It was hypothesised that the shape of the relationship between deprivation and child DA might be curvilinear with higher DA rates in the extreme ends of deprivation. There was, however, a linear association between DA (children aged 5 years and under) and deprivation at local level (lower-tier LA). DA rates decreased as the level of local area deprivation increased. Area deprivation was a significant predictor of DA after controlling for ethnicity, single parenthood, dental caries and dentist-to-population ratio. White ethnicity, single parenthood and dental caries were directly associated with an increase in DA whereas dentist-to-population ratio was not associated. The strength and direction of the relationship of DA and deprivation was moderated by the effect of ethnicity, single parenthood and dental caries. For instance, in areas with lower prevalence of dental caries and lower percentage of single parents, the decrease in DA with increasing deprivation was steeper.



A broad range of strategies and interventions are advocated to improve children's dental health, including DA to receive both preventive and disease treatment. The second aim of this work was to explore the potential role of dental services in promoting DA and improving oral health outcomes through the evaluation of an NHSE&I initiative, "Starting Well". This initiative aimed to improve oral health in children under 5 years and to encourage DA in 13 'high priority areas' in England. It looked to support dental practices to have a more preventive focus and to engage with the community. The Starting Well is an example of how interventions based on dental practices can be used to drive a more preventive focus and promote oral health in the community.

The evaluation, based on the Donabedian model, had the aim of assessing whether the objectives of the programme were met and to inform future dental commissioners. The evaluation used both quantitative and qualitative methods. The first objective of the evaluation was to conduct qualitative semi-structured interviews with the purpose of capturing the experiences of those involved in the design, planning, implementation and development of the initiative in order to inform future commissioners; the second objective was to summarise data collected from practices participating in the NHSE&I dental initiative.

Findings from this study showed that the Starting Well was considered ambitious and an opportunity for different parts of local health systems to work together in a coordinated way. It enabled dental practices to drive a more preventive approach and engage with the community. Practices were enthusiastic and keen to deliver prevention; with support and internal leadership practices are able to adopt a more



CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

preventive focus. The role of PPC appeared key to supporting change. Oral health improvement networks may be helpful to support dental practices.

Compared to routine NHS dental care, the programme was more complex to deliver and monitor. It required dental practices to acquire new skills and foster new relationships with local partners. Practices at times reported difficulty in engaging with other aspects of the local health community that might have played a role in supporting young children in accessing dental care. The local health system, particularly local authorities, local NHSE&I commissioners and PHE were identified as key to facilitate links. The programme required considerable facilitation and monitoring to ensure delivery. The additional activity data requirements proved burdensome and there were consequent information gaps which made it difficult to assess the impact of the initiative. Challenges with commissioning capacity were reported. Where the commitment to oral health was shared across the health and social care system it seemed to have greater chance of successful implementation. Findings from the evaluation contributed to the elaboration of evaluation reports to inform NHSE&I.

To summarise, child DA rates across English LAs were generally low and only partially explained by deprivation. The low rates and the variations observed suggest a complex causality which should not be subject to simple assumptions. It creates challenges for policy makers looking to achieve high rates of DA in younger children as these are generally low. National initiatives such as Starting Well can provide learning for NHSE&I commissioners and contribute to the evidence on the effectiveness of population interventions commissioned via dental teams.



6.1 Suggestions for future research

The findings from my research can be taken further in several ways, for instance:

- It would be important to evaluate the effect of this type of initiative in the longer term to assess whether there has been a sustainable change in DA rates and disease levels, within the limitations identified earlier. Such analysis would need to be limited to those areas where the intervention has continued and there is a likelihood of increasing “pollution” of the intervention delivery. Alternatively, a more controlled experiment could be devised, possibly a cluster randomised controlled trial though this may not be feasible and “pollution” of the intervention would still be likely.
- Further qualitative research with dental practices and dental commissioners would be useful to capture final views on success and key learning at the end of the initiative, though with the increasing passage of time this may lack validity.
- A qualitative research study involving local partners such as local authorities and health visitors could capture their views on this type of intervention, and how to devise effective partnership working to have an integrated health system.
- A focus group with parents could result in a better understanding of the barriers faced by patients to take their children to the dentist and their views regarding of these types of programmes.



CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

- It would be valuable to know how the Starting Well initiative compares to other programmes in both developed and developing countries; and to capture views on how prevention is delivered and prioritised in different countries.

- An analysis to further explore the relationship between child DA and predictors such as ethnicity may also be of value as the relationship between these is likely to change over time.

7 BIBLIOGRAPHY

Adair, P.M., Burnside, G. and Pine, C.M. (2013): 'Analysis of Health Behaviour Change Interventions for Preventing Dental Caries Delivered in Primary Schools'. *Caries Research* **47 Suppl 1**, 2-12.

Al-Haboubi, M., Klass, C., Jones, K., Bernab, E. and Gallagher, J.E. (2013): 'Inequalities in the Use of Dental Services among Adults in Inner South East London'. *European Journal of Oral Sciences* **121**, 176-181.

Altman, D.G. (1991): *Practical Statistics for Medical Research*. London: Chapman & Hall.

American Academy of Pediatric Dentistry (2016): 'Guideline on Periodicity of Examination Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents'. *Pediatric Dentistry* **38**, 133-141.

Amin, M.S. and Harrison, R.L. (2008): 'Understanding Parents' Oral Health Behaviors for Their Young Children'. *Quality Health Research* **19**, 116-127.

Appleby, J., Merry, L. and Reed, R. (2017) *Root Causes: Quality and Inequality in Dental Health*. England: The Health Foundation and Nuffield Trust.

Armstrong, M. (2020): The 10-Billion-Dollar Question: What Is Dentistry Worth? *British Dental Association*. Available at: <https://bda.org/news-centre/blog/Pages/The-10-billion-dollar-question-What-is-dentistry-worth.aspx?fbclid=IwAR0-5-D7TstOPAI0M3dpTB7x1f9tnBOYGo3W1eLRekD1n25oafk2VjsWmgQ>. (Accessed: November 2020).

Arora, A., Khattri, S., Ismail, N.M., Kumbargere Nagraj, S. and Eachempati, P. (2019): 'School Dental Screening Programmes for Oral Health'. *Cochrane Database of Systematic Reviews*, **8**, 1-45.

Arora, G., Mackay, D.F., Conway, D.I. and Pell, J.P. (2016): 'Ethnic Differences in Oral Health and Use of Dental Services: Cross-Sectional Study Using the 2009 Adult Dental Health Survey'. *BMC Oral Health* **17**, 1-12.

Ashford, R. and Blinkhorn, A.S. (1999): 'Patient Care: Marketing Dental Care to the Reluctant Patient'. *British Dental Journal* **186**, 436-441.

Asimakopoulou, K. and Newton, J.T. (2015): 'The Contributions of Behaviour Change Science Towards Dental Public Health Practice: A New Paradigm'. *Community Dentistry and Oral Epidemiology* **43**, 2-8.

Audit Commission (2002) *Dentistry. Primary Dental Care Services in England and Wales. Briefing*. Available at: <http://www.sigwales.org/wp-content/uploads/briefing-dentistry.pdf>. (Accessed: March 2017).

Banerjee, A. (2017): 'Minimum Intervention – MI Inspiring Future Oral Healthcare?'. *British Dental Journal* **223**, 133-135.



BIBLIOGRAPHY

Batchelor, P. and Sheiham, A. (2002): 'The Limitations of a 'High-Risk' Approach for the Prevention of Dental Caries'. *Community Dentistry and Oral Epidemiology* **30**, 302-312.

Batchelor, P.A. and Sheiham, A. (2006): 'The Distribution of Burden of Dental Caries in Schoolchildren: A Critique of the High-Risk Caries Prevention Strategy for Populations'. *BMC Oral Health* **6**, 3.

Baum, F. and Fisher, M. (2014): 'Why Behavioural Health Promotion Endures Despite Its Failure to Reduce Health Inequities'. *Sociology of Health & Illness* **36**, 213-225.

BBC News. (2020): *Coronavirus: No Return to 'Business as Usual' for Dentists*. Available at: https://www.bbc.co.uk/news/health-52913826?fbclid=IwAR15uqAv-RGvwl_fM4VjliuefdD26gDOIJZo2o9Zjd-ipNn_HvaMwFLYCY (Accessed: November 2020).

BDA. (2017): *Dentists Call for Charges Shake Up*. Available at: <https://www.bda.org/news-centre/press-releases/Pages/Dentists-call-for-charges-shake-up.aspx> (Accessed: June 2017).

BDA. (2020a): *Hancock Must Act, as Agonising Year-Long Waiting Times for Tooth Extractions Set to Lengthen*. Available at: <https://bda.org/news-centre/press-releases/Pages/Hancock-must-act-as-agonising-year-long-waiting-times-for-tooth-extractions-set-to-lengthen.aspx> (Accessed: September 2020).

BDA. (2020b): *Tooth Extractions: Pandemic Means Crisis Will Go from Bad to Worse* Available at: <https://bda.org/news-centre/press-releases/Pages/Tooth-extractions-Pandemic-means-crisis-will-go-from-bad-to-worse-.aspx> (Accessed: September 2020).

Bentley, E.M. and Holloway, P.J. (1993): 'An Evaluation of the Role of Health Visitors in Encouraging Dental Attendance of Infants'. *Community Dental Health* **10**, 243-249.

Birmingham Community Healthcare. (2020): *Startwell*. Available at: <https://www.bhamcommunity.nhs.uk/patients-public/adults/nutrition/meet-the-teams/startwell/#:~:text=Startwell%20is%20an%20obesity%20prevention,based%20around%207%20key%20messages.> (Accessed: July 2020).

Black, N. (1996): 'Why We Need Observational Studies to Evaluate the Effectiveness of Health Care'. *BMJ* **312**, 1215.

Blair, Y.I., McMahon, A.D. and Macpherson, L.M. (2013): 'Comparison and Relative Utility of Inequality Measurements: As Applied to Scotland's Child Dental Health'. *PLOS One* **8**.

Blane, D. (1985): 'An Assessment of the Black Report's Explanations of Health Inequalities'. *Sociology of Health & Illness* **7**, 423-445.

Blinkhorn, A.S., Wainwright-Stringer, Y.M. and Holloway, P.J. (2001): 'Dental Health Knowledge and Attitudes of Regularly Attending Mothers of High-Risk, Pre-School Children'. *Int Dent J* **51**, 435-438.

Boulos, M.N.K. and Phillipps, G.P. (2004): 'Is NHS Dentistry in Crisis? 'Traffic Light' Maps of Dentists Distribution in England and Wales'. *International Journal of Health Geographics* **3**, 1-15.

Bower, E. and Scambler, S. (2007): 'The Contributions of Qualitative Research Towards Dental Public Health Practice'. *Community Dentistry and Oral Epidemiology* **35**, 161-169.



Bradford District Care NHS. (n.d.): *Building Brighter Smiles*. Available at: <http://www.bdct.nhs.uk/wp-content/uploads/2016/12/Building-brighter-smiles.pdf> (Accessed: March 2017).

Bradford, N., Chambers, S., Hudson, A., Jauncey-Cooke, J., Penny, R., Windsor, C. and Yates, P. 'Evaluation Frameworks in Health Services: An Integrative Review of Use, Attributes and Elements'. *Journal of Clinical Nursing* **28**, 2486-2498.

Braun, V. and Clarke, V. (2012) "Thematic Analysis". In Cooper, H.E.; Camic, P.M.; Long, D.L.; Panter, A.; Rindskopf, D.E. & Sher, K.J. (Eds.) **Apa Handbook of Research Methods in Psychology, Vol 2: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological**. American Psychological Association.

Braun, V. and Clarke, V. (2013): *Successful Qualitative Research: A Practical Guide for Beginners* Los Angeles, California: SAGE.

British Dental Journal (2019): 'NHS Dentistry Is Falling Behind, in an Overall Growing Dental Market'. **226**, 243-243.

British Society of Paediatric Dentistry (2016) *A Practical Guide to Children's Teeth*. UK.

British Society of Paediatric Dentistry. (2017): *Dental Check by One*. Available at: <http://bspd.co.uk/Resources/Dental-Check-by-One> (Accessed: November 2017).

Britten, N., Jones, R., Murphy, E. and Stacy, R. (1995): 'Qualitative Research Methods in General Practice and Primary Care'. *Family Practice* **12**, 104-114.

Brocklehurst, P., Bridgman, C. and Davies, G. (2013): 'A Qualitative Evaluation of a Local Professional Network Programme "Baby Teeth Do Matter"'. *Community Dental Health* **30**, 241-248.

Burnard, P., Gill, P., Stewart, K., Treasure, E. and Chadwick, B. (2008): 'Analysing and Presenting Qualitative Data'. *British Dental Journal* **204**, 429-432.

Burt, B.A. (2005): 'Concepts of Risk in Dental Public Health'. *Community Dentistry and Oral Epidemiology* **33**, 240-247.

Capurro, D.A., Iafolla, T., Kingman, A., Chattopadhyay, A. and Garcia, I. (2015): 'Trends in Income-Related Inequality in Untreated Caries among Children in the United States: Findings from Nhanes I, Nhanes Iii, and Nhanes 1999-2004'. *Community Dentistry and Oral Epidemiology* **43**, 500-510.

Carey, G., Malbon, E., Crammond, B., Pescud, M. and Baker, P. (2016): 'Can the Sociology of Social Problems Help Us to Understand and Manage 'Lifestyle Drift'?'. *Health Promotion International* **32**, 755-761.

Carneiro, I. and Howard, N. (2011): *Introduction to Epidemiology*. Maidenhead, GB: Open University Press.

Catalogue of bias collaboration. (2019): *Sackett Catalogue of Biases*. Information bias. Available at: <https://catalogofbias.org/biases/information-bias/> (Accessed: April 2021).

BIBLIOGRAPHY

CEBM. (2021): *Oxford Centre for Evidence-Based Medicine: Levels of Evidence (March 2009)*. Available at: <https://www.cebm.ox.ac.uk/resources/levels-of-evidence/oxford-centre-for-evidence-based-medicine-levels-of-evidence-march-2009> (Accessed: February 2021).

CEMB, Centre for Evidence-Based Medicine. (2021): *Study Designs*. Available at: <https://www.cebm.ox.ac.uk/resources/ebm-tools/study-designs> (Accessed: February 2021).

Chen, H. (1996): 'A Comprehensive Typology for Program Evaluation'. *Evaluation Practice* **17**, 121-130.

CIPFA, The Chartered Institute of Public Finance and Accountancy. (2017): *Analytics & Research: Nearest Neighbours Model*. Available at: <https://www.cipfastats.net/resources/nearestneighbours/profile.asp?view=select&dataset=england> (Accessed: November 2017).

CISION, PR Newsire. (2017): *Start Babies' Oral Care from Birth - Brush-Baby Survey Reveals Mothers Are Unaware of the Benefits of Very Early Oral Care*. Available at: <https://www.prnewswire.co.uk/news-releases/start-babies-oral-care-from-birth---brush-baby-survey-reveals-mothers-are-unaware-of-the-benefits-of-621831053.html> (Accessed: March 2020).

Clarke, A. (1999): *Evaluation Research : An Introduction to Principles, Methods, and Practice*. London: Thousand Oaks, Calif.: SAGE, 1999.

Clarke, J., Bradnock, G. and Hamburger, R. (1992): 'The Uptake and Completion of Dental Treatment Using a Mobile Clinic in Central Birmingham, UK'. *Community Dental Health* **9**, 181-185.

Clarke, V. and Braun, V. (2017): 'Thematic Analysis'. *The Journal of Positive Psychology* **12**, 297-298.

Community Dental Services. (n.d.): *Suffolk. School Dental Screening*. Available at: <https://communitydentalservices.co.uk/services/suffolk-dental-services/school-dental-screening/> (Accessed: January 2021).

Concato, J., Shah, N. and Horwitz, R.I. (2000): 'Randomized, Controlled Trials, Observational Studies, and the Hierarchy of Research Designs'. *New England Journal of Medicine* **342**, 1887-1892.

Connell, J.P. and Kubisch, A.C. (1998) *Applying a Theory of Change Approach to the Evaluation of Comprehensive Community Initiatives: Progress, Prospects, and Problems*. Aspen Institute.

Cunningham, C.J., Elton, R. and Topping, G.V. (2009): 'A Randomised Control Trial of the Effectiveness of Personalised Letters Sent Subsequent to School Dental Inspections in Increasing Registration in Unregistered Children'. *BMC Oral Health* **9**, 8.

Dahlgren, G. and Whitehead, M. (1991) *Policies and Strategies to Promote Social Equity in Health*. Stockholm: Stockholm Institute for Further Studies.

Daly, B., Batchelor, P., Treasure, E.T. and Watt, R.G. (2013): *Essential Dental Public Health* 2nd ed. Oxford: Oxford University Press.

Daly, J., Willis, K., Small, R., Green, J., Welch, N., Kealy, M. and Hughes, E. (2007): 'A Hierarchy of Evidence for Assessing Qualitative Health Research'. *Journal of Clinical Epidemiology* **60**, 43-49.



Davenport, C., Elley, K., Fry-Smith, A., Taylor-Weetman, C. and Taylor, R. (2003): 'The Effectiveness of Routine Dental Checks: A Systematic Review of the Evidence Base'. *British Dental Journal* **195**, 87-98.

Davies, J.A. (1999): 'Enhancing Dental Attendance Rates for Children from Deprived Areas in the UK.'. *British Dental Journal* **187**, 323-326.

Dental Public Health Intelligence Programme. (2017): *Hospital Episode Statistics: Extractions Data, 0-19 Year Olds, 2011-12 to 2016-17*. Available at: http://www.nwph.net/dentalhealth/Extractions_270317.aspx (Accessed: July 2018).

Department for Communities and Local Government. (2015a): *The English Indices of Deprivation 2015. Statistical Release*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/465791/English_Indices_of_Deprivation_2015_-_Statistical_Release.pdf 30/09/2015 (Accessed: July 2017).

Department for Communities and Local Government. (2015b): *Official Statistics. English Indices of Deprivation 2015*. Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015> (Accessed: July 2017).

Department for Education (2020) *Early Years Foundation Stage Reforms: Government Consultation Response*. England.

Department of Health. (2009): *The Healthy Child Programme*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/167998/Health_Child_Programme.pdf (Accessed: March 2020).

Department of Health (2012) *Dental Contract Reform Pilots Evaluation Research Report for the Department of Health April-June 2012*. England.

Department of Health and NHS England. (2017): *Dental Contract Reform Engagement Events*. Available at: https://www.nhsbsa.nhs.uk/sites/default/files/2018-08/dcr_engagement_event.pdf (Accessed: February 2020).

Department of Health and Social Care (2019) *Advancing Our Health: Prevention in the 2020s*. England. Available at: <https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document>. (Accessed: April 2020).

Dickersin, K. and Manheimer, E. (1998): 'The Cochrane Collaboration: Evaluation of Health Care and Services Using Systematic Reviews of the Results of Randomized Controlled Trials'. *Clinical Obstetrics and Gynaecology* **41**, 315-331.

Donabedian, A. (2005): 'Evaluating the Quality of Medical Care'. *The Milbank Quarterly* **83**, 691-729.

Donaldson, A.N., Everitt, B., Newton, T., Steele, J., Sherriff, M. and Bower, E. (2008): 'The Effects of Social Class and Dental Attendance on Oral Health'. *Journal of Dental Research* **87**, 60-64.

BIBLIOGRAPHY

Donaldson, M. and Kinirons, M. (2001): 'Effectiveness of the School Dental Screening Programme in Stimulating Dental Attendance for Children in Need of Treatment in Northern Ireland'. *Community Dentistry and Oral Epidemiology* **29**, 143-149.

Doughty, J. (2016): 'Challenges Identified in a Pilot Outreach Dental Service for Traveller Children in Hackney, East London'. *Community Dental Health* **33**, 185-189.

Douglass, J.M. (2005): 'Mobile Dental Vans: Planning Considerations and Productivity'. *Journal of Public Health Dentistry* **65**, 110-113.

e-Learning for Healthcare. (2021a): *Behaviour Change Conversations*. Available at: <https://portal.e-lfh.org.uk/Component/Details/603111> (Accessed: May 2021).

e-Learning for Healthcare. (2021b): *Delivering Better Oral Health*. Available at: <https://portal.e-lfh.org.uk/Component/Details/603109> (Accessed: May 2021).

e-Learning for Healthcare. (2021c): *Delivering Better Oral Health - Part II*. Available at: <https://portal.e-lfh.org.uk/Component/Details/603101> (Accessed: May 2021).

Eckersley, A.J. and Blinkhorn, F.A. (2001): 'Dental Attendance and Dental Health Behaviour in Children from Deprived and Non-Deprived Areas of Salford, North-West England'. *International Journal of Paediatric Dentistry* **11**, 103.

Etikan, I. (2016): 'Comparison of Convenience Sampling and Purposive Sampling'. *American Journal of Theoretical and Applied Statistics* **5**, 1-4.

Evans, P., Pearson, N. and Simons, D. (2013): 'A School-Based Oral Health Intervention in East London: The Happy Teeth Fluoride Varnish Programme'. *British Dental Journal* **215**, E14.

Fadl, R.K.A.E., Blair, M. and Hassounah, S. (2016): 'Integrating Maternal and Children's Oral Health Promotion into Nursing and Midwifery Practice- a Systematic Review'. *PLOS One* **11**.

Finch, H. (1988): *Barriers to the Receipt of Dental Care: A Qualitative Research Study. Report (Social and Community Planning Research)*. London: Social and Community Planning Research.

Fox, C. (2010a): 'Evidence Summary: What Do Dentists Mean by 'Prevention' When Applied to What They Do in Their Practices?'. *British Dental Journal* **208**, 359-363.

Fox, C. (2010b): 'Evidence Summary: What Is the Effectiveness of Alternative Approaches for Increasing Dental Attendance by Poor Families or Families from Deprived Areas?'. *British Dental Journal* **208**, 167.

Freeman, R. (1999a): 'The Psychology of Dental Patient Care. Barriers to Accessing and Accepting Dental Care'. *British Dental Journal* **187**, 81-84.

Freeman, R. (1999b): 'The Psychology of Dental Patient Care. Barriers to Accessing Dental Care: Patient Factor'. *British Dental Journal* **187**, 141-144.

Furze, H. and Basso, M. (2003): 'The First Dental Visit: An Argentine Point of View'. *International Journal of Paediatric Dentistry* **13**, 266-268.



- Gale, N.K., Heath, G., Cameron, E., Rashid, S. and Redwood, S. (2013): 'Using the Framework Method for the Analysis of Qualitative Data in Multi-Disciplinary Health Research'. *BMC Medical Research Methodology* **13**, 117.
- Gallagher, J.E., Cooper, D.J. and Wright, D. (2009): 'Deprivation and Access to Dental Care in a Socially Diverse Metropolitan Area'. *Community Dental Health* **26**, 92-98.
- Gardner, G., Gardner, A. and O'Connell, J. (2014): 'Using the Donabedian Framework to Examine the Quality and Safety of Nursing Service Innovation'. *Journal of Clinical Nursing* **23**, 145-155.
- Gill, P., Stewart, K., Treasure, E. and Chadwick, B. (2008): 'Methods of Data Collection in Qualitative Research: Interviews and Focus Groups'. *British Dental Journal* **204**, 291-295.
- Glasziou, P. and Longbottom, H. (1999): 'Evidence-Based Public Health Practice'. *Australian and New Zealand Journal of Public Health* **23**, 436.
- Gnich, W., Deas, L., Mackenzie, S., Burns, J. and Conway, D.I. (2014): 'Extending Dental Nurses' Duties: A National Survey Investigating Skill-Mix in Scotland's Child Oral Health Improvement Programme (Childsmile)'. *BMC Oral Health* **14**, 137.
- Goodwin, N., Morris, A.J.M., Hill, K.B., McLeod, H.S., Burke, F.J.T., Hall, A.C. and Hill, K.B. (2003): 'National Evaluation of Personal Dental Services (Pds) Pilots: Main Findings and Policy Implications'. *British Dental Journal* **195**, 640-643.
- Gray, A.M. (1982): 'Inequalities in Health. The Black Report: A Summary and Comment'. *International Journal of Health Services* **12**, 349-380.
- Green, J. and Thorogood, N. (2004): *Qualitative Methods for Health Research*. London: SAGE.
- Grocock, R. (2020): 'Leadership in Dentistry'. *British Dental Journal* **228**, 882-885.
- Guarnizo-Herreño, C.C., Watt, R.G., Fuller, E., Steele, J.G., Shen, J., Morris, S., Wildman, J. and Tsakos, G. (2014): 'Socioeconomic Position and Subjective Oral Health: Findings for the Adult Population in England, Wales and Northern Ireland'. *BMC Public Health* **14**, 827.
- Harding M, T.G. (1993): 'The Outcome of School Dental Screening in Two Suburban Districts of Greater Manchester, UK'. *Community Dental Health* **10**, 269-275.
- Harris, J.C., Balmer, R.C. and Sidebotham, P.D. (2018): 'British Society of Paediatric Dentistry: A Policy Document on Dental Neglect in Children'. *International Journal of Paediatric Dentistry* **28**, e14-e21.
- Harris, R. and Haycox, A. (2001): 'The Role of Team Dentistry in Improving Access to Dental Care in the UK'. *British Dental Journal* **190**, 353-356.
- Harris, R.D. and Pine, C.M. (2007): *Community Oral Health*. 2nd ed. London: Quintessence Publishing.



BIBLIOGRAPHY

- Harris, R.V., Pennington, A. and Whitehead, M. (2017): 'Preventive Dental Visiting: A Critical Interpretive Synthesis of Theory Explaining How Inequalities Arise'. *Community Dentistry and Oral Epidemiology* **45**, 120-135.
- Health and Social Care Board Northern Ireland, Northern Ireland Oral Health Development Group and HSC Trust Community Dental Service teams. (2016): *Happy Smiles*. Available at: http://www.hscboard.hscni.net/download/PUBLICATIONS/DENTAL/happy_smiles/HSCB-Happy-Smiles-Brochure.pdf (Accessed: March 2017).
- Hebbal, M., Ankola, A., Murugaboopathy, V., Patel, S., Patel, N. and Parkar, N. (2012): 'Do Dentists Require Leadership Qualities?'. *Canadian Medical Education Journal* **3**, e80-e81.
- Heilmann, A., Tsakos, G. and Watt, R.G. (2015) "Chapter 3: Oral Health over the Life Course". In Burton-Jeangros, C.; Cullati, S.; Sacker, A. & Blane, D. (Eds.) **A Life Course Perspective on Health Trajectories and Transitions**. 1st ed. Springer Nature. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK385369/>.
- Hill, K.B., Chadwick, B., Freeman, R., O'Sullivan, I. and Murray, J.J. (2013): 'Adult Dental Health Survey 2009: Relationships between Dental Attendance Patterns, Oral Health Behaviour and the Current Barriers to Dental Care'. *British Dental Journal* **214**, 25-32.
- Hill, K.B., White, D.A., Morris, A.J., Goodwin, N. and Burke, F.J.T. (2003): 'National Evaluation of Personal Dental Services: A Qualitative Investigation into Patients' Perceptions of Dental Services'. *British Dental Journal* **195**, 654-656.
- Holmes, R., Howe, D. and Landes, D.P. (2013): 'Oral Health Education and Disease Prevention in Primary Dental Care: Insight from a Pilot Intervention Targeting Children Aged 0-7 Years in Northeast England'. *Community Dental Health* **30**, 134-137.
- Holmes, R., Porter, J., Vernazza, C., Tsakos, G., Ryan, R. and Dennes, M. (2015a) *Children's Dental Health Survey 2013. Country Specific Report: England*. England: Health and Social Care Information Centre.
- Holmes, R.D., Porter, J., Devapal, L. and White, D.A. (2016): 'Patterns of Care and Service Use Amongst Children in England, Wales and Northern Ireland 2013'. *British Dental Journal* **221**, 509-514.
- Holmes, R.D., Steele, J.G., Donaldson, C. and Exley, C. (2015b): 'Learning from Contract Change in Primary Care Dentistry: A Qualitative Study of Stakeholders in the North of England'. *Health Policy* **119**, 1218-1225.
- Hooley, M., Skouteris, H., Boganin, C., Satur, J. and Kilpatrick, N. (2012): 'Parental Influence and the Development of Dental Caries in Children Aged 0-6 Years: A Systematic Review of the Literature'. *Journal of Dentistry* **40**, 873-885.
- Hosseinpoor, A.R., Nambiar, D., Schlottheuber, A., Reidpath, D. and Ross, Z. (2016): 'Health Equity Assessment Toolkit (Heat): Software for Exploring and Comparing Health Inequalities in Countries'. *BMC Medical Research Methodology* **16**, 141.
- House of Commons. (2021): *Covid-19: Dental Services. Debate. C571*. Available at: <https://www.theyworkforyou.com/debates/?id=2021-01-14b.571.0&s=cg> (Accessed: April 2021).



House of Commons Hansard. (2017): *Access to NHS Dentists. Debate. Volume 628. Column 812-820*. Available at: <http://hansard.parliament.uk/Commons/2017-09-12/debates/1709132000001/AccessToNHSDentists> (Accessed: September 2017).

House of Commons Hansard. (2018): *Dental Health: Children. Question for Short Debate. Volume 788. Column 37gc*. Available at: <https://hansard.parliament.uk/Lords/2018-01-18/debates/D65D3111-8243-4495-B8E1-9399214B0918/DentalHealthChildren> (Accessed: December 2019).

House of Commons Health Committee (2008) *Dental Services. Fifth Report of Session 2007–08. Volume 1*. England. Available at: <https://publications.parliament.uk/pa/cm200708/cmselect/cmhealth/289/289i.pdf>. (Accessed: May 2020).

Hulme, C., Robinson, P., Douglas, G., Baxter, P., Gibson, B., Godson, J., Vinall-Collier, K., Saloniki, E., Meads, D., Brunton, P. and Pavitt, S. (2016): 'The Incentive Study: A Mixed-Methods Evaluation of an Innovation in Commissioning and Delivery of Primary Dental Care Compared with Traditional Dental Contracting'. *Health Services and Delivery Research. NIHR Journals Library* **4**, 70-99.

Hurley, S. (2020): 'Why Re-Invent the Wheel If You've Run out of Road?'. *British Dental Journal* **228**, 755-756.

Innes, N.P., Clarkson, J.E., Douglas, G.V.A., Ryan, V., Wilson, N., Homer, T., Marshman, Z., McColl, E., Vale, L., Robertson, M., Abouhajar, A., Holmes, R.D., Freeman, R., Chadwick, B., Deery, C., Wong, F. and Maguire, A. (2019): 'Child Caries Management: A Randomized Controlled Trial in Dental Practice'. *Journal of Dental Research* **99**, 36-43.

Iqbal, A. and Glenny, A.M. (2002): 'General Dental Practitioners' Knowledge of and Attitudes Towards Evidence Based Practice'. *British Dental Journal* **193**, 587-591.

Jones, C.M. (2001): 'Capitation Registration and Social Deprivation in England. An Inverse 'Dental' Care Law?'. *British Dental Journal* **190**, 203-206.

Jones, C.M., Clouting, D. and McCartney, G. (2013): 'Socio-Economic Status of Patients Registered with NHS Dental Services in Scotland: An Inverse 'Dental' Care Law?'. *British Dental Journal* **214**, 1-4.

Joury, E., Bernabe, E., Sabbah, W., Nakhleh, K. and Gurusamy, K. (2017): 'Systematic Review and Meta-Analysis of Randomised Controlled Trials on the Effectiveness of School-Based Dental Screening Versus No Screening on Improving Oral Health in Children'. *Journal of Dentistry* **58**, 1-10.

Kassebaum, N.J., Bernabé, E., Dahiya, M., Bhandari, B., Murray, C.J.L. and Marcenes, W. (2015): 'Global Burden of Untreated Caries: A Systematic Review and Metasregression'. *Journal of Dental Research* **94**, 650-658.

Kay, E.J. and Locker, D. (1996): 'Is Dental Health Education Effective? A Systematic Review of Current Evidence'. *Community Dentistry and Oral Epidemiology* **24**, 231-235.

BIBLIOGRAPHY

- Kim, E., Kim, B. and Jung, H. (2019): 'Does the National Dental Scaling Policy Reduce Inequalities in Dental Scaling Usage? A Population-Based Quasi-Experimental Study'. *BMC Oral Health* **19**, 1-8.
- Kinirons, M. and McCabe, M. (1995): 'Familial and Maternal Factors Affecting the Dental Health and Dental Attendance of Preschool Children'. *Community Dental Health* **12**, 226-229.
- Klingberg, G. and Broberg, A.G. (2007): 'Dental Fear/Anxiety and Dental Behaviour Management Problems in Children and Adolescents: A Review of Prevalence and Concomitant Psychological Factors'. *International Journal of Paediatric Dentistry* **17**, 391-406.
- Kwan, S.Y., Petersen, P.E., Pine, C.M. and Borutta, A. (2005): 'Health-Promoting Schools: An Opportunity for Oral Health Promotion'. *Bulletin of the World Health Organization* **83**, 677-685.
- Lancashire Children and Young People's Trust. (2017): *Smile4life*. Available at: <http://www3.lancashire.gov.uk/corporate/web/view.asp?siteid=5729&pageid=32028&e=e> (Accessed: March 2017).
- Lincoln, Y.S. and Guba, E.G. (1980): 'The Distinction between Merit and Worth in Evaluation'. *Educational Evaluation and Policy Analysis* **2**, 61-71.
- Listl, S. (2011): 'Income-Related Inequalities in Dental Service Utilization by Europeans Aged 50+'. *Journal of Dental Research* **90**, 717-723.
- Listl, S. (2012): 'Inequalities in Dental Attendance Throughout the Life-Course'. *Journal of Dental Research* **91**, 91s-97s.
- Listl, S., Moeller, J. and Manski, R. (2014): 'A Multi-Country Comparison of Reasons for Dental Non-Attendance'. *European Journal of Oral Sciences* **122**, 62-69.
- Lu, H.X., Wong, M.C.M., Lo, E.C.M. and McGrath, C. (2011): 'Trends in Oral Health from Childhood to Early Adulthood: A Life Course Approach'. *Community Dentistry and Oral Epidemiology* **39**, 352-360.
- Mackenzie, N. and Knipe, S. (2006): 'Research Dilemmas: Paradigms, Methods and Methodology'. *Issues in Educational Research* **16**, 193-205.
- Macpherson, L.M.D., Ball, G.E., Brewster, L., Duane, B., Hodges, C.L., Wright, W., Gnich, W., Rodgers, J., McCall, D.R., Turner, S. and Conway, D.I. (2010): 'Childsmile: The National Child Oral Health Improvement Programme in Scotland. Part 1: Establishment and Development'. *British Dental Journal* **209**, 73-78.
- Mann, J., Doshi, M., Quentin, L., Eaton, K. and Morton-Holtham, L. (2020): 'Cost Benefit Analysis of Two Oral Health Improvement Programmes'. *Community Dental Health* **37**, 1-7.
- Marmot, M. and Bell, R. (2011): 'Social Determinants and Dental Health'. *Advances in Dental Research* **23**, 201-206.
- Maunder, P., Landes, D.P. and Steen, N. (2006): 'The Equity of Access to Primary Dental Care for Children in the North East of England'. *Community Dental Health* **23**, 116.



Maynard, A. (2012): 'Public Health and Economics: A Marriage of Necessity'. *Journal of Public Health Research* **1**, 11-13.

Maynard, A. (2013) *The Role of Cost-Effectiveness Evidence in Reducing Inequality*. England.

McLaren, L. and Petit, R. (2018): 'Universal and Targeted Policy to Achieve Health Equity: A Critical Analysis of the Example of Community Water Fluoridation Cessation in Calgary, Canada in 2011'. *Critical Public Health* **28**, 153-164.

Mertens, D.M. and Wilson, A.T. (2012): *Program Evaluation Theory and Practice: A Comprehensive Guide*. Program Evaluation Theory and Practice. New York : Guilford Publications, 2012.

Michie, S., van Stralen, M.M. and West, R. (2011): 'The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions'. *Implementation Science* **6**, 42.

Mileva, S.P. and Kondeva, V.K. (2010): 'Age at and Reasons for the First Dental Visit'. *Folia medica* **52**, 56.

Milsom, K., Blinkhorn, A., Worthington, H., Threllfall, A., Buchanan, K., Kearney-Mitchell, P. and Tickle, M. (2006): 'The Effectiveness of School Dental Screening: A Cluster-Randomized Control Trial'. *Journal of Dental Research* **85**, 924-928.

Mitchell, M.N. (2012): *Interpreting and Visualizing Regression Models Using Stata*. STATA Press.

Moles, D.R. (2001): 'Inequalities in Availability of National Health Service General Dental Practitioners in England and Wales'. *British Dental Journal* **190**, 548-553.

Morris, J., Pendry, L. and Harker, R. (2004) *Patterns of Care and Service Use. Children's Dental Health in the United Kingdom 2003*. United Kingdom: Office for National Statistics.

Morrison, J.J., Macpherson, L.M.D. and Binnie, V.I. (2000): 'A Qualitative Investigation of the Perceived Barriers to and Inducements for the Early Registration of Infants with General Dental Practitioners'. *International Journal of Health Promotion and Education* **38**, 4-9.

Muirhead, V.E., Quayyum, Z., Markey, D., Weston-Price, S., Kimber, A., Rouse, W. and Pine, C.M. (2018): 'Children's Toothache Is Becoming Everybody's Business: Where Do Parents Go When Their Children Have Oral Pain in London, England? A Cross-Sectional Analysis'. *BMJ Open* **8**.

Münevveroğlu, A.P., Akgöl, B.B. and Erol, T. (2014): 'Assessment of the Feelings and Attitudes of Children Towards Their Dentist and Their Association with Oral Health'. *ISRN Dentistry* **2014**, 4.

Murad, M.H., Asi, N., Alsawas, M. and Alahdab, F. (2016): 'New Evidence Pyramid'. *BMJ Evidence-Based Medicine* **21**, 125-127.

Murphy, J. and Moore, R. (2018): 'Maximising Paediatricians' Roles in Improving Children's Oral Health: Lessons from Leicester'. *Archives of Disease in Childhood* **103**, 181.



BIBLIOGRAPHY

Murphy, J.M., Burch, T.E., Dickenson, A.J., Wong, J. and Moore, R. (2018): 'An Evidence-Based Oral Health Promotion Programme: Lessons from Leicester'. *Oral Diseases* **24**, 38-43.

Murray, J.J., Vernazza, C.R. and Holmes, R.D. (2015): 'Forty Years of National Surveys: An Overview of Children's Dental Health from 1973-2013'. *British Dental Journal* **219**, 281-285.

Murshid, E.Z. (2016): 'Children's Ages and Reasons for Receiving Their First Dental Visit in a Saudi Community'. *The Saudi Dental Journal* **28**, 142-147.

Nakre, P.D. and Harikiran, A.G. (2013): 'Effectiveness of Oral Health Education Programs: A Systematic Review'. *Journal of International Society of Preventive & Community Dentistry* **3**, 103-115.

National Institute for Health and Care Excellence. (2016): *Community Engagement: Improving Health and Wellbeing and Reducing Health Inequalities*. Available at: <https://www.nice.org.uk/guidance/ng44/chapter/Recommendations> (Accessed: August 2020).

National Institute for Health and Care Excellence. (2017): *Child Maltreatment: When to Suspect Maltreatment in under 18s*. Available at: <https://www.nice.org.uk/guidance/cg89> (Accessed: July 2020).

Nayee, S., Klass, C., Findlay, G. and Gallagher, J.E. (2018): 'Parenting and Oral Health in an Inner-City Environment: A Qualitative Pilot Study'. *BMC Oral Health* **18**, 168.

Newton, J.T., Alexandrou, B., Dixon Bate, B. and Best, H. (2006): 'A Qualitative Analysis of the Planning, Implementation and Management of a Pds Scheme: Lessons for Local Commissioning of Dental Services'. *British Dental Journal* **200**, 625-630.

Newton, J.T. and Bower, E.J. (2005): 'The Social Determinants of Oral Health: New Approaches to Conceptualizing and Researching Complex Causal Networks'. *Community Dentistry and Oral Epidemiology* **33**, 25-34.

NHS. (2018): *A Model for Measuring Quality Care*. Online library of Quality, Service Improvement and Redesign tools. Available at: <https://improvement.nhs.uk/resources/measuring-quality-care/> (Accessed: April 2020).

NHS. (2020a): *National Cost Collection for the NHS*. Available at: <https://www.england.nhs.uk/national-cost-collection/#ncc1819> (Accessed: September 2020).

NHS. (2020b): *Smile4life*. Available at: <https://www.england.nhs.uk/primary-care/dentistry/smile4life/> (Accessed: June 2020).

NHS Business Services Authority. (2020): *Dental Contract Reform in England*. Available at: <https://www.nhsbsa.nhs.uk/dental-contract-reform/dental-contract-reform-england> (Accessed: July 2020).

NHS Choices. (2017): *Who Is Entitled to Free NHS Dental Treatment in England?* Available at: <https://www.nhs.uk/chq/pages/1786.aspx?categoryid=68&subcategoryid=154> (Accessed: January 2018).



NHS Digital. (2016): *NHS Dental Statistics England 2015-16*. Available at: <http://content.digital.nhs.uk/catalogue/PUB21701/nhs-dent-stat-eng-15-16-rep-v2.pdf> (Accessed: March 2017).

NHS Digital. (2017): *NHS Dental Statistics for England 2016-17*. Available at: <http://digital.nhs.uk/catalogue/PUB30069> (Accessed: September 2017).

NHS Digital. (2018a): *NHS Dental Statistics for England 2017-18. Annual Report*. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-dental-statistics/2017-18-annual-report> England (Accessed: August 2018).

NHS Digital. (2018b): *NHS Dentists with NHS Activity, 2016-2018*. . Dentists by lower tier local authority final. Available at: <https://digital.nhs.uk/data-and-information/find-data-and-publications/supplementary-information/2018-supplementary-information-files/staff-numbers/dental/nhs-dentists-with-nhs-activity-2016---2018> (Accessed: May 2019).

NHS Digital. (2019): *NHS Dental Statistics for England 2018-19. Annual Report*. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-dental-statistics/2018-19-annual-report-pas> (Accessed: September 2019).

NHS Digital. (2020): *NHS Dental Statistics for England 2019-20. Annual Report*. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-dental-statistics/2019-20-annual-report> (Accessed: September 2020).

NHS Digital. (2021): *NHS Dental Statistics for England 2020-21. Biannual Report*. Available at: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-dental-statistics/2020-21-biannual-report> (Accessed: February 2021).

NHS England. (2014): *Improving Dental Care and Oral Health: A Call to Action*. Available at: <https://www.england.nhs.uk/wp-content/uploads/2014/02/imp-dent-care.pdf> England NHS (Accessed: November 2017).

NHS England. (2017a): *News. GP Patient Survey Dental Statistics; January to March 2017, England*. Available at: https://www.england.nhs.uk/statistics/2017/07/06/gpps_dent_y111864861/ (Accessed: November 2017).

NHS England. (2017b): *Starting Well*. Available at: <https://www.england.nhs.uk/commissioning/primary-care/dental/starting-well/> (Accessed: November 2017).

NHS Highland. (n.d.): *Childsmile Programme*. Available at: <https://www.nhshighland.scot.nhs.uk/Services/Pages/Childsmile.aspx> (Accessed: July 2020).

NHS Leadership Academy (2011) *Leadership Framework. A Summary*. England.

NICE. (2004): *NICE Guidance*. Dental checks: intervals between oral health reviews. Available at: <https://www.nice.org.uk/guidance/cg19/chapter/1-guidance> (Accessed: March 2020).

NICE (2014) *Oral Health: Approaches for Local Authorities and Their Partners to Improve the Oral Health of Their Communities*. England.



BIBLIOGRAPHY

Noble, H. and Smith, J. (2015): 'Issues of Validity and Reliability in Qualitative Research'. *Evidence Based Nursing* **18**, 34-35.

Novick, G. (2008): 'Is There a Bias against Telephone Interviews in Qualitative Research?'. *Research in Nursing & Health* **31**, 391-398.

Nowak, A.J. and Casamassimo, P.S. (2015) "Anticipatory Guidance". In Berg, J.H. & Slayton, R.L. (Eds.) **Early Childhood Oral Health**. 2nd ed. Hoboken, NJ: John Wiley & Sons, Inc. pp. 169-192.

NSMC, National Social Marketing Centre. (2010): *Increasing Access to Dental Services*. Available at: <http://www.thensmc.com/resources/showcase/increasing-access-dental-services> (Accessed: March 2020).

NSMC and NHS Kensington and Chelsea. (2010): *Show Case: Increasing Access to Dental Services*. Available at: <http://www.thensmc.com/sites/default/files/KC%20dentistry%20FULL%20case%20study.pdf> (Accessed: March 2020).

O'Cathain, A., Murphy, E. and Nicholl, J. (2010): 'Three Techniques for Integrating Data in Mixed Methods Studies'. *BMJ: British Medical Journal* **341**, 1147-1150.

O'Connor-Fleming, M.L., Parker, E., Higgins, H. and Gould, T. (2006): 'A Framework for Evaluating Health Promotion Programs'. *Health Promotion Journal of Australia* **17**, 61-66.

Office for National Statistics. (2011): *2011 Census*. Available at: <https://www.ons.gov.uk/census/2011census> (Accessed: March 2019).

Office for National Statistics. (2019): *Population Estimates for the UK, England and Wales, Scotland and Northern Ireland: Mid-2015*. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2015> (Accessed: March 2019).

Office for National Statistics. (2020): *Healthcare Expenditure, UK Health Accounts: 2018. Health Care Expenditure Data*. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresystem/bulletins/ukhealthaccounts/2018#government-healthcare-expenditure> (Accessed: February 2021).

Oge, O.A., Douglas, G.V.A., Seymour, D., Adams, C. and Csikar, J. (2018): 'Knowledge, Attitude and Practice among Health Visitors in the United Kingdom toward Children's Oral Health'. *Public Health Nursing* **35**, 70-77.

Olley, R.C., Hosey, M.T., Renton, T. and Gallagher, J. (2011): 'Why Are Children Still Having Preventable Extractions under General Anaesthetic? A Service Evaluation of the Views of Parents of a High Caries Risk Group of Children'. *British Dental Journal* **210**, 1-8.

Östlund, U., Kidd, L., Wengström, Y. and Rowa-Dewar, N. (2010): 'Combining Qualitative and Quantitative Research within Mixed Method Research Designs: A Methodological Review'. *International Journal of Nursing Studies* **48**, 369-383.



Palinkas, L., Horwitz, S., Green, C., Wisdom, J., Duan, N. and Hoagwood, K. 'Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research'. *Administration and Policy in Mental Health and Mental Health Services Research* **42**, 533-544.

Palmer, H., Campbell-Jack, D., Lillis, J. and Elsby, A. (2020) *The Impact of Covid-19 on Dental Professionals*. United Kingdom: General Dental Council

Available at: <https://www.gdc-uk.org/about-us/what-we-do/research/our-research-library/detail/report/the-impact-of-covid-19-on-dental-professionals>.

Passalacqua, A., Reeves, A.O., Newton, T., Hughes, R., Dunne, S., Donaldson, N. and Wilson, N. (2012): 'An Assessment of Oral Health Promotion Programmes in the United Kingdom'. *European Journal of Dental Education* **16**, e19-e26.

Penchansky, R. and Thomas, J.W. (1981): 'The Concept of Access: Definition and Relationship to Consumer Satisfaction'. *Medical Care* **19**, 127-140.

Petersen, P.E., Bourgeois, D., Ogawa, H., Estupinan-Day, S. and Ndiaye, C. (2005): 'The Global Burden of Oral Diseases and Risks to Oral Health'. *Bulletin of the World Health Organization* **83**, 661-669.

Petersen, P.E. and Stella, K. (2004): 'Evaluation of Community-Based Oral Health Promotion and Oral Disease Prevention – WHO Recommendations for Improved Evidence in Public Health Practice'. *Community Dental Health* **21 (Supplement)**, 319–329.

PHE (2014) *Local Authorities Improving Oral Health: Commissioning Better Oral Health for Children and Young People. An Evidence-Informed Toolkit for Local Authorities* London: Public Health England.

PHE (2015) *Rapid Review to Update Evidence for the Healthy Child Program 0-5*. London: Public Health England.

PHE. (2016): *National Dental Epidemiology Programme for England: Oral Health Survey of Five-Year-Old Children 2015. A Report on the Prevalence and Severity of Dental Decay*. Available at: <https://www.whittington.nhs.uk/document.ashx?id=14286> England (Accessed: February 2020).

PHE. (2017a): *Guidance. Health Matters: Child Dental Health*. Available at: <https://www.gov.uk/government/publications/health-matters-child-dental-health/health-matters-child-dental-health> (Accessed: February 2020).

PHE. (2017b): *Oral Health Profile*. Available at: <https://fingertips.phe.org.uk/profile/oral-health> (Accessed: January 2020).

PHE (2017c) *Public Health Outcomes Framework: Health Equity Report. Focus on Ethnicity*. London: Public Health England.

PHE (2018a) *Local Action on Health Inequalities: Understanding and Reducing Ethnic Inequalities in Health*. London: Public Health England.

PHE (2018b) *Local Authority Area Variation in the Oral Health of Five-Year-Olds*. London: Public Health England.

BIBLIOGRAPHY

PHE. (2018c): *Oral Health Survey of 5-Year-Old Children 2017*. Available at: <https://www.gov.uk/government/statistics/oral-health-survey-of-5-year-old-children-2017> (Accessed: March 2019).

PHE. (2018d): *Water Fluoridation Health Monitoring Report for England 2018*. Available at: <https://www.gov.uk/government/publications/water-fluoridation-health-monitoring-report-for-england-2018> (Accessed: February 2020).

PHE. (2019): *Dental Public Health Epidemiology Programme. Oral Health Survey of Three-Year-Old Children 2013. A Report on the Prevalence and Severity of Dental Decay*. Available at: <https://www.gov.uk/government/publications/oral-health-survey-of-3-year-old-children-2013> England (Accessed: February 2020).

PHE (2020a) *National Dental Epidemiology Programme for England: Oral Health Survey of 5-Year-Old Children 2019*. Available at: <https://www.gov.uk/government/statistics/oral-health-survey-of-5-year-old-children-2019>. (Accessed: April 2020).

PHE. (2020b): *Top Tips for Teeth*. Available at: <https://campaignresources.phe.gov.uk/resources/campaigns/69-top-tips-for-teeth/overview> (Accessed: April 2020).

Pitts, N., Chadwick, B. and Anderson, T. (2015) *Children's Dental Health Survey 2013. Report 2: Dental Disease and Damage in Children*. England, Wales and Northern Ireland: Health and Social Care Information Centre.

Popay, J., Whitehead, M. and Hunter, D.J. (2010): 'Injustice Is Killing People on a Large Scale— but What Is to Be Done About It?'. *Journal of Public Health* **32**, 148-149.

Pope, C. and Mays, N. (1995): 'Reaching the Parts Other Methods Cannot Reach: An Introduction to Qualitative Methods in Health and Health Services Research'. *British Medical Journal* **311**, 42.

Pope, C. and Mays, N. (2005): *Qualitative Research in Health Care*. 3rd ed. Blackwell Publishing Ltd.

Pope, C. and Mays, N. (2020): *Qualitative Research in Health Care*. 4th ed. John Wiley & Sons Ltd.

Poulsen, S. (2003): 'The Child's First Dental Visit'. *International Journal of Paediatric Dentistry* **13**, 264-265.

Qadri, G., Alkilzy, M., Franze, M., Hoffmann, W. and Splieth, C. (2018): 'School-Based Oral Health Education Increases Caries Inequalities'. *Community Dental Health* **35**, 153-159.

Nvivo Version 12 (2018). QSR International.

Quinn, G. and Freeman, R. (1991): 'Health Visitors as Dental Health Educators: Their Knowledge, Attitudes and Behaviours'. *Health Education Journal* **50**, 191-194.

Rahman, N., Nathwani, S. and Kandiah, T. (2020): 'Teledentistry from a Patient Perspective During the Coronavirus Pandemic'. *British Dental Journal* **229**, 1-4.



- Raison, H. and Harris, R.V. (2019): 'Interventions to Reduce Socio-Economic Inequalities in Dental Service Utilisation - a Systematic Review'. *Community Dental Health* **36**, 39-45.
- Ramsdale, M.P. and Landes, D.P. (2014): 'Evaluation of an Oral Health Promotion Pilot in County Durham and Darlington'. *International Journal of Health Promotion and Education* **52**, 60-67.
- Ravaghi, V., Hargreaves, D. and Morris, A. (2019): 'Persistent Socioeconomic Inequality in Child Dental Caries in England Despite Equal Attendance'. *Journal of Dental Research* **5**, 185-194.
- Ravaghi, V., Salomon-Ibarra, C. and Morris, J. (2020): 'Editorial - Child Oral Health; Is There Anything More to Know?'. *Community Dental Health* **37**, 108-109.
- Rayner, J.A. (1992): 'A Dental Health Education Programme, Including Home Visits, for Nursery School Children'. *British Dental Journal* **172**, 57-62.
- Rooney, E. (2018) *Dental Contract Reform Evaluation of the First Year of Prototyping 2016-2017*. England: Department of Health & Social Care.
- Rose, G. (2008): *Rose's Strategy of Preventive Medicine*. Oxford: Oxford University Press.
- Rouxel, P. and Chandola, T. (2018): 'Socioeconomic and Ethnic Inequalities in Oral Health among Children and Adolescents Living in England, Wales and Northern Ireland'. *Community Dentistry and Oral Epidemiology* **46**, 426-434.
- Royal College of Surgeons of England. (2019): *Hospital Admissions for 5-9 Year Olds with Tooth Decay More Than Double Those for Tonsillitis*. Available at: <https://www.rcseng.ac.uk/news-and-events/media-centre/press-releases/dental-decay-hosp-admissions/> (Accessed: February 2020).
- Royston, P. (2017): 'Model Selection for Univariable Fractional Polynomials'. *The Stata Journal* **17**, 619-629.
- Rubin, H.J. and Rubin, I.S. (2011): *Qualitative Interviewing: The Art of Hearing Data*. SAGE.
- Rychetnik, L., Frommer, M., Hawe, P. and Shiell, A. (2002): 'Criteria for Evaluating Evidence on Public Health Interventions'. *Journal of Epidemiology and Community Health* **56**, 119.
- Sackett, D.L., Haynes, R.B., Guyatt, G.H. and Tugwell, P. (1991): *Clinical Epidemiology: A Basic Science for Clinical Medicine*. 2nd ed. Boston. Toronto. London: Little, Brown and Company.
- Sanders, A.E., Spencer, A.J. and Slade, G.D. (2006): 'Evaluating the Role of Dental Behaviour in Oral Health Inequalities'. *Community Dentistry and Oral Epidemiology* **34**, 71-79.
- Sarri, G. and Marcenes, W. (2012): 'Child Dental Neglect: Is It a Neglected Area in the UK?'. *British Dental Journal* **213**, 103-104.
- Savage, M.F., Lee, J.Y., Kotch, J.B. and Vann, W.F. (2004): 'Early Preventive Dental Visits: Effects on Subsequent Utilization and Costs'. *Pediatrics* **114**, e418-e423.
- Scambler, S., Asimakopoulou, K. and Scott, S.E. (2016): *Sociology and Psychology for the Dental Team: An Introduction to Key Topics*. Cambridge: Polity Press, 2016.



BIBLIOGRAPHY

Secretary of State for Health. (2008): *Government Response to the Health Select Committee Report on Dental Services. Presented to Parliament by the Secretary of State for Health by Command of Her Majesty Cm 7470*. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/243366/7470.pdf London (Accessed: January 2020).

Shaban, R., Kassim, S. and Sabbah, W. (2017): 'Socioeconomic Inequality in the Provision of Specific Preventive Dental Interventions among Children in the UK: Children's Dental Health Survey 2003'. *British Dental Journal* **222**, 865-869.

Shaw, D., Macpherson, L. and Conway, D. (2009): 'Tackling Socially Determined Dental Inequalities: Ethical Aspects Ofchildsmile, the National Child Oral Health Demonstration Programme in Scotland'. *Bioethics* **23**, 131-139.

Shen, J. and Listl, S. (2018): 'Investigating Social Inequalities in Older Adults' Dentition and the Role of Dental Service Use in 14 European Countries'. *The European Journal of Health Economics* **19**, 45-57.

Simons, D., Pearson, N. and Evans, P. (2013): 'A Pilot of a School-Based Dental Treatment Programme for Vulnerable Children with Possible Dental Neglect: The Back2school Programme'. *British Dental Journal* **215**, E15.

Simons, D., Pearson, N., Evans, P., Wallace, T., Eke, M. and Wright, D. (2015): 'Improving Access to Dental Care for Vulnerable Children Further Development of the Back2school Programme in 2013'. *Community Dental Health* **32**, 68.

SLWG, Short Life Working Group (2020) *Investigation into the Resilience of Mixed NHS/Private Dental Practices Following the First Wave of the Covid-19 Pandemic*. England.

Smith, P.A. and Freeman, R. (2010): 'Remembering and Repeating Childhood Dental Treatment Experiences: Parents, Their Children, and Barriers to Dental Care'. *International Journal of Paediatric Dentistry* **20**, 50-58.

Stata Statistical Software: Release 14. (2015). StataCorp.

Steele, J. (2009) *NHS Dental Services in England: An Independent Review by Professor Jimmy Steele*. London: Department of Health.

Stein, C., Santos, N.M.L., Hilgert, J.B. and Hugo, F.N. (2018): 'Effectiveness of Oral Health Education on Oral Hygiene and Dental Caries in Schoolchildren: Systematic Review and Meta-Analysis'. *Community Dentistry and Oral Epidemiology* **46**, 30-37.

Stewart, K., Gill, P., Chadwick, B. and Treasure, E. (2008): 'Qualitative Research in Dentistry'. *British Dental Journal* **204**, 235-239.

Stokes, E., Pine, C.M. and Harris, R.V. (2009): 'The Promotion of Oral Health within the Healthy School Context in England: A Qualitative Research Study'. *BMC Oral Health* **9**, 3.

The Lancet (2009): 'Editorial: Oral Health: Prevention Is Key'. *Lancet* **373**, 1-1.



The National Archives. (2012): *Health and Social Care Act 2012*. Available at: <http://www.legislation.gov.uk/ukpga/2012/7/contents/enacted> England (Accessed: 18/11/2017).

The W.K. Kellogg Foundation (2004) *Logic Model Development Guide*.

Thomson, W., Williams, S.M., Broadbent, J., Poulton, R. and Locker, D. (2010): 'Long-Term Dental Visiting Patterns and Adult Oral Health'. *Journal of Dental Research* **89**, 307-311.

Thomson, W.M., Poulton, R., Milne, B.J., Caspi, A., Broughton, J.R. and Ayers, K.M.S. (2004): 'Socioeconomic Inequalities in Oral Health in Childhood and Adulthood in a Birth Cohort'. *Community Dentistry and Oral Epidemiology* **32**, 345-353.

Tickle, M. (2006): 'Improving the Oral Health of Young Children through an Evidence-Based Approach'. *Community Dental Health* **23**, 2-4.

Tickle, M., Milsom, K.M., Buchanan, K. and Blinkhorn, A.S. (2006): 'Dental Screening in Schools: The Views of Parents, Teachers and School Nurses'. *British Dental Journal* **201**, 769.

Tickle, M., Moulding, G., Milsom, K. and Blinkhorn, A. (2000a): 'Dental Caries, Contact with Dental Services and Deprivation in Young Children: Their Relationship at a Small Area Level'. *British Dental Journal* **189**, 376-379.

Tickle, M., Moulding, G., Milsom, K. and Blinkhorn, A. (2000b): 'Socioeconomic and Geographical Influences on Primary Dental Care Preferences in a Population of Young Children'. *British Dental Journal* **188**, 559-562.

Toma, M., Dreischulte, T., Gray, N.M., Campbell, D. and Guthrie, B. (2018): 'Balancing Measures or a Balanced Accounting of Improvement Impact: A Qualitative Analysis of Individual and Focus Group Interviews with Improvement Experts in Scotland'. *BMJ Quality & Safety* **27**, 547.

Tsakos, G., Hill, K., Chadwick, B. and Anderson, T. (2015) *Children's Dental Health Survey 2013. Report 1: Attitudes, Behaviours and Children's Dental Health*. England, Wales and Northern Ireland: Health and Social Care Information Centre.

Tudor Hart, J. (1971): 'The Inverse Care Law'. *The Lancet* **297**, 405-412.

UCL (2020a) *Children's Oral Health Improvement Programme Board: Evaluation Report Year 1*. England: University College London. Available at: <https://www.ucl.ac.uk/epidemiology-health-care/sites/epidemiology-health-care/files/COHIPBR.pdf>. (Accessed: May 2020).

UCL (2020b) *Children's Oral Health Improvement Programme Board: Evaluation Report Year 2*. England: University College London. Available at: https://www.ucl.ac.uk/epidemiology-health-care/sites/epidemiology-health-care/files/cohipbs_evaluation_year_2.pdf. (Accessed: May 2020).

UCLA Institute for Digital Research & Education. (2021): *Statistical Consulting. Negative Binomial Regression*. Available at: <https://stats.idre.ucla.edu/stata/output/negative-binomial-regression/> (Accessed: March 2021).

UK National Screening Committee. (2019): *The UK NSC Recommendation on Dental Disease Screening in Children*. Available at: <https://legacyscreening.phe.org.uk/dental> (Accessed: March 2020).



BIBLIOGRAPHY

- Ulin, P.R., Robinson, E.T. and Tolley, E.E. (2012): *Qualitative Methods in Public Health: A Field Guide for Applied Research*. John Wiley & Sons.
- Vashishtha, V., Kote, S., Basavaraj, P., Singla, A., Pandita, V. and Malhi, R.K. (2014): 'Reach the Unreached - a Systematic Review on Mobile Dental Units'. *Journal of Clinical and Diagnostic Research* **8**, ZE05-ZE08.
- Volpato, L.E.R., Palti, D.G.P., Lima, J.E.d.O., Machado, M.A.d.A.M., Aranha, A.M.F., Bandeca, M.C., Pedro, F.L.M. and Borges, A.H. (2013): 'When and Why Parents Seek Dental Care for Children under 36 Months'. *Journal of International Oral Health* **5**, 21-25.
- Waite, C. (2020): British Dental Association. Children's Oral Health: Why New Obesity Programmes Are Not Enough. Available at: <https://bda.org/news-centre/blog/Pages/Childrens-oral-health-Why-new-obesity-programmes-are-not-enough-.aspx>. (Accessed: September 2020).
- Wamala, S., Merlo, J. and Boström, G. (2006): 'Inequity in Access to Dental Care Services Explains Current Socioeconomic Disparities in Oral Health: The Swedish National Surveys of Public Health 2004-2005'. *Journal of Epidemiology and Community Health* **60**, 1027-1033.
- Waplinton, J., White, D. and Clarke, J. (1998): 'A Comparison of the Social Backgrounds and Dental Health of Patients Attending the Community Dental Service, the General Dental Service and Non Registered Patients'. *Community Dental Health* **15**, 93-96.
- Watt, R., Fuller, S., Harnett, R., Treasure, E. and Stillman-Lowe, C. (2001): 'Oral Health Promotion Evaluation - Time for Development'. *Community Dentistry and Oral Epidemiology* **29**, 161-166.
- Watt, R., McGlone, P., Evans, D., Boulton, S., Jacobs, J., Graham, S., Appleton, T., Perry, S. and Sheiham, A. (2004): 'The Facilitating Factors and Barriers Influencing Change in Dental Practice in a Sample of English General Dental Practitioners'. *British Dental Journal* **197**, 485-489.
- Watt, R. and Sheiham, A. (1999): 'Inequalities in Oral Health: A Review of the Evidence and Recommendations for Action'. *British Dental Journal* **187**, 6-12.
- Watt, R.G. (2005): 'Strategies and Approaches in Oral Disease Prevention and Health Promotion'. *Bulletin of the World Health Organization* **83**, 711-718.
- Watt, R.G. (2007): 'From Victim Blaming to Upstream Action: Tackling the Social Determinants of Oral Health Inequalities'. *Community Dentistry and Oral Epidemiology* **35**, 1-11.
- Watt, R.G. (2012): 'Social Determinants of Oral Health Inequalities: Implications for Action'. *Community Dentistry and Oral Epidemiology* **40**, 44-48.
- Watt, R.G. and Fuller, S.S. (1999): 'Oral Health Promotion-Opportunity Knocks!'. *British Dental Journal* **186**, 3-6.
- Watt, R.G., Harnett, R., Daly, B., Fuller, S.S., Kay, E., Morgan, A., Munday, P., Nowjack-Raymer, R. and Treasure, E.T. (2006): 'Evaluating Oral Health Promotion: Need for Quality Outcome Measures'. *Community Dentistry and Oral Epidemiology* **34**, 11-17.



Watt, R.G., Listl, S., Peres, M. and Heilmann, A. (2015) *Social Inequalities in Oral Health: From Evidence to Action*. England: International Centre for Oral Health Inequalities Research and Policy (ICOHIRP).

Watt, R.G., Williams, D.M. and Sheiman, A. (2014): 'The Role of the Dental Team in Promoting Health Equity'. *British Dental Journal* **216**, 11-14.

Welsh Government. (n.d.): *Designed to Smile*. Available at: <https://gov.wales/created-smile-improving-childrens-dental-health> (Accessed: March 2020).

Westgarth, D. (2020): 'How Does Dentistry Move from Survival to Revival?'. *British Dental Journal In Practice* **33**, 12-16.

Weston-Price, S., Csikar, J., Vinall-Collier, K., Bishop, P., apos, Antoni, D. and Pine, C. (2020): 'Barriers and Facilitators to Health Visiting Teams Delivering Oral Health Promotion to Families of Young Children: A Mixed Methods Study with Vignettes'. *Community Dental Health* **37**, 1-9.

White, M., Adams, J. and Heywood, P. (2009) "How and Why Do Interventions That Increase Health Overall Widen Inequalities within Populations?". In Babones, S.J. (Ed.) **Social Inequality and Public Health**. August 2019. Available at: http://www.mrc-epid.cam.ac.uk/wp-content/uploads/2016/10/WhiteM_etal_How_and_why_do_interventions_that_increase_health_overall_widen_inequalities_within_populations.pdf. (Accessed: August 2019).

Whittle, J.G., Pitkethly, D. and Wilson, M.C. (1994): 'A Dental Health Promotion Campaign in a Shopping Centre'. *Health Education Research* **9**, 261-265.

WHO (1995) *Health Promotion Evaluation : Recommendations to Policy-Makers: Report of the WHO European Working Group on Health Promotion Evaluation*. Available at: <https://apps.who.int/iris/bitstream/handle/10665/108116/E60706?sequence=1>. (Accessed: March 2020).

WHO (2013) *Handbook on Health Inequality Monitoring with a Special Focus on Low and Middle Income Countries*. Luxembourg: World Health Organization.

WHO. (2017): *Oral Health. What Is the Burden of Oral Disease?* Available at: http://www.who.int/oral_health/disease_burden/global/en/ (Accessed: March 2017).

WHO. (2020): *School and Youth Health. Global School Health Initiative*. Available at: https://www.who.int/school_youth_health/gshi/en/ (Accessed: April 2020).

WHO Europe. (1986): *Ottawa Charter for Health Promotion*. Available at: https://www.euro.who.int/_data/assets/pdf_file/0004/129532/Ottawa_Charter.pdf (Accessed: April 2020).

WHO Europe (2001) *Evaluation in Health Promotion: Principles and Perspectives*. WHO Regional Publications European Series. No. 92.

Widmer, R. (2003): 'The First Dental Visit: An Australian Perspective'. *International Journal of Paediatric Dentistry* **13**, 270-270.

BIBLIOGRAPHY

Williams, O. and Fullagar, S. (2019): 'Lifestyle Drift and the Phenomenon of 'Citizen Shift' in Contemporary UK Health Policy'. *Sociology of Health & Illness* **41**, 20-35.

Williams, S.A. and Gelbier, S. (2016): 'Access to Dental Health? An Ethnic Minority Perspective of the Dental Services'. *Health Education Journal* **47**, 167-170.

Witton, R. and Smith, W. (2019): 'A Service Evaluation of the "Open Wide and Step inside" School Oral Health Programme'. *British Dental Journal* **5**, 1-6.

Witton, R.V. and Moles, D.R. (2013): 'Barriers and Facilitators That Influence the Delivery of Prevention Guidance in Health Service Dental Practice: A Questionnaire Study of Practising Dentists in Southwest England'. *Community Dental Health* **30**, 71-76.

Worthington, H.V., Hill, K.B., Mooney, J., Hamilton, F.A. and Blinkhorn, A.S. (2001): 'A Cluster Randomized Controlled Trial of a Dental Health Education Program for 10-Year-Old Children'. *Journal of Public Health Dentistry* **61**, 22-27.

Wright, D. (2016): *Update on Dental Access for Children for the HWBB*. Available at: <https://democracy.towerhamlets.gov.uk/documents/s83935/Appendix%201%20-%20Dental%20access%20update%20%2004032016.pdf> Tower Hamlets (Accessed: February 2020).

Young, N., Newton, J., Morris, J., Morris, J., Langford, J., Iloya, J., Edwards, D., Makhani, S. and Verne, J. (2015): 'Community Water Fluoridation and Health Outcomes in England: A Cross-Sectional Study'. *Community Dentistry and Oral Epidemiology* **43**, 550-559.

Yuan, S., Kerr, G., Salmon, K., Speedy, P. and Freeman, R. (2007): 'Evaluating a Community-Based Dental Registration Program for Preschool Children Living in Areas of High Social Deprivation'. *European Archives of Paediatric Dentistry* **8**, 55-61.

Yusuf, H., Wright, K. and Robertson, C. (2015): 'Evaluation of a Pilot Oral Health Promotion Programme 'Keep Smiling': Perspectives from Gdps, Health Champions and School Staff'. *British Dental Journal* **218**, 455-459.

Zarod, B.K. and Lennon, M.A. (1992): 'The Effect of School Dental Screening on Dental Attendance. The Results of a Randomised Controlled Trial'. *Community Dental Health* **9**, 361-368.

8 APPENDICES

Appendix I: Example of values considered for the calculation of RII and SII.

A	B	C	D	E	F	G
Categories/subgroups (Local Authorities)	IMD Rank (1=Most deprived)	Population	Proportion of total population	Cumulative proportion of population	Midpoint of cumulative range of population	Outcome (Dental attendance %)
			Population of each subgroup/Total population i.e. =C1/\$C\$152...	Cumulative proportion + Proportion of total population i.e. =E0+D1; E1+D2...	Cumulative proportion + (0.5*Proportion of total population) i.e. =E0+(0.5*D1); E1+(0.5*D2)...	
0					0	
1	Blackpool	1 3461	0.003	0.003	0.001	15.02
2	Knowsley	2 3934	0.003	0.006	0.004	13.75
3	Kingston upon Hull, City of	3 7047	0.005	0.011	0.008	15.25
4	Liverpool	4 11656	0.009	0.020	0.015	14.76
5	Manchester	5 15863	0.012	0.031	0.026	18.66
6	Middlesbrough	6 3914	0.003	0.034	0.033	19.95
7	Birmingham	7 33999	0.025	0.060	0.047	8.65
8	Nottingham	8 8424	0.006	0.066	0.063	10.72
9	Tower Hamlets	9 8984	0.007	0.073	0.070	5.64
10	Hackney	10 8550	0.006	0.079	0.076	3.66
11	Barking and Dagenham	11 7579	0.006	0.085	0.082	6.83
12	Sandwell	12 9402	0.007	0.092	0.089	11.81
13	Stoke-on-Trent	13 7134	0.005	0.097	0.095	17.55
14	Blackburn with Darwen	14 4293	0.003	0.101	0.099	14.26
15	Rochdale	15 5838	0.004	0.105	0.103	24.13
(Some rows were omitted in this table)						
137	Central Bedfordshire	137 6673	0.005	0.889	0.886	10.45
138	Hertfordshire	138 29539	0.022	0.911	0.900	9.47
	Bath and North East					
139	Somerset	139 3524	0.003	0.913	0.912	11.38
140	Hampshire	140 29326	0.022	0.935	0.924	7.52
141	Oxfordshire	141 15603	0.012	0.947	0.941	10.56
142	South Gloucestershire	142 6312	0.005	0.952	0.949	9.36
143	Kingston upon Thames	143 4611	0.003	0.955	0.954	9.93
144	Bracknell Forest	144 3023	0.002	0.958	0.956	6.09
145	West Berkshire	145 3609	0.003	0.960	0.959	5.79
146	Richmond upon Thames	146 5252	0.004	0.964	0.962	6.25
147	Buckinghamshire	147 12551	0.009	0.974	0.969	8.25
148	Rutland	148 687	0.001	0.974	0.974	21.11
149	Surrey	149 27554	0.021	0.995	0.984	6.60
150	Windsor and Maidenhead	150 3383	0.003	0.997	0.996	7.27
151	Wokingham	151 3619	0.003	1.000	0.999	8.76
152	Total	1333918				



Appendix II: Interview guide

First Stage of interviews

NHS CENTRAL TEAM

Aims and Objectives:

To capture the experience of those involved in the design and initiation of the Starting Well Programme, especially about:

1. Processes of the programme.
2. Anticipated outcomes and how they will be achieved.
3. Anticipated challenges and how to overcome them.
4. Key lessons.

1. Introduction (For all interviews)

- Presentation and permission to record.

Good morning, thank you for giving me the time for this interview. My name is Candy Salomon, I'm a PhD student in dental public health at the University of Birmingham. We are providing some support to the evaluation of the NHS England Starting Well Initiative. First, I would like to ask your permission to record this interview in order to have an accurate summary of the responses. The information captured in this interview will be confidential and anonymous; your name will be removed to maintain the anonymity. The recording will be stored in a secured workspace.

- Explain use of the information

The purpose of this interview is to capture the experiences of those involved in the design and initiation of the Starting Well Programme, for instance about the structure, process, outcomes and challenges. This information will be used to inform the evaluation team.

2. Interviewee background

- Could you tell me a little bit about your career? How long have been in your current position?
- How long have you been planning the Starting Well Initiative?

3. Ambitions for the project

- What are your ambitions for the Starting Well Initiative?
 - What oral health improvements do you expect in the areas where the initiative is taking place?

4. Important processes

- What would you say are most important processes through which the project will improve oral health in the 13 areas?
 - How access could be improved?
 - How seldom heard communities are going to be reached?



- What are the processes to improve prevention by the dental team?

5. Challenges

- What are the main challenges you have experienced and how have you overcome them?
 - What challenges there have been in recruiting practices?
 - Helping local commissioners to prepare/ supporting local commissioners, e.g. needs assessment?
 - Communications with local commissioners and people involved?
 - IT / information/data collection/data submission tool?
- Do you envisage any other challenges? How do you plan to overcome them?
 - Contract and payment issues?

6. Key lessons

- If there had been no constraints, how the project would have been designed differently?
- What would you say are the key lessons to date? From the design and implementation of the programme.
- How this initiative could be used in the future?

7. Additional comments.

- Is there any questions you think I should asked and I didn't?

8. THANK YOU for all that valuable information.



LOCAL COMMISSIONERS

Aims and Objectives:

To capture the experience of those involved in the design and initiation of the Starting Well Programme, especially about:

1. Structure and processes of the programme and local context.
2. Anticipated outcomes and how they will be achieved.
3. Role of key partners.
4. Anticipated challenges and constraints and how to overcome them.
5. Key lessons.

1. Introduction

- Presentation and permission to record.

2. Interviewee background

- Could you tell me a little about your career? How long have been in your position?

3. Initiative

- How did you first hear of the Starting Well initiative?
- Were you involved in the planning and preparation?
- How were you involved in setting it up locally?

4. Fitting with local needs

- How does the Initiative fit with the local needs and priorities?
- Do you think it fits with the Oral Health Needs Assessment?
- Do you think it fits with the Oral health improvement strategy?
- Do you think there have been synergies? Clashes? Duplications?

5. Overview of local structure/ Practices recruited

- How many practices have been recruited? How these practices have been recruited in your area?
- How are you contracting for the activity? What kind of contracts are you using?
- What has been your role in supporting the recruitment?
- Is there something that could be done to help you with the recruitment?

6. Local Partners

- How other local partners organisations have been involved in the project?
- Who are the key local partners in making the project a success?

7. Leadership

- Who is the local lead for the project?
- How the programme was communicated to dental practices?
- Were there any issues in communicating the programme to dental practices?

8. Launch of the project

- Were you at the launch of the project? Who else was at the launch?



- Were the dental team members at the launch?
- When did it take place?
- How successful do you think it was?

9. Benefits

- What benefits do you envisage from the initiative?
- How those benefits will be achieved?
- What will be your role and the role of your organisation in maximising those benefits? What will be the role of local partners?
- Do you have a timescale to achieve those benefits?

10. Outcomes

- How will you know that the outcomes have been achieved? How will you evaluate the success of the programme?
- How does success look like for you?

11. Challenges

- Could you tell me about the main challenges you have experienced and how you have overcome them?
- What has been your role in mitigating them? What has been the role of your organisation and the role of local partners in mitigating them?

12. Future challenges

- What other challenges can you anticipate?
- How do you plan to overcome them?
- What is the role of your organisation and local partners in mitigating them?

13. Key lessons

- If there had been no constraints, how the project would have been designed differently?
- From the design and implementation of the programme. What would you say are the key lessons to date?
- How this initiative could be used in the future?

14. Additional comments

- Are there any questions you think I should asked and I didn't?
- Is there anything else you would like to add?

15. Thank you for all that valuable information.



Aims and Objectives:

To capture the experience of those involved in the design and initiation of the Starting Well Programme, especially about:

1. Structure and processes of the programme and local context.
2. Anticipated outcomes and how they will be achieved.
3. Role of key partners.
4. Anticipated challenges and constraints and how to overcome them.
5. Key lessons.

1. Introduction.

- Presentation and permission to record.

2. Interviewee background

- Could you tell me a little bit about your career? How long have been in your current position?

3. Initiative

- How did you first hear of the Starting Well initiative?
- Were you involved in the planning and preparation?
- How were you involved in setting it up locally?

4. Fitting with local needs

- How does the Initiative fit with the local needs and priorities?
- Do you think it fits with the Oral Health Needs Assessment?
- Do you think it fits with the Oral health improvement strategy?
- Do you think there have been synergies? Clashes? Duplications?

5. Local Partners

- How other local partner organisations been involved in the project?
- Who are the key local partners in making the project a success?

6. Leadership

- Who is the local lead for the project?
- How the programme was communicated to dental practices?
- There were any issues in communicating the programme to dental practices?

7. Launch of the project

- Were you at the launch of the project? Who else was at the launch?
- How successful do you consider it was?

8. Benefits

- What benefits do you envisage from the initiative?
- How those benefits will be achieved?



- What will be your role and the role of your organisation in maximising those benefits? What will be the role of local partners in maximising those benefits?
- Do you have a timescale to achieve those benefits?

9. Outcomes

- How will you know that the outcomes have been achieved? How will you evaluate the success of the programme?
- How does success look like for you?

10. Challenges

- Could you tell me about the main challenges you have experienced and how you have overcome them?
- What has been your role and the role of your organisation in mitigating them? What has been the role of local partners in mitigating them?

If not involved in any practical aspects of the project: what challenges those setting the programme up have experienced? what has the interviewee observed?

11. Future challenges

- What other challenges can you anticipate?
- How do you plan to overcome them?
- What is the role of your organisation and local partners in mitigating them?

12. Key lessons

- If there had been no constraints, how the project would have been designed differently
- What would you say are the key lessons to date? From the design and implementation of the programme.
- How this initiative could be used in the future?

13. Additional comments

- Are there any questions you think I should asked and I didn't?
- Is there anything else you would like to add?

14. Thank you for all that valuable information.



LOCAL DENTAL NETWORK CHAIR

Aims and Objectives:

To capture the experience of those involved in the design and initiation of the Starting Well Programme, especially about:

1. Structure and processes of the programme and local context.
2. Anticipated outcomes and how they will be achieved.
3. Role of key partners.
4. Anticipated challenges and constraints and how to overcome them.
5. Key lessons.

1. Introduction.

- Presentation and permission to record.

2. Interviewee background

- Could you tell me a little about your career? How long have been in your current position?

3. Initiative

- How did you first hear of the Starting Well initiative?
- Were you involved in the planning and preparation?
- How were you involved in setting it up locally?

4. Fitting with local needs

- How does the Initiative fit with the local needs and priorities?
- Do you think it fits with the Oral Health Needs Assessment?
- Do you think it fits with the Oral health improvement strategy?
- Do you think there have been any synergies? Clashes? Duplications?

5. Local Partners

- How other local partners organisations been involved in the project?
- Who are the key local partners in making the project a success?

6. Leadership

- Who is the local lead for the project?
- How the programme was communicated to dental practices?
- There were any issues in communicating the programme to dental practices?

7. Launch of the project

- Were you at the launch of the project? Who else was at the launch?
- How successful was it?

8. Practices recruited

- Could you tell me a little about how practices are recruited?



- What is your role in supporting the recruitment?
- Is there something that could be done to help with the recruitment?

9. Benefits

- What benefits do you envisage from the initiative?
- How those benefits will be achieved?
- What will be your role and the role of local partners in maximising those benefits?
- Do you have a timescale to achieve those benefits?

10. Outcomes

- How will you know that the outcomes have been achieved? How will you evaluate the success of the programme?
- How does success look like?

11. Challenges

- Could you tell me about the main challenges you have experienced and how you have overcome them?
- What has been your role in mitigating them? what has been the role of local partners in mitigating them?

If not involved in any practical aspects of the project: what challenges have experienced those setting the programme up? what has the interviewee observed?

12. Future challenges

- What other challenges can you anticipate?
- How do you plan to overcome them?
- What would be your role and the role of local partners in mitigating them?

13. Key lessons

- If there had been no constraints, how the project would have been designed differently?
- From the design and implementation of the programme. What would you say are the key lessons to date?
- How this initiative could be used in the future?

14. Additional comments

15. Thank you for all that valuable information.



NATIONAL LEADS

Aims and Objectives:

To capture the experience of those involved in the design and initiation of the Starting Well Programme, especially about:

1. Particular role in the Intervention.
2. Dedicated training.
3. Anticipated outcomes and how they will be achieved.
4. Anticipated challenges and how to overcome them.
5. Key lessons.

1. Introduction.

- Presentation and permission to record.

2. Interviewee background

- Could you tell me a little about your career? How long have been in your current position?

3. Initiative

- How did you first hear of the Starting Well initiative?
- Were you involved in the planning and preparation?
- What is your personal role and the role of your organisation in setting up the Starting Well intervention?

4. Ambitions for the project

- What are the ambitions for this project? / What do you expect from the initiative?

5. Important processes

- What would you say are most important processes through which the project will improve oral health in the 13 areas?

6. Challenges

- What are the main challenges you have experienced so far in relation to your role?
If not, what challenges have you observe others struggle with?
- How have you overcome them?
- Do you identify any training needs?
- Do you envisage any other challenges? How do you plan to overcome them?

7. Key lessons

- If there had been no constraints, how the project would have been designed differently?
- What would you say are the key lessons to date?
- How this initiative could be used in the future?

8. Additional comments

- Is there any question you think I should asked and I didn't?
- Is there something else you would like to add?

9. THANK YOU for your time and for all that valuable information



2nd Stage of Interviews

LOCAL COMMISSIONERS

Aims and Objectives:

To capture the experience of local commissioners in the recruitment of practices and their perspectives on establishment of the programme in their area:

1. **Structure:** a) Current shape of the programme; b) context and synergy with other local programmes.
2. **Processes:** a) Recruiting practices, b) contracting with practices, c) establishing local networks, d) practice / PPC development, e) local partnerships, f) information and monitoring of practice delivery and g) facilitators and barriers.
3. **Outcomes:** a) Indicators of improvement to date, b) measures of success, c) sustainability and d) key lessons.
4. Key lessons.

1. Introduction.

- Presentation and permission to record.

2. About interviewee (If the person has not been interviewed before)

- Could you tell me a little about your career?
- How long have been involved in the Starting Well?
- How have you been involved in implementing it?

3. Total number of practices that have been recruited (sense checking the inventory)

- At the time of the first interview, the total number of practices haven't been determined, how many practices have been now recruited?
- Have you completed the Supplementary Information?
- When did dental practices start to deliver the program?

4. Local context and whether this has changed

- Have there for example been other local or national programmes that have affected the relevance or direction of SW in your area?

5. Revisit anticipated challenges from last interview; whether these occurred and how tackled.

- In the previous interview, we talked about anticipated challenges, for instance, (refer below), how these challenges have been tackled?

Engaging practices

Getting children to the dentist

Local differences (demographics, language, education, cultural barriers, deprivation).

Training

Monitoring and data collection

Sustainability (Funding, capacity)



Appendix II Interview guide

6. Recruiting practices – how this has gone

- What has been your experience in the recruitment of dental practices? What have facilitated it?
 - What challenges have you faced?
- Engaging practices
-Practices that were declined
-Practices that dropped out during contract negotiations

7. Contracting with practices. Facilitators and barriers

- What funding source has been used for the programme (clawback, main allocation, other)?
- How determined the contract value and agreed the SW variation
- How the variation of the contracts was agreed
- Synergies or conflicts with the other NHS contracts held by the contractors?
- Commissioning capacity

8. Establishing local networks

- In the previous interview, local networks were about to get established, how has it changed?
- Which local partners have been involved?
- What challenges have you experienced in setting up a network? What has facilitated networking?

9. Local partnerships

- How the programme has been linked to other local programmes?/ local authority plans (e.g. JSNA)?
- Support received from local partners (PHE, HEE, LA)

10. Practice / PPC development. Facilitators and barriers

- Perceptions on how easy it has been for practices and PPCs to adapt to their new role
- Key factors facilitating practices and PPCs to develop SW interventions?
- Challenges practices might be facing
- Do you think the relationship between commissioner and provider has changed as a result of SW?
- Do you think the nature of the pre-existing relationship was important?
- Have you experienced any challenges in communicating with dental practices / PPCs?
- Have you experienced any other challenges (in supporting practices to develop the programme)?

11. Information and monitoring of practice delivery.

- Do you think you are getting the right information to support local monitoring of delivery?
 - Timely
 - Nature of information
 - Format
- Have practices reported challenges related to data reporting and monitoring?
- Are you aware of any information gaps, e.g. practices not submitting information?
- Have there been any other challenges related to information and monitoring? What has facilitated the monitoring of the programme?

12. Tangible indicators of improvement from commissioner's perspective

- What indicators of improvement have you seen?



- Prevention and delivery of care?

-Integrating the dental team with the community?

13. Thoughts on how success might be measured over and above monitoring criteria in Service Specification / information currently available

- How will you evaluate the success of the programme?
- How does success look like for you at this stage?

14. Sustainability of programme in longer term

- In the previous interview we talked about sustainability, how do you think this programme can be sustainable?

-Finance

-Momentum / interest

-Capacity of NHSE and partners

15. Key lessons to date

- What would you say to someone starting this afresh?
- What do you consider are the main key lessons to date?
- What do you think could be improved?

16. Anything not asked that had been anticipated / expected

- Are there any questions you think I should asked and I didn't?
- Is there anything else you would like to add?

17. Thank you for all that valuable information.



LOCAL PRACTICE PREVENTION CHAMPIONS

Aims and Objectives:

To capture the experience of PPC in the establishment of the programme in their dental practice:

1. **Structure:** characteristics, role.
2. **Processes:**
 - a) Understanding the purpose of the programme, practices role.
 - b) Process adopted by practices.
 - c) PPC role developing.
 - d) Facilitators and barriers.
3. **Outcomes:** Indicators of improvement to date, measures of success and key lessons.
4. Key lessons.

1. Introduction.

- Presentation and permission to record.

2. About interviewee

- Could you tell me a little bit about your career?
 - Background / normal tasks (outside SW)
- When did you start your current position as Local Champion?
- How did you get involved?
- Is your practice an Advance Starting Well?
 - Nature of practice (ASW / SW), NHS commitment

3. Understanding the purpose of the programme

- What do you expect from the programme? / What benefits do you expect?

4. PPCs perspective on the launch of the scheme and support for practices in getting established

- Were you at the launch of the programme?
- How successful do you think it was?
- How practices have been supported in establishing the programme?
 - In terms of training, have dental practices found what they need to developed their role?
- What support for dental practices do you think is needed?
 - Training needs

5. Understanding of the role of the practice in delivering the programme

- What would you say are the main processes in which practices will deliver the programme to achieve the benefits?
 - Improving access
 - Prevention by the dental team
- What would you say is the main role of dental practices?



6. Description of actions to adopt a more preventive focus – how have things changed since becoming a SW practice? / Facilitators and barriers

- (In relation to prevention) Is the practice working in a different way to how it was working before SW?
- What have facilitated these actions?
- What challenges have the dental practice experienced?
- How delivery of prevention could be improved?

7. (ASW) Description of actions to take on new patients – how have things changed since becoming a SW practice?

- (In relation to taking on new patients) Is the practice working in a different way to how it worked before SW?
- What have facilitated these actions?
- What challenges have the dental practice experienced in taking on new patients?

8. (ASW) Description of actions to integrate dental team with the community – how have things changed since becoming a SW practice?

Facilitators and barriers

- (In relation to integrating the team with the community) Is the practice working in a different way to how it worked before SW? What actions have been taken to integrate the dental team with the community?
- What have facilitated these actions?
- What challenges have the dental practice experienced in integrating with the community?

9. General comment on the core processes / Facilitators and barriers.

- (As a whole) What has been your experience in implementing the programme? Comments on (from Service Specification section 7).
- (As a whole) What do you consider has facilitated the implementation?
- Could you tell me about the main challenges that the practice has experienced in implementing the programme and how have they been overcome?
- What challenges can you anticipate? How can they be overcome?

**10. General description of the PPC's role in supporting the above activities;
How they have developed in role and how they see their role developing.**

Role of any support / development mechanisms. Facilitators and barriers.

- What has been your main role in supporting the implementation of the programme?
- How easy have you found it to take this role on?
- What personal challenges have you experienced?
- Have you had support or assistance in developing into this role?
 - In terms of training, have you found what you need to develop your role as local prevention champion?
- If you were starting again would you want things to be different?

11. Specific comment on following roles

- What has been your experience supporting the dental practice in the delivery of the programme activities? What challenges have you experienced?

12. Tangible indicators of improvement from PPC's perspective



Appendix II Interview guide

- What would you say are the main indicators of improvement to date?
 - Children accessing dental care
 - Changes in parents' attitudes
 - Dental team more involved in prevention

13. Thoughts on how success might be measured over and above monitoring criteria in Service Specification

- How will you know that the outcomes have been achieved? How will you evaluate the success of the programme?
- How does success look like for you?

14. Key lessons to date

- What do you consider are the main key lessons to date? What would you say to someone starting this afresh?
- What do you think could be improved?

15. Anything not asked that had been anticipated / expected

- Are there any questions you think I should ask and I didn't?
- Is there anything else you would like to add?

16. Thank you for all that valuable information.



DENTAL PROVIDERS

Aims and Objectives:

To capture the experience of dental providers in the establishment of the programme in their dental practice:

1. **Structure:** practice organisation, arrangements and communication.
2. **Processes:**
 - a) Communication of the programme and launch event.
 - b) Understanding the purpose of the programme, practice role, initial implementation, support
 - c) Process adopted to deliver the programme.
 - d) Facilitators and barriers.
 - e) Challenges to date and how they have been overcome; anticipated challenges
3. **Outcomes:** Indicators of improvement to date, measures of success and key lessons.

1. Introduction.

- Presentation and permission to record.

2. About interviewee

- Could you tell me, how long have you been working in this dental practice?
- How did you get involved in the Starting Well?
- Is your practice an Advance Starting Well?
- How many dental performers are involved in the Starting Well?
- Who is the Prevention Champion? What is her/his role within the practice?

3. Perspective on the communication of the programme and launch of the scheme

- I understand that the programme was communicated through a lunch event, how this launch event was communicated within the dental practice? Who has been in charge of the communications within the dental practice?
- Did you attend the lunch event? How successful do you think it was?
- How practices have been supported in establishing the programme?
-In terms of training, have you found what you need to develop your role?
- What support for dental practices do you think is needed?

4. Understanding the purpose of the programme

- What do you expect from the programme? / What benefits do you expect?

5. Understanding of the role of the practice in delivering the programme

- What would you say are the main process in which practices will deliver the programme to achieve the benefits?
- What would you say is the main role of dental practices?

6. Description of actions to adopt a more preventive focus – how have things changed since becoming a SW practice? / Facilitators and barriers

- (In relation to prevention) Is the practice working in a different way to how it worked before SW?
- What have facilitated these actions?
- What challenges have the dental practice experienced in engaging with prevention activities?



Process to improve prevention

- How are dental performers incentivised (incl. financial) and monitored (internally) to adopt a more preventive focus?
- How prevention delivery could be improved?

7. (ASW) Description of actions to take on new patients – how have things changed since becoming a SW practice?

- (In relation to taking on new patients) Is the practice working in a different way to how it worked before SW? What have facilitated these actions?
- What challenges have the dental practice experienced in taking on new patients?

8. (ASW) Description of actions to integrate dental team with the community – how have things changed since becoming a SW practice?

Facilitators and barriers

- (In relation to integrating the team with the community) Is the practice working in a different way to how it worked before SW? What actions have been taken to integrate the dental team with the community? What have facilitated these actions?
- What challenges have the dental practice experienced in integrating with the community?

9. General comment on the core processes / Facilitators and barriers.

- As a whole, what has been your experience in implementing the programme?
- What do you consider has facilitated the implementation?
- Could you tell me about the main challenges that the practice has experienced in implemented the programme and how have they been overcome?
- Is there anything that could be improved?
- Who is in charge of data submission?

10. Other main challenges to date and anticipated challenges

- Are there any other challenges that you have experienced?
- Do you anticipate any other challenges?

11. Tangible indicators of improvement from PPC's perspective

- What would you say are the main indicators of improvement to date?

12. Thoughts on how success might be measured over and above monitoring criteria in Service Specification

- How will you know that the outcomes have been achieved? How will you evaluate the success of the programme?
- How does success look like for you?

13. Key lessons to date

- What do you consider are the main key lessons to date? What would you say to someone starting this afresh?



- What do you think could be improved?

14. Anything not asked that had been anticipated / expected

- Are there any questions you think I should asked and I didn't?
- Is there anything else you would like to add?

15. Thank you for all that valuable information.



Aims and Objectives:

To capture the experience of those involved in the design, initiation and establishment of the Starting Well Programme, especially about:

1. Particular role in the Intervention.
2. Dedicated training.
3. Anticipated outcomes and how they are being achieved.
4. Challenges and how to overcome them.
5. Key lessons.

1. Introduction.

- **Presentation and permission to record.**

2. Interviewee background

- Could you tell me a little about your career? e.g. How long have been in your current position?

3. Initiative

- How did you get involved in the Starting Well?
- What has been the role of your organisation in supporting the establishment and operation of setting up the Starting Well?
- What geographic area does your organisation cover? Can I just sense check that against a list of SW localities?
- How have you been involved? Were you involved in the planning and preparation?

4. Ambitions for the project

- What do you think the outcomes of the initiative will be?

5. Important processes

- What would you say are most important processes through which the project will achieve the benefits and improve oral health in the 13 areas?
- Have specific training needs been identified?
- How have practices have been supported in relation to training?

6. Challenges

- What are the main challenges you have experienced in relation to your role?

If not, what challenges have you observed others struggle with?

- Do you envisage any other challenges? How do you plan to overcome them?

-Sustainability

7. Key lessons

- If there would have been no constraints, how the project would have been designed differently?
- What would you say are the key lessons to date?
- How this initiative could be used in the future?

8. Additional comments



- Is there any question you think I should asked and I didn't?
- Is there something else you would like to add?

9. THANK YOU for your time and all that valuable information.



Appendix III: Starting Well 13 evaluation reports

A. Baseline Report

NHS England

Starting Well 13 – A Smile4Life Initiative

Baseline Report - Implementation and indicators of progress

Prepared by

Candy Salomon-Ibarra¹

John Morris¹

Nick Barkworth²

Kate Jones³

Kirsty Hill¹

Vahid Ravaghi¹

1. University of Birmingham
2. NHS England
3. Public Health England

April 2019



Contents

Key lessons	3
1. Background	
1.1 Starting Well 13	4
1.2 Contracts and monitoring	5
1.3 Pre-implementation phase	6
2. Evaluation	
2.1 Aims of the evaluation	7
2.2 Evaluation design	8
3. Initial findings from evaluation	
3.1 Establishing the programme	
Programme design	9
Anticipated strengths and weaknesses	11
Anticipated challenges	12
3.2 Programme implementation in the 13 localities	
Recruiting practices	13
Developing local networks	17
Establishing core processes	18
Robustness of the programme	19
3.3 Data indicators of progress	19
4. Next steps for the evaluation	23
5. Acknowledgements	23



Key lessons

Starting Well 13 is regarded by participants as an ambitious programme to deliver oral health improvement for young children through dental practices.

The programme has successfully launched in the 13 areas, in that practices have been recruited and have commenced providing services.

There is a high perceived value in locally flexible commissioning of oral health improvement services from dental practices using a national framework with the ability to modify the programme to fit local circumstances.

In particular there is a perceived high value in the use of additional funding to drive a more preventive approach in dental practice and allow practices to engage with local partners.

There is significant scope for dental practices to engage with the local health system on common priorities. Local commissioners have a key role in fostering dialogue.

There are anticipated training and development implications from encouraging dental teams to work in new ways. Investment in processes to support practice prevention champions seems key.

Whilst not all practices were submitting data, the early indications were of a high degree of success in operating key processes and there were early signs of improvement in delivery of preventive practice.



1 Background

In response to the challenge of improving children's oral health, the NHS Starting Well programme (A Smile4Life Initiative) was announced through a Ministerial Statement to the British Dental Association conference in May 2016. This programme of dental practice-based initiatives aims to reduce oral health inequalities and improve oral health in children under the age of five years living in 13 areas identified as having higher levels of tooth decay. The programme is available to all children, with a focus on those who are not currently visiting the dentist and those aged under one-year. Details of the programme and how the 13 areas were selected can be found at <https://www.england.nhs.uk/commissioning/primary-care/dental/starting-well/>.

The programme documentation and methods have also been made available to all NHS England local teams, meaning that commissioners can consider using the programme as a template for other areas.

An aligned initiative, Starting Well Core, also commenced during 2018. The programme is also designed to improve access to dental services for young children and promote a greater focus on prevention. To date it has operated in areas not hosting a Starting Well programme. Details of the programme can be found at: <https://www.england.nhs.uk/dentistry/smile4life/starting-well-core/>.

To assist distinction between the two programmes and following selection of areas, the programme being evaluated has been referred to as Starting Well 13.

1.1 Starting Well 13

The 13 areas targeted by the programme are:

- Blackburn with Darwen
- Blackpool
- Bolton
- Ealing
- Kingston upon Hull, City of
- Leicester
- Luton
- Middlesbrough
- Oldham
- Rochdale
- Salford
- Slough
- Wakefield



These are localities with high levels of deprivation and tooth decay, with an anticipated no change or worsening of disease levels based on data trends.

The Starting Well initiative has two modes of delivery:

Starting Well Preventive Practice (SWP)

Interventions are offered at an individual child and family level and at a whole practice level by implementing systems and processes to ensure a preventive focus. Practices are supported by the local health and social care system to deliver the following interventions:

- i. Designated practice prevention champion.
- ii. Prevention pathway.
- iii. Evidence based advice at an individual level.
- iv. Embedding prevention in the practice.

Advanced Starting Well Preventive Practice (ASWP)

This involves integration of the dental team with their local community and the wider healthcare system, linking in with the local authority oral health strategy. Advanced Starting Well Practices should engage with a range of partners to ensure key oral health messages are consistent and are embedded within existing public health advice. The practices should also work with partners to promote uptake of dental checks by the age of one-year and increase access for high risk groups. Practices will also deliver all the interventions required of a Starting Well Preventive Practice.

1.2 Contracts and monitoring

Contracting was via a standard contract variation to NHS General Dental Services contracts. The number of contracts that could be offered in any particular area was determined by the funding made available to local commissioners. Alongside delivery of the programme providers are required to submit information centrally describing their activities over and above the information submitted through standard FP17 returns.

Starting Well Preventive Practices are monitored on the following activities:

- identifying a designated practice prevention champion
- staff training and meetings on preventive practice and safeguarding
- implementation of a Delivering Better Oral Health audit and action plan
- improvement against the baseline Delivering Better Oral Health audit
- dental attendance by young children
- provision of preventive advice and interventions



- fluoride varnish applications in the under fives
- follow-up appointments for children referred from Starting Well practices for extractions under general anaesthetic or sedation

In addition to the monitoring required of a Starting Well Practice, Advanced Starting Well Practices are also monitored on the following:

- number of external settings engaged with to promote oral health
- types of oral health promotion activities provided
- number of dental attendances by children aged under the age of five from the selected high-risk group
- number of children that attend following referral by health or social care professionals

1.3 Pre-implementation phase

The central NHSE team arranged national programme board meetings on a frequent basis. These meetings involved a representative from each locality, usually local commissioners. Every area was required to develop a launch event with the purpose of introducing the programme to dental practices and stakeholders. Local commissioners, working with consultants in dental public health, the local dental network (LDN), local authority (LA) representatives and local child paediatric dental service providers developed action plans to achieve outcomes and objectives and support and co-ordinate activities locally.



2 Evaluation

2.1 Aims of the evaluation

The evaluation of Starting Well is a joint initiative between NHS England, NHS Business Services Authority, Public Health England and The University of Birmingham. The aim is to evaluate if the objectives of the programme were met and to inform the development of guidance for future commissioners of such programmes.

The evaluation seeks to assess the programme from the perspective of commissioners, local networks, dental teams and Public Health England dental public health consultants. It focuses on whether the interventions are operable and whether high level outcomes such as increased numbers of children from high needs communities attending dental practices are achieved.

The evaluation is looking at:

Structure:

- The commissioning processes used to recruit and contract with practices joining the initiative;
- The number of participating practices and pattern of provision (SWP/ASWP)
- The contract models employed between NHSE and the dental teams and the costs and how these differ for SWP and ASWP;
- Details of the local networks, including LDNs, LAs and early years leads;
- Local oral health strategies and other initiatives relevant to child oral health in the 13 areas.

Process:

- Practice development (identification of prevention champion, team development, audits);
- Local partnership working.

Analysis of outcomes:

This part of the evaluation seeks to provide a narrative on:

- How access rates for younger children changed after the initiative commenced, particularly for children who were not regularly visiting the dentist;
- The extent to which practices adopted a more preventative approach as a result of the initiative.

The timeframe for the evaluation and coverage of the initiative will not allow an assessment of whether the initiative has led to reduced levels of tooth decay among



the local population, but indicators of process towards achieving this aim will be used where practicable.

The evaluation will run from January 2018 to at least January 2020.

2.2 Evaluation design

The evaluation uses a mixture of qualitative and quantitative methodologies and, in line with the stated aims of the initiative, provides learning for commissioners. The evaluation plan is designed to be dynamic and will adapt to meet changing circumstances during the course of the programme.

Data are derived from FP17 data, specific Starting Well practice submissions (via a Web Tool), practice audits and patient questionnaires. Analysis of routine (FP17) and bespoke activity returns from providers will continue.

A series of interviews supplement the above data. Interviewees include local participants such as dental team members, local commissioners, chairs of LDNs and PHE consultants in dental public health plus national leads and national representatives from NHSE, PHE and the British Dental Association (BDA).

The aim of these interviews is to capture the experiences of those involved in the design, planning and implementation of the programme, specifically on:

- Structure of the programme
- Local context and suitability with local priorities
- Partnership working
- Expected ambitions and benefits
- Process to achieve the benefits
- Evaluation of success and achievement of outcomes
- Challenges to date, anticipated challenges and how to overcome them
- Key lessons

Qualitative study also includes observation of some local and national networking events through the development of the programme.



3 Initial findings from the evaluation

The initial findings of this evaluation are based on initial data from commissioners and practices, 28 semi-structured interviews conducted from November 2017 to February 2018 and observation at network events during 2018. The initial interviews were of:

- NHSE local commissioners
- PHE consultants in dental public health
- LDN chairs
- NHSE central team
- PHE and NHSE national team members
- BDA national representative

3.1 Establishing the programme

Programme Design

Participants considered that the programme is ambitious and has brought an opportunity for different parts of the health system to work together in a coordinated way. In particular it was felt that the initiative had allowed practices to devote more time to prevention and engage with local communities. Comments included:

'I think it's been incredibly rewarding to see people who don't normally work together working outside of their comfort zone to produce something as high quality as we can and really people have been very committed to doing that'.

'I think the Starting Well Programme is good because they do pay the practices to free up staff and I think that's a really good thing you know I think that's going to make it much more effective'.

'What I like about Starting Well is it's absolutely inspired because it looks into the practice and it also looks outside as well because without that link with the community our efforts as a dental profession will be less effective'.

Having a national framework was felt to be helpful, whilst allowing some flexibility for local adaptation. There were some conflicting views, however, when implementing a programme that is led nationally but funded and implemented locally:

'The national programme has been really helpful in terms of providing some a framework nationally and some national profile for us to then adopt and adapt locally so as I say we are not doing exactly what the national framework is but we are looking to deliver the same outcomes'.

'...how that balance between a national nationally led but locally implemented ...that dynamic is quite a difficult one to achieve'.

Generally, participants agreed that the programme was a good fit with local needs and priorities for oral health improvement and felt that the programme might be applicable to other areas of high need that had not been included in the selection of the 13 areas:

'There are a number of areas in (region) which have quite a lot of social deprivation and there are other areas in (region) who felt that they should have been chosen for the initiative rather than (SW locality) but according to the criteria for selection of the areas (SW locality) was actually the one which in particular showed the least improvement in child oral health over a given period which was one of the critical criteria'.

Some interviewees reported that there were already oral health improvement initiatives in place in their locality, understandable given that these were areas with poor oral health. The view of interviewees in general was that Starting Well would work alongside these initiatives rather than duplicate them, though care might be needed to ensure this:

'We already have a number of initiatives which were going on in (locality) relating to trying to improve the health of young children [...] and basically this just helps to kind of cement that and give us a little extra resource to play in the local dental practice and get them more involved'.

'I think there could have been (duplication) but because we've mapped out you know quite well I think what's already happening [...] so it's not that there's clashes it's just that we need to be clear about what's happening under each heading really'.

'There hasn't been other investment from the NHS tailored for individual patients apart from Starting Well, so it is welcomed'.

Some interviewees felt that caution was needed to emphasise how the requirements under Starting Well services were over and above those for base contracts, particularly regarding individual prevention interventions, though of the view that the additional emphasis on prevention was helpful overall.

Anticipated strengths and weaknesses

Interviewees were very positive about the programme at the point of initiation:

'I think it's a really solid programme I think it's well developed it's well designed and I think the supporting documentation has been hugely helpful and I think it's well done but you know these things are never easy.'

'It's got a lot of the things you need to make something work so you've got the national leadership you've got the programme board...I've really enjoyed working on it...we've had just about the right number of meetings that hasn't become a chore you know and you don't get to the point where you think we don't need to meet you know I think it's been managed really well it's funded we've managed in (SW locality) to identify funding for it and I know that's not the case everywhere.'

It was recognised that it might take some time for oral health improvement to be apparent following programme implementation and that in the short term some indicators, such as referrals for extractions might worsen:

'Part of the big benefits will be that if the prevention messages are embedded then hopefully in the future years the level of decay etc. will be reduced...but that's not something that happens that quickly...'

'Always difficult to say for preventative programmes...I think over a number of years we might expect there to be an improvement in the oral health of the children that have been involved in the programme...hopefully encouraging that both them and the rest of their family to take better care of their teeth to understand what they need to do and to reduce the incidence of dental decay later in life.'

'If particularly in (locality) if you get more children coming to the dentist GAs are almost certainly going to go up so and that's not necessarily a bad thing because actually it means that maybe these kids who weren't getting their dental care addressed will now get it addressed.'

It was also anticipated that the programme might facilitate local system development which would be of benefit beyond the Starting Well objectives. Some comments were:

'It is also about looking at how we commission services and trying to be innovative...'



'We leave a legacy which means that our local authorities and our dental practices are forever linked together and working together going forward that once the funding runs out its custom and practice for health visitors to talk to dental practices and it's custom and practice for Sure Start dentists to talk to our dental practices to have that kind of engagement going backwards and forwards'.

Anticipated challenges

From the outset, local commissioners felt that it might prove difficult in some areas to engage stakeholders and manage local expectations:

'I think it could be a challenge in terms of getting the other partners involved because again for similar issues this is another thing they've already got a lot of stuff they have to try and take on and so it will be a question of trying to sort of sell the benefits to them so they can see some positive outcomes for them always I think one of the risks is when you do things multi organisationally it's whether it's a priority for that other organisation...'

'I think the expectations of our local authority stakeholders making sure they are managed appropriately I think they have very high expectations that this will be a cure all and it will happen very quickly and I think they also have some I think what they ultimately want to see is dental clinicians going out into different settings providing dentistry which isn't going to happen at all'.

There were also concerns voiced over the ability of dental providers to adopt more preventive approaches and adapt to new ways of working and that investment in training and support would be vital:

'I'm not sure that the dental practices were ready for it I think there are still practices out there that are not following the advice in delivering better oral health and they're certainly not following the preventive treatments that are advised...'

'I think quite a lot will fall on the oral health champion the prevention champion that is within the model and I think my biggest worry probably would be turnover of staff...'

'I think there are challenges for the dental teams in terms of finding the time to do what they need to do there's challenges in terms of them actually having had the training and the knowledge to do what needs to be done.'



'I think you need to have the teams the whole dental team really trained up...'

Concerns were also expressed about how difficult it might prove to increase uptake of dental care, for example whether practices had the capacity to take whole families on as new patients. Guidance from the Chief Dental Officer was felt to have been helpful in reassuring dentists about potential contract delivery implications of seeing very young children. Concerns were also raised about long term sustainability of the programme, including funding arrangements.

The importance of working with the community was seen as essential in attracting patients and producing a cultural change; as well as having a good relationship with health visitors and the importance of having a champion. It was also mentioned that targeting those communities at risk will help to reach high risk groups:

'I think we certainly need to work with communities to stimulate demand and to get them to understand that dentistry and the delivery of dental care is not necessarily interventional it is about prevention and improving health and that's a massive massive job that we have to do'.

3.2 Programme Implementation in the 13 localities

Recruiting practices

By January 2019 there were 112 dental contracts providing Starting Well services (Table 1) of which 90 (80%) were providing ASWP services. Whilst the number of contracts does not necessarily denote the number of locations from which services are offered, the number of locations from which services were being provided was also 112. Over the first year of the programme there has been a progressive increase in participation, a small number who left the programme early and some who moved from SWP to ASWP status. The total value of contract variations to reimburse providers was £1.53M.

Recruitment of practices was still underway at the time of the interviews and local commissioners, PHE consultants in dental public Health and LDNs reported working closely in each area to implement the programme. At this early stage it was apparent that there were variations in how the programme was being implemented; for example in Manchester a community based initiative was being implemented alongside Starting Well interventions and commissioners in Middlesbrough implemented a modified version that they felt able to offer to all practices within the

available cost envelope. The planned duration of the programme also varies in each locality.

Table 1. Overview of Starting Well 13 Programme (January 2019)

Starting Well locality	Contracts* n	Physical locations** n	Contracts providing Advanced Starting Well services n	Contracts providing Preventative Starting Well services only n
Leicester	8	8	4	4
Luton	7	7	6	1
Middlesbrough	7	6	7	0
Bolton	12	13	12	0
Oldham	12	12	12	0
Rochdale	10	10	10	0
Salford	14	14	14	0
Blackburn with Darwen	8	8	0	8
Blackpool	4	4	0	4
Ealing	12	12	12	0
Slough	4	4	4	0
Wakefield	7	7	5	2
Hull	7	7	4	3
TOTAL	112	112	90	22
Percentage of contracts providing Advanced/Preventative Starting Well			80%	20%

* See narrative

** Some contracts relate to services provided at more than one location and some locations relate to more than one SW13 contract

Annual contract value (NACV variation, full year effect) for SW13 services 2018/19 was £1,525,190

Communication of the programme to dental practices was generally through the local dental network in the form of emails and / or letters, including newsletters, followed by launch events that were supported by Colgate. These were felt to have been successful processes, though resource intensive:

'It was really successful we got some fabulous feedback and the workshops went down particularly well and the case study from a local GDP went down well. I think non dental people found it really really helpful because I don't



think they appreciated really what was being done in practice and they found it a really useful opportunity to actually meet practices and dentists and people that they send patients to but have never seen’.

‘We were pleased in that it was a good turnout there was a good discussion at the meeting and I think it was helpful that we had some sort of nationally derived slides to work from so we were giving the same message as being given elsewhere’.

‘I think there was something about the events were incredibly difficult to develop and do locally on top of everything else and a huge amount of work locally [...] I think perhaps some of that stuff...could have been done nationally so the LDN Chairs presentations there could have been a national slide set there was a slide set which we had to do significant amount of work on to tweak because actually those...are the important bits in terms of selling the project...’

The Chief Dental Officer attended some events and there was usually representation from the NHSE central team, local authorities, commissioners, PHE, the local dental network chair and a range of local partners such as school nurses, health visitors, early intervention team, community dental services, Health Education England and Healthwatch. Some interviewees emphasised the importance of giving practices adequate notice of events to help them attend and some felt that this may have limited practice attendance.

The importance of having key information to communicate, particularly funding arrangements, was underlined by some:

‘...people kind of want to know how much they are going to get paid first... before they are going to go into something...’

‘Something that felt a little bit last minute you know I didn’t feel as though we were always able to give them all the information [...] we can’t give you all the detail and when we get the detail we will tell you about it, it would have been nice to have had a lot of that stuff in advance’.

Other challenges in communicating with the dental team were the internal communication within dental practices and communication reliant on individuals such as practice owners:

We engage with our contract holder or provider who runs the practice but often it’s the dentists, the hygienist, the therapist and the dental nurses who want to make sure they get the message and we are very much reliant on the

dental practice owner communicating that [...] sometimes it depends who opens the emails or you know communication within practices sometimes isn't very good...'

Whilst the recruitment process was still underway at the time of these interviews, there was a general optimism on the number of practices that would be recruited. Restricting the number of practices that could participate to match the funding available was a concern to some commissioners though commissioners in one area (Middlesbrough) offered a modified programme to all local dental practices. Commissioners reported following the national criteria for practice selection but there was some local variation. In addition to more routine procurement criteria such as capacity to deliver, base contract type and stability of delivery, some commissioners identified areas within their locality that were a priority for recruitment based on local need:

'We already knew that we wouldn't be able to roll it out to all of our practices...we gathered some intelligence around the deprivation indices, the current access rates for children...'

'We looked at the areas we looked at the needs assessment for (locality) and we looked at the areas that had the highest decay rates so a number of things ...when we had our event for starting well we invited all of the (locality) dentists but we did specify obviously that we are going to be focusing on 'x' areas'.

Commissioners felt that practices may have declined to participate if they were struggling to deliver against their base contract, or if they felt the level of remuneration was insufficient or the activities too onerous. It was also reported that corporate practices were more difficult to engage on the programme. One felt that practices in the priority areas were under-represented among those seeking to participate. In general, however, commissioners reported being very pleased with the level of uptake:

'It's a difficult time to engage practices and it's probably come at a time when practices are probably struggling to think about taking on new initiatives to do more for a little bit of money it's probably going to be a challenge...'

'I think if you're looking a needs based approach the problem is that we have to work with what we've got working with existing practices and where we'd like the initiative, we haven't got all those practices they are not the ones that have come forward...I think there is some genuine nervousness you know people who want to sign up to something but they think they can't deliver...'



'...because we've got really good relationships with our practices and because we work quite closely with our practices they've been involved in other prevention initiatives and there's such a high oral health need in the area the practices have been absolutely fantastic have been really receptive so I've not encountered any challenges particularly in this area'.

Developing local networks

At the commencement of the programme commissioners described engagement with partners, in particular local authority public health teams and establishing local networks. Where engagement was strong this was described as beneficial in affording a perspective into the needs of local communities:

'We've got very strong links with the local authorities the local councils and they attended our launch events but I think within the local councils we've got some fairly strong relationships as well with local communities and it's all facilitated with local councils.'

There was general agreement that a wide range of local partners had a role in supporting the programme to achieve its objectives, including local authorities, local dental networks, PHE local teams, health visitors, early intervention teams and community dental services. There was a particular role for these other agencies in helping providers understand the needs and perspectives of communities who were not regular dental attenders.

'...and I think in particular in (SW locality) we have...a partnership...with our local community organisation; they are going to do some focus group work for us for example so that we can best understand our population so lots and lots of partners.'

During 2018 the evaluation team attended local network meetings and observed the developing dialogue between practices and other parts of the local health system. The role of NHSE local commissioners and local authority public health teams was key in facilitating local links. It was also apparent that cooperation and mutual support between practices, where apparent, was beneficial, particularly as there was a wide variety in skill and experience among the practice prevention champions. The experience of providers and champions has been the subject of more recent interviews and will be reported in a subsequent publication.



Establishing core processes

An important element to monitoring the programme is the submission of additional data by practices to report the additional activity required. These additional data were:

- A monthly practice submission in which practices report operation of the main processes through which Starting Well 13 services are delivered;
- A quarterly preventive practice audit based on PHE guidance Delivering Better Oral Health, in which practices report a wide range of preventative practices, and
- Patient experience audits in which parents and guardians report their experience of individual visits by children to Starting Well practices.

From the outset those designing the programme were aware that the additional reporting requirement was a risk area and consequently investment was made in providing support for practices and commissioners.

'I think the practices will have a challenge around you know anything that's new and because it's so short you haven't got time to invent the change really ...so we're probably going to get lots of queries about how do you fill in this spreadsheet and do I need to do this can I do this and this kind of thing'.

Commissioners were, however, reassured that there was a substantial amount of data which could be gleaned from standard dental contract reporting which, as linked to base contract delivery, would be unaffected.

'Dental information is quite well served by the NHS BSA...who compiles all dental information centrally so we have a good database...much better than most other health services actually'.

Observation at meetings between local and national teams and at meetings of local networks emphasised that difficulties with data returns were often raised by providers and that there was considerable support needed at all levels to help providers overcome these. One perspective that was helpful during early implementation of the programme was that this was a pilot and therefore the data collection requirements were greater than might be the case were the programme to be rolled out. This theme will be developed further in the next report, drawing on more recent interviews.



Establishing core processes

An important element to monitoring the programme is the submission of additional data by practices to report the additional activity required. These additional data were:

- A monthly practice submission in which practices report operation of the main processes through which Starting Well 13 services are delivered;
- A quarterly preventive practice audit based on PHE guidance Delivering Better Oral Health, in which practices report a wide range of preventative practices, and
- Patient experience audits in which parents and guardians report their experience of individual visits by children to Starting Well practices.

From the outset those designing the programme were aware that the additional reporting requirement was a risk area and consequently investment was made in providing support for practices and commissioners.

'I think the practices will have a challenge around you know anything that's new and because it's so short you haven't got time to invent the change really ...so we're probably going to get lots of queries about how do you fill in this spreadsheet and do I need to do this can I do this and this kind of thing'.

Commissioners were, however, reassured that there was a substantial amount of data which could be gleaned from standard dental contract reporting which, as linked to base contract delivery, would be unaffected.

'Dental information is quite well served by the NHS BSA...who compiles all dental information centrally so we have a good database...much better than most other health services actually'.

Observation at meetings between local and national teams and at meetings of local networks emphasised that difficulties with data returns were often raised by providers and that there was considerable support needed at all levels to help providers overcome these. One perspective that was helpful during early implementation of the programme was that this was a pilot and therefore the data collection requirements were greater than might be the case were the programme to be rolled out. This theme will be developed further in the next report, drawing on more recent interviews.

Robustness of the programme

Some interviewees felt at the outset that the programme is robust, with strong aspects that can be applicable to other areas and other groups of age. Concerns were raised, however, over the affordability of the programme and associated difficulty in commissioning the services at scale. Some comments were:

'I think that the way the programme has been developed and the implementation toolkit it's almost exactly what NHS England commissioners have been looking for a scheme that has everything that you could possibly need to make it work. There's a business case in there there's data collection tools there's a communications plan there's launch event guidance there's an evaluation plan there's everything you possibly need it's easy to simply take it down change the name change the locality and then launch it somewhere else so it is very easy to replicate'.

'It's a good model the only thing that would stop us rolling it out further would be financial constraint...otherwise I think it would work just as well in other areas of (region)' [...] it's just a question of finding the money really'.

Others mentioned that its use in the future will largely depend on the evaluation which is key to identify the main aspects that have actually worked in the programme:

'It just depends doesn't it on the evaluation and how successful it is in terms of achieving its aims really and if it is successful [...] then I think it should be offered to everybody that would seem to me the right thing to do...'

3.3 Data indicators of progress

Practices have been recruited to the programme during the first half of 2018 and the data available at the time of this report is consequently limited. The progressive increase in the number of monthly returns is shown in figure 1.

By December 2018, 89 out of the 112 contracts (79%) had submitted at least one monthly Starting Well return (figure 2) with the number of returns per contract ranging from 0 to 10. There was some variability across areas with the proportion of contracts submitting these data varying from 42% to 100%. The reliability of submission was, however, less encouraging as far fewer contracts were submitting a return for every month. As an indicator of this only 41 contracts (37%) had submitted at least 2 returns for the period October to December 2018. The limited data available in this early stage of the programme has restricted analysis to the overall programme rather than at locality level.

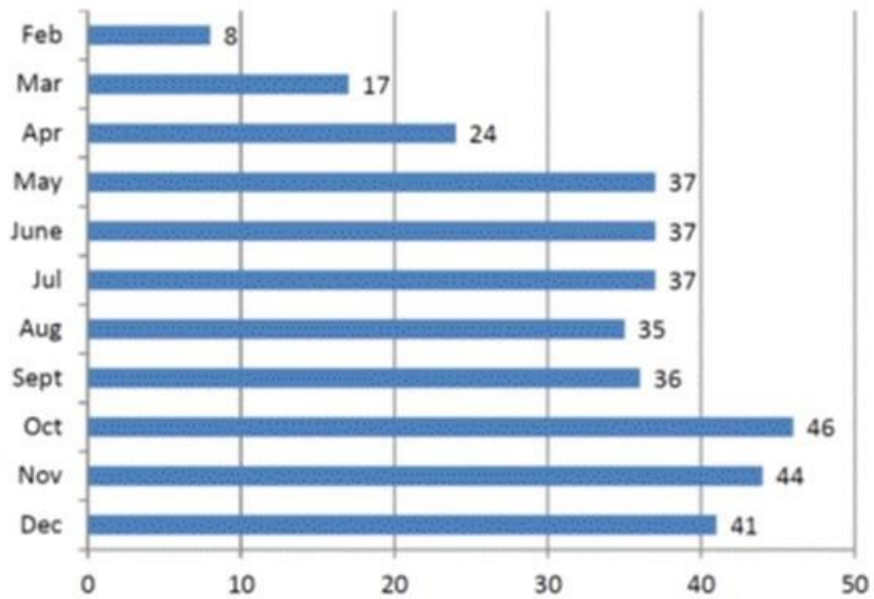


Figure 1. Submission (numbers) of SW13 monthly returns Feb-Dec 2018

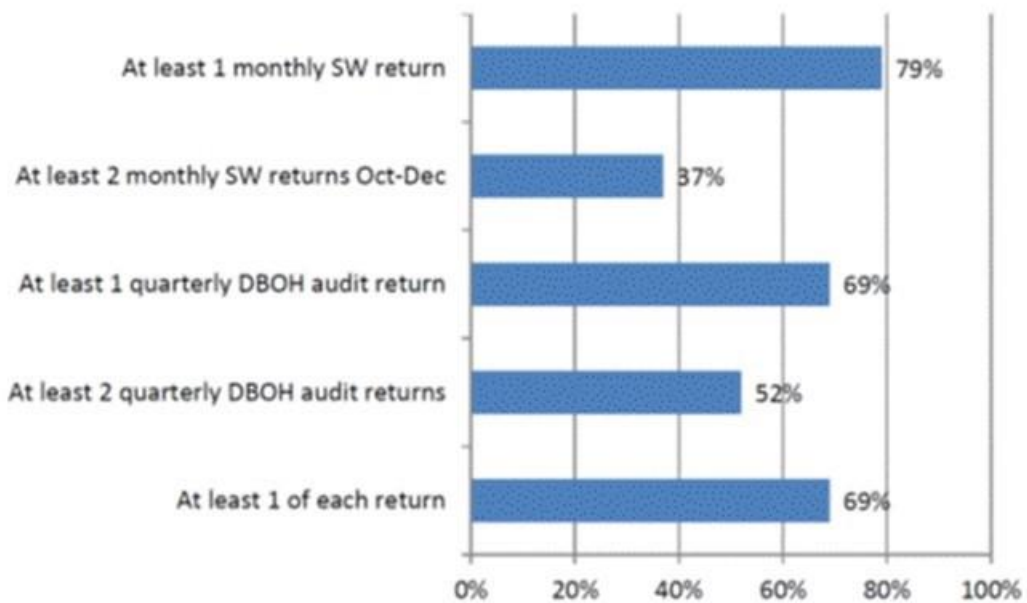


Figure 2. Proportion of contracts that submitted SW13 returns Feb-Dec 2018

A slightly smaller proportion of contracts (69%) had submitted a quarterly Delivering Better Oral Health audit return (range 0-9), though some practices had completed multiple returns to reflect each individual performer.

Regarding the content of monthly returns, all 89 (79%) contracts who reported data reported that they had a practice prevention champion in post and were actively taking on new child patients aged under 5 years (figure 3).



Figure 3. Actions reported through SW13 monthly returns Feb-Dec 2018

* numbers may be different to number of contracts successfully *submitting* an audit
Numbers are for at least one submission reporting the specific detail
Baseline denominator for percentages is all contracts, irrespective of whether they reported data; therefore 79% represents 100% of contracts submitting data

In general, therefore, most contracts that were submitting data were reporting a high degree of success in establishing the core aspects of Starting Well.

Regarding the Delivering Better Oral Health prevention audits, those submitted later in 2018 (July to December) showed a higher rate of successful application of a range of preventive elements (table 2) than those submitted earlier in the year (February to June). This was particularly evident for advice for 0-2 year olds on appropriate fluoride toothpaste use, breastfeeding, use of sugar-free medicines and prescription of sugar-free medicines and advice on and prescription of sugar-free medicines for 3



to 4 year olds. Whilst the data are limited and not all practices had submitted audits, the indications are that there is an improvement in preventative practice.

Table 2. Analysis of quarterly audit returns (Feb-Dec 2018)

	% of cases examined where advice recorded as given	
	Feb-June	Jul-Dec
Prevention advice and treatment given to all 0 to 2 year olds		
1. Parents should brush twice daily as soon as teeth erupt	83%	94%
2. Parents should brush last thing at night and on one other occasion	84%	89%
3. Use a smear of toothpaste containing at least 1000ppm fluoride	71%	90%
4. Breast feeding provides the best nutrition for babies	44%	64%
5. From the age of six months, babies should be introduced to drinking from a free-flow cup. Bottle feeding should be discouraged from 12 months old	64%	75%
6. Sugar should not be added to weaning foods	60%	75%
7. Frequency and amount of sugary foods and drinks should be reduced	79%	92%
8. Sugar free medicines are recommended	51%	72%
9. Tooth brushing instruction	87%	92%
10. Prescribe sugar free medicines	38%	62%
Prevention advice and treatment given to all 3 to 4 year olds		
1. Brush last thing at night and on one other occasion	88%	90%
2. Brushing should be carried out/supervised by an adult	79%	85%
3. Use a pea-sized amount of toothpaste containing more than 1000ppm fluoride	72%	87%
4. Spit do not rinse	71%	81%
5. Frequency and amount of sugary foods and drinks should be reduced	86%	91%
6. Sugar free medicines should be recommended	38%	65%
7. Application of fluoride varnish for all children twice a year	79%	87%
8. Tooth brushing instruction	80%	88%
9. Prescribe sugar free medicines	33%	58%
10. Use 1350-1500ppm fluoride toothpaste	76%	79%
11. Application of fluoride varnish for high risk children more than twice a year	75%	73%
12. Investigate diet and advise in line with the Eat well Guide	72%	73%

Percentages are number of cases reported achieved divided by number of cases examined. Figures may be affected by multiple submissions from some contracts



4 Next steps for the evaluation

As at April 2019 the second wave of interviews was almost complete. Interviewees included NHSE commissioners, practice prevention champions, contract holders and Health Education England. Analysis of further tranches of data from practices and of data available from routine NHS data returns (FP17) was underway.

5 Acknowledgements

The research team are very grateful to those who agreed to be interviewed for this evaluation and to NHS BSA for support with data collation, analysis and interpretation.



B. Final Report

NHS England
Starting Well 13 – A Smile4Life Initiative
Report of evaluation
February 2021

Prepared by

Candy Salomon-Ibarra¹

John Morris¹

Nick Barkworth²

Kate Jones³

Kirsty Hill¹

Vahid Ravaghi¹

1. University of Birmingham
2. NHS England
3. Public Health England



Contents

Executive summary.....	4
Key lessons.....	4
1 Background.....	6
1.1 Starting Well 13.....	6
1.2 Implementation and monitoring.....	7
2 Evaluation.....	7
3 Findings from the evaluation.....	8
3.1 Establishing the programme.....	8
Programme Design.....	8
3.2 Programme Implementation In the 13 localities.....	9
Extent of the programme.....	9
Developing local networks.....	10
Establishing core processes.....	12
Supporting initial delivery of the programme.....	12
Training and development of workforce.....	13
3.3 Programme delivery.....	13
Changes in preventive practice.....	14
Engaging with the local health system.....	23
Submission of data.....	24
Skills, roles and leadership.....	27
Commissioning.....	27
Perceived benefits.....	28
Generalisability of findings.....	29
4 Conclusions.....	30
5 Acknowledgements.....	30



List of tables

Table 1. Overview of SW13 programme.....	10
Table 2. Reported actions from monthly submissions (February 2018 to March 2020).....	17
Table 3. Prevention advice and treatment given to all 0 to 2 year olds (Source: quarterly returns)....	19
Table 4. Patients questionnaire (February 2018 to March 2020).	21
Table 5. Starting Well 13 returns: monthly submissions (February 2018 to March 2020).	25
Table 6. Submission of quarterly returns and patient questionnaires (February 2018 to March 2020).	26

List of figures

Figure 1. Number of FP17s with fluoride varnish, children 0 to 4 years old.....	15
Figure 2. Children aged 0 to 4 years accessing NHS dental care.....	23



Executive summary

The Starting Well programme has been successfully trialled in the 13 areas, in that practices were recruited, services were provided and there is evidence of changes in the patterns of activity that reflected the programme objectives.

Dental practices engaged enthusiastically with the programme and the role of practice-based prevention champions appeared key to supporting change.

Compared to routine NHS dental care, the programme was more complex to provide and required practice teams to acquire new skills and foster new relationships with local partners.

Dental practices at times reported difficulty in engaging with other aspects of the local health and social care system that might otherwise have played a role in supporting young children to access dental care and the dissemination of key oral health messages.

The services were more complex to monitor than routine NHS dental services; the additional activity data requirements proved burdensome to meet for dental practices and there were consequent information gaps.

Key lessons

Feasibility

1. There is potential in dental practices to undertake oral health improvement activities and there are likely to be passionate champions within dental teams.
2. There is untapped capacity among dental care professionals to take on leadership roles within practices for such activities.
3. With support and internal leadership, practices are able to adopt a more preventative focus.

Facilitators for delivery

4. Dental team members providing these services have training needs, including leading change in clinical practice.
5. Practice oral health improvement networks may help support dental teams and may facilitate peer-peer support.
6. Initiatives to ensure that children from higher risk backgrounds make appropriate use of dental services require support from a range of local agencies such as local authorities and CCGs. A system-wide plan for delivery with identified roles and responsibilities would support this.
7. Localities where the commitment to oral health is shared across the health and social care system seem to be those where these programmes have greater chance of successful implementation. This may require local system development before initiating such programmes, including clear messages about the programme and expectations of local agencies.
8. Providers may struggle with new ways of working and not have local system contacts. Facilitation and support may be needed to help providers develop contacts with local partners and help design appropriate interventions.
9. Commitment from the providers is key and commissioners need assurance that the required resources will be applied to deliver the programme.



Commissioning and monitoring

10. Commissioning of these programmes is not resource neutral in terms of commissioning capacity, requiring considerable facilitation and monitoring to ensure delivery.
11. The effort required in collecting and collating large volumes of additional data can be considerable and the added value might not justify this. Routinely collected (FP17-derived) data alongside engagement with practice leads and support from public health partners to assess change at population level may be more efficient.
12. Ensure that the providers are clear over which contract numbers should be used to report activity and that the contracts are identifiable in data.
13. Some measures, such as reported delivery of best preventive practice, can become rapidly saturated. Consider other ways to evidence provision of high quality preventive care.

DRAFT



1 Background

The NHS Starting Well programme (A Smile4Life Initiative) was announced in 2016, commenced in 2017 and ran as a programme to April 2020. The programme sought to reduce oral health inequalities and improve oral health in children under the age of five years. The programme was introduced in 13 areas identified as having higher levels of tooth decay and was available to all children, with a focus on those not visiting the dentist regularly and those aged under one.

Details of the programme and how the 13 areas were selected can be found at: <https://www.england.nhs.uk/commissioning/primary-care/dental/starting-well/>.

An aligned initiative, Starting Well Core, commenced during 2018. This programme is also designed to improve access to dental services for young children and promote a greater focus on prevention. Details of the programme can be found at: <https://www.england.nhs.uk/dentistry/smile4life/starting-well-core/>.

To assist distinction between the two programmes, the trial programme is referred to as Starting Well 13 (SW13).

1.1 Starting Well 13

The 13 areas targeted by the programme were:

- Blackburn with Darwen
- Blackpool
- Bolton
- Ealing
- Kingston upon Hull, City of
- Leicestershire
- Luton
- Middlesbrough
- Oldham
- Rochdale
- Salford
- Slough
- Wakefield

These were localities with high levels of deprivation and tooth decay, with an anticipated maintenance or worsening of disease levels based on data trends.



The initiative had two modes of delivery:

Starting Well Preventive Practice (SWP)

This aspect focussed on implementing systems and processes within practices to ensure a greater preventive focus. Features included each practice identifying a designated practice prevention champion to support change.

Advanced Starting Well Preventive Practice (ASWP)

This aspect involved all the features of SWP but, in addition, practices were to engage with a range of local partners to promote key oral health messages and the uptake of dental checks by children before their first birthday.

In some areas, the programme ran alongside, or was integrated with other local initiatives. In the latter case this varied the activities commissioned from providers. For example, in Greater Manchester commissioners continued to commission the Baby Teeth DO Matter and the Healthy Living Dentistry programmes and therefore amended the SW13 programme to complement this. The Greater Manchester programme was also working in the context of a community-based initiative working with local authorities to implement supervised tooth brushing and delivery of tooth brushing packs in early years settings, health visitor training and signposting to Baby Teeth DO Matter practices. In Middlesbrough commissioners implemented a modified version of SW13 that they felt able to offer to all practices within the available cost envelope and in Hull the programme was integrated with an initiative to refer children at risk of tooth decay for intensive prevention under a programme called In Practice Prevention. The duration of the programme also varied in each locality, for example Middlesbrough ended the programme in April 2019 and some other areas secured funding to continue and/or expand the programme beyond April 2020. In some localities there were also amendments to the mandatory services contracted volumes to support delivery.

1.2 Implementation and monitoring

Dental providers were recruited by local commissioners who held launch events to introduce the programme to dental practices and local partners.

Contracting was via a standard contract variation to NHS General Dental Services contracts. The number of contracts that could be offered in any particular area was determined by the funding made available to local commissioners.

Providers were required to submit information centrally describing their activities over and above the information submitted through standard FP17 returns. These reported process measures such as identification of a practice prevention champion, prevention audits and accepting new child patients. ASWP providers were, additionally, required to report on their engagement with local partners, any oral health promotion activities provided and the number of new child patients attending the practice.

2 Evaluation

The evaluation of Starting Well 13 was a joint initiative between NHS England, NHS Business Services Authority (NHSBSA), Public Health England (PHE) and The University of Birmingham. The aim was to evaluate if the objectives of the programme were met and to inform the development of guidance for future commissioners of such programmes.

The evaluation sought to assess the programme from the perspective of commissioners, local networks, dental teams and PHE dental public health consultants. It focused on whether the commissioned activities were operable and whether high level outcomes were achieved.

A series of interviews were undertaken at the outset of the programme between November 2017 and February 2018 and again between November 2018 and March 2019. Interviewees included local participants such as dental team members, local commissioners, chairs of local dental networks (LDN) and PHE consultants in dental public health plus national leads and national representatives from NHSE&J, PHE, British Dental Association (BDA) and Health Education England (HEE). The qualitative aspect of the study also included observation of some local and national networking events.

A final round of interviews was abandoned due to the COVID-19 pandemic but draft findings were circulated to commissioners and their advisors in December 2020 and two further interviews were carried out to clarify some points about local adaptation of the programme.

3 Findings from the evaluation

The findings of this evaluation are based on the interviews described above along with data provided by local commissioners and submitted by providers to The NHS Business Services Authority. The evaluation looked at the programme as a whole and did not seek to report on outcomes at the locality level.

3.1 Establishing the programme

Programme Design

Participants at the outset considered that the programme had brought an opportunity for different parts of the health system to work together in a coordinated way. In particular it was felt that the initiative had allowed practices to devote more time to prevention and engage with local communities.

'I think it's been incredibly rewarding to see people who don't normally work together working outside of their comfort zone to produce something as high quality as we can and really people have been very committed to doing that'. (NHS Central team)

'I think the Starting Well Programme is good because they do pay the practices to free up staff and I think that's a really good thing you know I think that's going to make it much more effective'. (BDA)

'What I like about Starting Well is it's absolutely inspired because it looks into the practice and it also looks outside as well because without that link with the community our efforts as a dental profession will be less effective'. (PHE Consultant in Dental Public Health)

Having a national framework was felt to be helpful, whilst allowing some flexibility for local adaptation. There were some conflicting views, however, when implementing a programme that was led nationally but funded and implemented locally:

'The national programme has been really helpful in terms of providing a framework nationally and some national profile for us to then adopt and adapt locally so as I say we are not doing exactly what the national framework is but we are looking to deliver the same outcomes'. (Local Commissioner)

'...how that balance between a nationally led but locally implemented ... that dynamic is quite a difficult one to achieve'. (Local Commissioner)

Some areas already had oral health improvement initiatives; the view of interviewees in general was that Starting Well would work alongside these initiatives rather than duplicate them, though care might be needed to ensure this:

'We already have a number of initiatives which were going on in ["SW locality"] relating to trying to improve the health of young children... and basically this just helps to kind of cement that and give us a little extra resource to play in the local dental practice and get them more involved'. (LDN Chair)

'I think there could have been [duplication] but because we've mapped out you know quite well I think what's already happening... so it's not that there's clashes it's just that we need to be clear about what's happening under each heading really'. (PHE Consultant In Dental Public Health)

'There hasn't been other investment from the NHS tailored for individual patients apart from Starting Well, so it is welcomed'. (Local Commissioner)

Some interviewees felt that caution was needed to emphasise how the programme requirements differed from those for base contracts, particularly regarding individual prevention interventions. It was also recognised at the outset that it might take some time for oral health improvement to be apparent:

'Part of the big benefits will be that if the prevention messages are embedded then hopefully in the future years the level of decay etc. will be reduced... but that's not something that happens that quickly...'. (Local Commissioner)

'Always difficult to say for preventative programmes... I think over a number of years we might expect there to be an improvement in the oral health of the children that have been involved in the programme... hopefully encouraging that both them and the rest of their family to take better care of their teeth to understand what they need to do and to reduce the incidence of dental decay later in life'. (NHS Central team)

It was also felt beneficial that the programme might facilitate local system development which would be of benefit beyond the programme objectives.

3.2 Programme implementation in the 13 localities

Extent of the programme

By January 2019 there were 112 dental contracts providing Starting Well services of which 90 (80%) were providing ASWP services (see Table 1). Whilst the number of contracts does not necessarily denote the number of locations from which services are offered, the number of locations from which services were being provided was also 112. Pre-existing experience of working on similar programmes was reported by some to have made it easier to recruit practices. Clarity over the reward mechanism and required activities was essential and reported barriers to participation included negative experience with previous programmes, concerns about delivery, staff capacity, internal practice issues and perceived insufficient funding. In some areas this meant that it proved difficult to recruit practices from priority areas.

Over the first year of the programme there was a progressive increase in participation, a small number who left the programme early and some who moved from SWP to ASWP status. The total value of contract variations (full year effect) to reimburse providers was £1.53M in 2018/19. Some practices left the programme and others joined thereafter.

The clinical leadership of PHE Consultants in Dental Public Health and LDN chairs was felt useful in helping to engage dental practices:

'I think probably the clinical leadership of the process through the LDN and Public Health England... I think it's been good to have clinical people front and centre of that rather than commissioners going out, the practices would tend to see the relationship with us as being contractual [...] I think they're really crucial [PHE Consultants in Dental Public Health] in terms of getting this to fly because they do they keep coming back to explaining to people why we need to do this and I think they haven't got any contractual axe to grind so you know they're really able to explain to people why this is big picture stuff...' (Local Commissioner)

Table 1. Overview of SW13 programme.

Starting Well locality	Contracts* n	Physical locations* n	Contracts providing Advanced Starting Well services n	Contracts providing Preventative Starting Well services only n
Leicester	8	8	4	4
Luton	7	7	6	1
Middlesbrough	7	6	7	0
Bolton	12	13	12	0
Oldham	12	12	12	0
Rochdale	10	10	10	0
Salford	14	14	14	0
Blackburn with Darwen	8	8	7	1
Blackpool	4	4	4	0
Ealing	12	12	12	0
Slough	4	4	4	0
Wakefield	7	7	5	2
Kingston upon Hull	7	7	4	3
TOTAL	112	112	101	11
Percentage of contracts providing Advanced/Preventative Starting Well			90%	10%

* Some contracts relate to services provided at more than one location and some locations relate to more than one SW13 contract.

Developing local networks

At the commencement of the programme commissioners described engagement with partners, in particular local authority public health teams and establishing local networks. Where engagement was strong this was described as beneficial in affording a perspective into the needs of local communities:



'We've got very strong links with the local authorities the local councils, they attended our launch events but I think within the local councils we've got some fairly strong relationships as well with local communities and it's all facilitated with local councils.' (PHE Consultant in Dental Public Health)

There was general agreement that a wide range of local partners had a role in supporting the programme to achieve its objectives, including local authorities, local dental networks, PHE local teams, health visitors, early intervention teams and community dental services. There was a particular role for these other agencies in helping providers understand the needs and perspectives of communities who were not regular dental attenders.

'...I think in particular in [SW locality] we have... a partnership... with our local community organisation; they are going to do some focus group work for us for example so that we can best understand our population so lots and lots of partners.' (Local Commissioner)

'...I think initiatives like this will help to maintain that momentum so it's more about us learning from each other and working with each other.' (Local Commissioner).

Reported examples of local support included providing venues, hosting meetings, making links with local settings and identifying high risk groups. Some practices mentioned that they had received support in the form of advertising, banners, leaflets and support with open days and events in schools. Not all areas were so confident working with local partners however, both in terms of engagement and expectation management:

'I think it could be a challenge in terms of getting the other partners involved because they've already got a lot of stuff they have to try and take on and so it will be a question of trying to sort of sell the benefits to them so they can see some positive outcomes for them, always I think one of the risks is when you do things multi organisationally it's whether it's a priority for that other organisation...' (Local Commissioner).

'I think the expectations of our local authority stakeholders making sure they are managed appropriately I think they have very high expectations that this will be a cure all and it will happen very quickly and I think they also have some I think what they ultimately want to see is dental clinicians going out into different settings providing dentistry which isn't going to happen at all.' (Local Commissioner).

During 2018 the evaluation team attended local network meetings and observed the developing dialogue between practices and other parts of the local health system. The role of NHSE&I local commissioners and local authority public health teams was key in facilitating local links. It was also apparent that cooperation and mutual support between practices, where apparent, was beneficial, particularly as there was a wide variety in experience among the practice prevention champions.

'It's helpful going to these meetings and discussing with other centres and discussing with NHS England things they want to bring in or things that aren't working so that's been quite helpful.' (PPC)

'I think it's been good I've enjoyed it I have enjoyed going to the meetings as well because you get to find out what other practices are up to.' (PPC)

Establishing core processes

An important element to monitoring the programme is the submission of additional data by practices to report the additional activity required. These additional data were a monthly practice submission, a preventive practice audit to be submitted every quarter and patient experience audits. From the outset those designing the programme were aware that the additional reporting requirement was a risk area and investment was made in providing support for practices and commissioners, though the degree of additional investment in staff to support the programme was variable.

Observation at meetings between local and national teams and at meetings of local networks emphasised that difficulties with data returns were often raised by providers and that there was considerable support needed at all levels to help providers overcome these. One perspective that was helpful during early implementation of the programme was that this was a pilot and therefore the data collection requirements were greater than might be the case were the programme to be rolled out. In Greater Manchester, since the SW13 programme was integrated with an already established programme (Baby Teeth DO Matter) it was decided to waive the requirements for returns that applied in other localities.

Supporting initial delivery of the programme

The national nature of the programme was reported as helpful by commissioners, both on terms of pre-produced guidance and materials and the perceived increased legitimacy of the programme that reinforced local action.

'...although it was a local implementation you had a national message behind it so in some ways it's easier to take that national message and then try to get that to be adopted locally [...] I think if you tried as a local office... would really struggle to do all of those individual elements on your own...' (Local Commissioner)

Supporting mechanisms for practices included meetings, training and physical resources such as leaflets, posters and toothbrush and paste packs. These were appreciated by providers, though logistics were problematic at times.

'We got all the leaflets... the tooth brushing packs and everything else [...] some of the material that the scheme's provided us with the leaflets and things like that has facilitated it because it saved us having to try to produce of all that ourselves which would've been a lot more difficult...' (Dental provider)

'...they were quite clear what they wanted us to do but they needed to give us more material and more information sooner... we were still waiting so we were having to buy our own tooth brushing packs and because we didn't want to wait we wanted to get on with it...' (Practice manager)

Some practices mentioned that having an agreed action plan was helpful in giving structure to delivery and monitoring progress:

'I think the main facilitation factor is really... when we started the process we were given an action plan and part of that action plan said okay you need to do this at these particular times and part of signing to this agreement was that we will do these things so I think there's been some degree of control through the area team...' (Dental provider)



In one locality a project manager was appointed to oversee and support the Initiative and other interviewees suggested that local clinical leadership and facilitation would have been helpful.

Training and development of workforce

Learning modules developed by HEE were available shortly after the programme commenced and were reported to have been very useful:

'We got given some Starting Well modules to do... the dentists and the nurses in the practice and reception and everybody had to read through them answer the questions on them so they all had a good read about actually what it was about so the training in terms of Starting Well is you know it was quite good.' (Practice Prevention Champion)

HEE also provided more local support in some areas and some practices received locally designed and delivered training and funding for training. Some providers identified a need for reinforcement training following the initial events.

'We have training by them [HEE] so a massive amount of training for all our practices not just the Starting Well... they've been absolutely brilliant they attend these meetings as well and they support whatever issues we may have so if we said we need a bit more training on this they will actually pick up that issue first so they've been very supportive.' (Local Commissioner)

The leadership role of practice prevention champions was identified as an area where development support was needed:

'I think leadership is very important this is led by a champion within the practice and it's about empowering them to be able to sort of plan and bring the whole team on board... ongoing training in leadership I think is a key thing and that's something that Health Education England and particularly on our patch we're very interested in exploring looking at how all members of the dental team can be leaders...' (HfE)

3.3 Programme delivery

Dental teams engaged enthusiastically with the programme and practice prevention champions took a lead role in coordinating activities.

'I think more positively from the practices point of view probably for the first time they were very engaged with the commissioners in a proper commissioner wider sense [...] that was the best part of the Starting Well actually for me getting to know those practices and you know being able to sort of encourage them to be thinking about the public health role...' (Local Commissioner)

'I mean it feels quite good that we've got the number of practices that we have and we've got a mix of practices and there is the engagement from the practices some of the providers and the champions you know there's the links with the local authority [...] I think it's positive we haven't had any like I say nobody drop out no real issues with the contract variation and the funding...' (Local Commissioner)

Changes In preventive practice

The increase in preventive focus was welcomed:

'I think this programme has really kind of emphasised the importance of prevention and I think it's something that we're all at least in our practice more involved [...] I think previously prevention was really between the dentist and the patient but now it's a little bit more wider than that...' (Dental provider)

'...some of the reception staff don't have dental background they're not nurses so now because we have the regular meetings we talk about Starting Well and about the messages that they can deliver on the front desk they've been really helpful it helps for the front desk.' (PPC and Dental provider)

The different incentives for contract holders and dental performers was reported to be a challenge to increasing prevention and the lack of incentive in the mandatory services contract was noted:

'... there is funding from the NHS for the practice but there's no funding formal as such, so for the practice principal it makes sense but for the practice associates there's no extra funding to be part of Starting Well...' (Dental provider)

'In our current contract there's no additional payments for to do prevention so for example if you do an examination on a child then you would get paid the same whether you examine a child didn't really give any instructions and you sent them on their way [...] so there's no incentives with the current contract to emphasise prevention to your patients.' (Dental provider)

Among those submitting monthly reports 92% (79% of all providers) reported completion of a prevention audit and action plan and 99% (84-85%) a safeguarding flowchart, identifying a practice prevention champion and establishing monthly practice meetings (see Table 2). Whilst reducing numbers of returns in latter stages of the programme make it hard to assess, those that were submitted indicated a reducing number of meetings. A similarly high proportion of providers reported that the practice was breastfeeding friendly and had oral health displays (see Table 2). These indicators saturated early in the programme and tended to decline thereafter. Some dentists reported difficulty in providing advice on breastfeeding as they felt some parents might feel uncomfortable over the matter being discussed. Other dentists reported that it can be difficult to provide advice to parents due to cultural reasons.

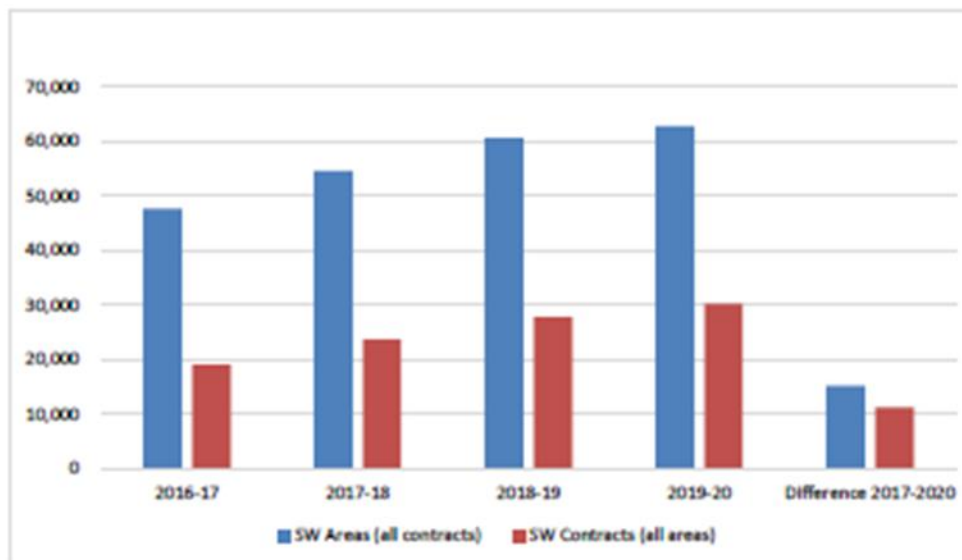
The audit returns themselves indicated generally high levels of compliance at the outset and consequently there was little apparent scope for improvement (Tables 3a & 3b); exceptions were promotion of breast feeding and avoiding adding sugar to weaning foods for 0-2 year olds and advice on/ prescribing of sugar free medicines where substantial improvements were reported during the life of the programme. Some dental teams reported that they rarely prescribe medication for child patients and this might have affected the reporting rather than practices not usually prescribing sugar free medicines.

The 4,910 parent/ guardian questionnaires (see Table 4) that were submitted similarly showed a high level of preventive behaviour was reported from the outset and this changed little during the course of the programme, though there was an apparent down-turn in the last 3 months. Posters were mentioned by 72% of respondents and 63% mentioned leaflets; 68% recalled advice on tooth brushing, 71% dietary advice and 61% use of fluoride toothpaste. Just over half (54%) recalled receiving advice on how often to visit the dentist. Nearly all respondents reported that they felt the dentist had listened carefully to their views, the dentist spoke to them and the child in way that they

could understand, they had enough time to discuss the child's oral health, they were treated with respect and friendliness and that they had confidence with tooth brushing, diet, attending future check-ups and that their child's teeth would be healthy in the future. The 1,099 questionnaires that related to children before their first birthday showed a very similar pattern, though with a slightly greater proportion of respondents (63%) recalling advice on frequency of dental visits.

Reported fluoride varnish application rates were slightly higher at baseline (2016/17) for (subsequent) SW13 contracts (32.0%) compared to all contracts in the SW13 areas (31.3%). Rates increased each year thereafter for all contracts (Figure 1), though the increase was greater for SW13 contracts in each of the following 3 years (10.2% SW13; 8.3% all contracts). It is not known whether the increase reflected true changes in practice or changes in reporting only and whether the increase was for children from the locally determined priority populations.

Figure 1. Number of FP17s with fluoride varnish, children 0 to 4 years old.



The increase in the actual number of FP17s relating to children aged 0-4 was greater, but may reflect other factors. There were 19,049 reports indicating fluoride varnish application from SW13 contracts in 2016/17 rising to 30,196 in 2019/20, a 58.5% increase compared with a 31.9% increase for all contracts in SW13 localities.

Achieving behavioural change was reported to be challenging by some interviewees:

'... if the kids have problems with the baby teeth they're [Parents] not really concerned about that because they know they're going change the teeth so they think it's not that important [...] it's quite difficult to get interaction with the parents you could see that you would speak about diet and they would get quite defensive...' (Dental provider)

'... Is educating parents as well as educating children and "Starting Well locality" is just one of those areas where not all cultures brush their teeth twice a day and that's not going to change



just because they live here so that is one of the main barriers that we have in this particular town.' (PPC)

There was some variation between localities in the programme; while the rates of fluoride varnish increased in all areas in some it was little different to, or lower than, the change in the locality as a whole and in two the increase in rate was around 20%, in one case being over double the increase seen across all local contracts. Again it must be emphasised that the nature of the contractual incentives varied across localities and this may in part explain the variation.

It is also worth emphasising that in some localities an emphasis in practice-based prevention was included in previously established local programmes and complemented by up-stream interventions such as school-based supervised tooth brushing with fluoride toothpaste.

DRAFT



Table 2. Reported actions from monthly submissions (February 2018 to March 2020).

Starting Well locality	Contracts reporting completing a baseline DBOH audit and action plan		Contracts reporting having a flow chart for managing safeguarding concerns		Contracts reporting having practice prevention champion in post (at least once)		Contracts reporting monthly dental team meetings (at least once)	
	n	%	n	%	n	%	n	%
Leicester	8	100%	8	100%	8	100%	8	100%
Luton	7	100%	7	100%	7	100%	7	100%
Middlesbrough	5	71%	7	100%	7	100%	7	100%
Bolton	8	67%	9	75%	9	75%	9	75%
Oldham	6	50%	7	58%	6	50%	7	58%
Rochdale	5	50%	7	70%	7	70%	6	60%
Salford	9	64%	9	64%	8	57%	9	64%
Blackburn with Darwen	8	100%	8	100%	8	100%	8	100%
Blackpool	3	75%	3	75%	4	100%	4	100%
Ealing	11	92%	12	100%	12	100%	12	100%
Slough	4	100%	4	100%	4	100%	4	100%
Wakefield	7	100%	7	100%	7	100%	7	100%
Kingston upon Hull	7	100%	7	100%	7	100%	7	100%
% from total of practices that submitted information	88	92%	95	99%	94	99%	95	99%
% from all SW13 practices	88	79%	95	85%	94	84%	95	85%

Numbers are for at least one submission reporting the specific detail.



Table 2. Continuation.

Starting Well locality	Contracts reporting actively taking on new patients (under 5 yrs)		Contracts reporting oral health improvement display		Contracts reporting practice is breastfeeding friendly	
	n	%	n	%	n	%
Leicester	8	100%	8	100%	8	100%
Luton	7	100%	7	100%	7	100%
Middlesbrough	7	100%	7	100%	7	100%
Bolton	9	75%	7	58%	9	75%
Oldham	7	58%	6	50%	6	50%
Rochdale	7	70%	5	50%	6	60%
Salford	9	64%	6	43%	8	57%
Blackburn with Darwen	8	100%	8	100%	8	100%
Blackpool	4	100%	4	100%	4	100%
Ealing	12	100%	12	100%	10	83%
Slough	4	100%	4	100%	4	100%
Wakefield	7	100%	7	100%	7	100%
Kingston upon Hull	7	100%	7	100%	7	100%
% from total of practices that submitted information	96	100%	88	92%	91	95%
% from all SW13 practices	96	86%	88	79%	91	81%

Numbers are for at least one submission reporting the specific detail.



Table 3a. Prevention advice and treatment given to all 0 to 2 year olds (Source: quarterly returns).

	% of cases examined where advice recorded as given				
	Feb-June 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Mar 2020
1. Parents should brush twice daily as soon as teeth erupt	83%	95%	95%	98%	86%
2. Parents should brush last thing at night and on one other occasion	84%	89%	94%	97%	85%
3. Use a smear of toothpaste containing at least 1000ppm fluoride	70%	90%	89%	95%	81%
4. Breast feeding provides the best nutrition for babies	44%	64%	70%	75%	65%
5. From the age of six months, babies should be introduced to drinking from a free-flow cup. Bottle feeding should be discouraged from 12 months old	64%	75%	80%	82%	74%
6. Sugar should not be added to weaning foods	59%	74%	76%	87%	75%
7. Frequency and amount of sugary foods and drinks should be reduced	79%	91%	94%	96%	84%
8. Sugar free medicines are recommended	51%	72%	74%	83%	74%
9. Tooth brushing instruction	82%	92%	92%	96%	85%
10. Prescribe sugar free medicines	39%	63%	64%	80%	72%

Percentages are number of cases reported achieved divided by number of cases examined. Figures may be affected by multiple submissions from some contracts.



Table 3b. Prevention advice and treatment given to all 3 to 4 year olds (Source: quarterly returns).

	% of cases examined where advice recorded as given				
	Feb-June 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Mar 2020
1. Brush last thing at night and on one other occasion	89%	90%	92%	94%	83%
2. Brushing should be carried out/supervised by an adult	78%	84%	87%	92%	75%
3. Use a pea-sized amount of toothpaste containing more than 1000ppm fluoride	70%	87%	88%	90%	81%
4. Spit do not rinse	69%	81%	87%	90%	83%
5. Frequency and amount of sugary foods and drinks should be reduced	86%	90%	88%	93%	82%
6. Sugar free medicines should be recommended	38%	65%	69%	79%	63%
7. Application of fluoride varnish for all children twice a year	79%	88%	85%	87%	81%
8. Tooth brushing instruction	81%	89%	83%	90%	81%
9. Prescribe sugar free medicines	35%	61%	61%	65%	63%
10. Use 1350-1500ppm fluoride toothpaste	74%	77%	80%	82%	71%
11. Application of fluoride varnish for high risk children more than twice a year	77%	75%	75%	74%	63%
12. Investigate diet and advise in line with the Eat well Guide	73%	75%	75%	78%	74%

Percentages are number of cases reported achieved divided by number of cases examined. Figures may be affected by multiple submissions from some contracts.

Table 4. Patients questionnaire (February 2018 to March 2020).

	2018		2019		2020
	Feb-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Mar
n questionnaires	426	1,461	1,434	1,298	291
First dental visit	23%	30%	26%	27%	28%
Percentage of respondents					
Information seen in the practice about how to take care of the child's teeth					
Posters	73%	71%	74%	70%	71%
Leaflets	63%	65%	65%	62%	54%
Messages on TV screen	15%	23%	24%	15%	18%
Other information	26%	30%	23%	24%	25%
No information	5%	6%	6%	8%	9%
Advice given about how to keep the child's teeth healthy					
Tooth brushing	88%	89%	87%	88%	82%
Fluoride toothpaste	60%	63%	61%	61%	56%
What the child eats and drinks	71%	72%	69%	70%	74%
How often to visit the dentist	50%	56%	50%	57%	64%
No advice	4%	2%	4%	3%	7%
<i>Agreement/Disagreement with the following statements:</i>					
The dentist listened carefully to what I had to say about the child's teeth					
Strongly agree / Agree	96%	98%	96%	97%	94%
The dentist spoke to the child and I in a way that I could understand					
Strongly agree / Agree	95%	98%	96%	96%	90%
I had enough time to discuss the child's oral health					
Strongly agree / Agree	95%	98%	95%	96%	92%
The child and I were approached with respect and friendliness.					
Strongly agree / Agree	97%	98%	97%	96%	93%
I feel confident that I can help improve the child's tooth brushing.					
Strongly agree / Agree	96%	97%	96%	95%	89%
I feel confident that I can help improve the child's eating habits.					
Strongly agree / Agree	92%	96%	93%	93%	86%
I feel confident that I will bring the child for a dental check-up in the future.					
Strongly agree / Agree	97%	98%	96%	97%	91%
I feel confident that the child's teeth will be healthy in the future.					
Strongly agree / Agree	94%	97%	95%	95%	88%

Increasing access for young children

Some providers interviewed were enthusiastic over the opportunity to promote dental attendance among very young children:

'It seems to be working really well and it's definitely a job that was needed, to go and spread the word even if they're not your patients at the practice, it's going out saying make sure you get a dentist make sure you register babies faster earlier...' (PPC)

'I thought it was a good opportunity to try because I don't see new patients for the past few years it was a good opportunity to build up a number of new patients of that age group and try to help the community too because it is a big case really in our area with the attendance of that age group...' (Dental provider)

All providers who submitted information reported that they were taking on new child patients (see Table 2). At the start of the initiative there were concerns expressed about how difficult it might prove to increase uptake of dental care, for example whether practices had the capacity to take whole families on as new patients. Guidance from the Chief Dental Officer was felt to have been helpful in reassuring dentists about potential contract delivery implications of seeing very young children.

However, a number of practices reported in the interviews to have enough capacity to take new patients. In some areas, practices were given additional funding through their mandatory services contract to be able to see additional children. Some dental providers mentioned, however, that the limited UDA capacity might be a challenge, as exemplified by this comment:

'We kind of are struggling a little bit in maintaining the monthly UDA contract so we're actually overrunning contract a little bit so that that's the only challenge that we are facing is how to keep taking on new patients but still work within our NHS pot [...] I'll probably overshoot my UDAs because of having to take new patients...' (Dental provider)

The initiative was also reported to have focussed teams on the importance of early attendance:

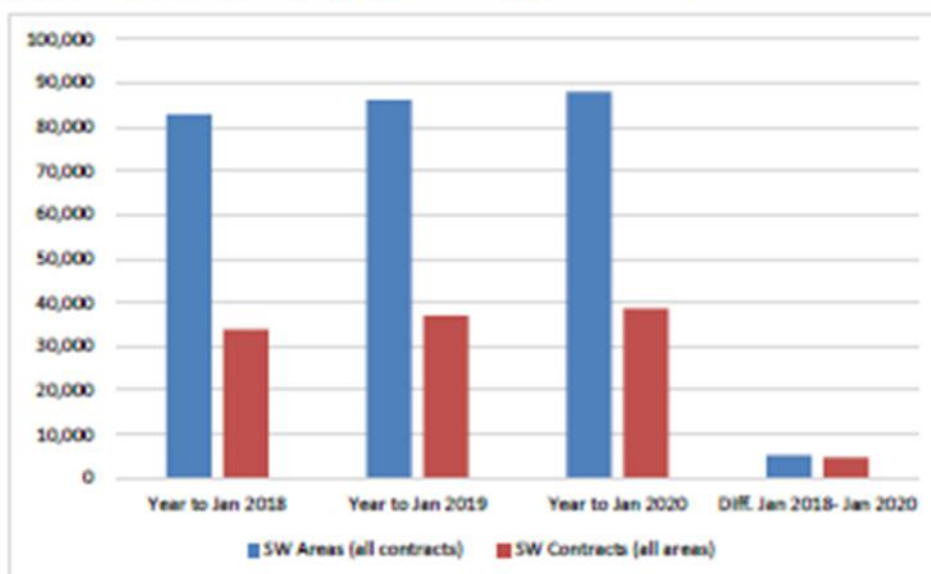
'We didn't encourage babies to come to the practice, Starting Well I think has opened up more educating parents and educating new mums [...] now it's new born babies, educating the mums so that's preventative that's I would say how we've changed as a practice [...] we are encouraging reception if they see any new born babies to speak to parents.' (PCC)

Some reported not seeing new patients referred to the practice in the expected volumes:

'I expected a bit more from the referrals I expected the children's centres and health visitors to have been able to bring more children...' (PPC)

The number of children being seen under the SW13 contracts collectively increased by 14.2% over the two years of the programme (Figure 2) compared to an increase of 6.2% in the SW13 localities and an increase of 3.7% across England. Whilst the numbers for SW13 contracts collectively increased in all localities there was wide variation in the figures for areas from 0.9% to 40.1%.

Figure 2. Children aged 0 to 4 years accessing NHS dental care.



As with the fluoride varnish data, these are not necessarily children from the locally-determined priority populations.

Engaging with the local health system

Many providers reported holding at least one practice open day (30% of all contracts) and engaging in local events at least once (37%). There were examples of innovative approaches to keeping elements of the system in touch such as using social networks. While some areas were already part of mature local networks, others were new to this way of working. The importance of local system support and facilitation was emphasised by many:

'I think that we've got really good healthcare partners who have been fabulous at working with us... they have been you know in the bedding system that we've adopted so that we can really go to the hard to reach groups in the demographics that were highlighted as the ones we really needed to target I think if there hadn't been... we would have really struggled...' (Local Commissioner)

Similarly, the reported ease with which practices were able to engage with other parts of the local health system was variable.

'Having access to more schools, more interaction with the school it would be great to have a bit more communication, but you know like I said the school has not been so responsive...' (PPC/Dental provider)

'It would be really useful if as a health community we could work together... I know the pharmacists are meant to be trained now to give certain dental advice and when I have been into my local pharmacy, they didn't know about it [...] if we could have a space in the social

centres, the childcare centres to help so that if we did a clinic up there or PPC could set a base up there... that would've been really good...' (Dental provider)

'We've allocated some spaces specifically for patients that have been referred through the scheme [...] whereas before we wouldn't have necessarily been taking on all the time but we've made allocations for a whole family if that's what's necessary [...] I expected a bit more from the referrals I expected the children's centres and health visitors to have been able to bring more children... I don't know if it's quite steady like there's always people of that age being accepted and being offered appointments, but I did expect it to be a bit more...' (PPC)

Practices reported using advertising and providing information on how to contact the practice through leaflets and posters in local settings such as GP surgeries, pharmacies, nurseries and schools. Experience with the open days was mixed. Some practices received support from the local council, e.g. in the form of advertising and/or banners.

'Our practice has been quite successful with them but I know that a lot of the other practices have really struggled to get people to attend the opening days they are quite hard to get to get kids on board cause a lot of parents they haven't got the time to come or and things like that.' (PPC)

'We've had three open days and they were really good because I know a few of the other practices have only had one or two people turn up... we had about 30 turn up [...] so they've been really successful here...' (PPC and Project manager)

Submission of data

The submission of monthly returns detailing the commissioned activities was very haphazard. By the end of the programme 16 (14%) practices had never submitted a monthly return; in nine areas all practices submitted at least one return (see Table 5). A similar picture was apparent for the quarterly Delivering Better Oral Health audits but there was an ongoing number of patient surveys submitted (see Table 6). Many providers reported the requirements as burdensome:

'...It takes a lot of time lot of energy and I think it's much better to spend that time on actually seeing patients, treating patient delivering the message [...] the actual technicality of the audit hasn't been clear I don't think was necessary this sort of detail or even if it was necessary can be simplified very quickly done.' (PPC/Dental provider)

In some localities however, particularly Greater Manchester, the requirement to submit monthly returns was waived, reflecting the already established oral health improvement programmes and associated data flows that were complemented by an adapted SW13 programme.



Table 5. Starting Well 13 returns: monthly submissions (February 2018 to March 2020).

Starting Well locality	Contracts n	MONTHLY RETURNS					
		Contracts that submitted at least one monthly SW return		Contracts that submitted at least six monthly SW returns		Contracts that submitted at least two monthly SW returns in the last six months of the programme (Oct. 2019 –Mar 2020)	
		n	%	n	%	n	%
Leicester	8	8	100%	4	50%	1	13%
Luton	7	7	100%	4	57%	2	29%
Middlesbrough*	7	7	100%	0	0%		
Bolton	12	9	75%	7	78%	3	25%
Oldham	12	7	58%	3	43%	3	25%
Rochdale	10	7	70%	3	43%	3	30%
Salford	14	9	64%	5	56%	3	21%
Blackburn with Darwen	8	8	100%	6	75%	2	25%
Blackpool	4	4	100%	2	50%	2	50%
Ealing	12	12	100%	6	50%	5	42%
Slough	4	4	100%	4	100%	4	100%
Wakefield	7	7	100%	6	86%	4	57%
Kingston upon Hull	7	7	100%	7	100%	5	71%
TOTAL	112	96	86%	57	51%	37	35%

* Middlesbrough finished the programme in April 2019.

Not all localities placed the same requirements on contractors to submit returns, for example it was not mandatory in Greater Manchester.



Table 6. Submission of quarterly returns and patient questionnaires (February 2018 to March 2020).

Starting Well locality	Contracts n	AUDIT				PATIENT QUESTIONNAIRE			
		Contracts that submitted at least one quarterly DBOH audit return		Contracts that submitted at least four quarterly DBOH audit returns		Contracts that submitted at least one monthly return that contains patient questionnaires		Contracts that submitted at least six monthly SW returns that contains patient questionnaires	
		n	%	n	%	n	%	n	%
Leicester	8	8	100%	6	75%	6	75%	4	50%
Luton	7	7	100%	6	86%	5	71%	2	29%
Middlesbrough*	7	6	86%	1	14%	4	57%	0	0%
Bolton	12	8	67%	6	50%	7	58%	5	42%
Oldham	12	6	50%	3	25%	4	33%	2	17%
Rochdale	10	6	60%	4	40%	6	60%	1	10%
Salford	14	7	50%	3	21%	7	50%	3	21%
Blackburn with Darwen	8	8	100%	5	63%	7	88%	1	13%
Blackpool	4	4	100%	3	75%	4	100%	0	0%
Ealing	12	9	75%	6	50%	4	33%	1	8%
Slough	4	4	100%	4	100%	4	100%	4	100%
Wakefield	7	7	100%	6	86%	7	100%	6	86%
Kingston upon Hull	7	7	100%	7	100%	6	86%	5	71%
TOTAL	112	87	78%	60	54%	71	63%	34	30%

* Middlesbrough finished the programme in April 2019.

Not all localities placed the same requirements on contractors to submit returns, for example Greater Manchester dispensed with this requirement.



Skills, roles and leadership

Unlike mandatory services, the nature of the contracted activities often called for dental teams to acquire new skills and work in different ways:

'I think sometimes the dentist likes to do it themselves but that's not always a cost-effective way of actually delivering the care so by training and upskilling other people in the practice to be able to do it has created some capacity but I think that challenge has always been... the Starting Well 13 because there's been a payment attached I think it's been easier to actually persuade them about the benefits of utilising other members of the team.' (HHE)

The role of the PPC and the support of the whole dental team were regarded as key for successful delivery:

'I think "PPC" made it successful ... I think how she has organised it and got everyone else on board I think the champion is a big part of that, having someone that's enthusiastic.' (Practice Manager)

'...and I think you've got to get all the staff on board as well to make it successful it's not something that you can just do on your own.' (PPC).

Some PPCs in particular expressed ongoing uncertainty about their role and a desire for more support:

'I think the concept is a really good idea and when I first heard about it and asked to be a part of it I was really looking forward to doing it but I've found it quite challenging [...] I'm not sure whether I'm up to date with everything because there's nobody to say yes you're doing that right or no you're not doing it right and here's how to fix it.' (PPC)

'An annual get together would probably be beneficial [...] I think speaking with the commissioners and people as well just though they can let you know if you're on track and everybody give ideas and just get that you know just to make sure that you are doing the right thing just a bit of a second opinion I think that would be beneficial to me.' (PPC)

The overall importance of effective clinical leadership at multiple levels was emphasised, both to support practice readiness for such programmes and to support delivery of unfamiliar aspects of the programme, in particular the ASW activities. The challenges of resourcing this was identified.

Commissioning

Some commissioners and local partners who were already heavily committed found the additional workload a challenge when establishing and monitoring the programme:

'I think there was something about the events [launch events] were incredibly difficult to develop and do locally on top of everything else and a huge amount of work locally... I think perhaps some of that stuff ... could have been done nationally so the LDN Chairs presentations there could have been a national slide set, there was a slide set which we had to do significant amount of work on to tweak because actually those ... are the important bits in terms of selling the project.' (PHE Consultant in Dental Public Health).

'it would've been nice if we had the capacity to go out to each practice and see the practice, see how it's working in practice and be able to have a nice separate conversation with each champion but unfortunately... we've been trying to manage this on top of the other workload.' (Local commissioner)

'it is resource intensive because... it's just added to what we do we've not had more resource to do it... but what's been very helpful and I think again this is good the way it's been set up nationally is the role of Public Health England so they're very pivotal to what we're doing... also Health Education England have been very proactive around the training... and also the local authority input is very important so they are creating the environment to say locally this is a big priority for us... so it's left us really just having to worry about in commissioning terms just organising the process...' (Local Commissioner)

The process for monitoring activity for the Starting Well practices was different from that for mandatory dental services and this aspect was also at times challenging, not least through want of data. Some commissioners emphasised the importance of trust in relationships with providers and the importance of avoiding excessive scrutiny.

Some mentioned the challenge of not knowing whether key information on the programme was getting to all members of the dental team, for example where they were reliant upon dissemination via one member of the team and there was concern that communication was not good within some practices.

Perceived benefits

Dental practices felt that the SW13 Initiative had brought benefits for both patients and practices. Particularly, it helped to reinforce and prioritize prevention, increase awareness of the importance of child oral health and improve dental attendance. It also helped the dental team to establish a relationship with local partners, provided a verifiable way of approaching local settings and an opportunity to integrate with the local community.

'I do think we've seen an increase in the under-fives... and what has been a real eye opener is perhaps because these are not patients who we saw regularly ... you realise these people don't know any of this information so when they come back again in three months' time you can see suddenly they've changed [...] or they come in and they bring their lunch box and they go 'is my lunch box healthy this time'... and they get excited...' (Dental provider)

'I know with my receptionist when they book in a family it's always do you have any more children who need to come in so they always try and encourage families rather than just parents to come in so our numbers are improving with children.' (PPC)

'I think what the big thing is that prior to the Starting Well programme we were kind of doing it and there was no formal way of approaching people, suddenly by being under the Starting Well umbrella it gives us a more verifiable way of going out... it was just like saying Oh I'm from "Practice's name" but then it's a bit better saying I am part of Starting Well programme...' (Dental provider)



The local partnership helped to increase awareness in the community and to reinforce prevention messages. Some practices mentioned that working with the community had been rewarding and good for staff morale. Some considered that the Initiative was already a success in their practices.

'I think [Starting Well] it has complemented a lot of the general work we do through [Starting Well locality] through our community links but also we've noticed like more and more parents are understanding the messages because they've been getting it from different places so not just from the dentist but the health visitors have been giving the same messages...' (Dental provider)

'I think it's been good for staff morale because it's made people feel like they're achieving something over and above what they were doing before and you know... making a positive contribution to people's lives I think that has certainly something that's come across and that's been helpful I think from as a provider.' (Dental provider)

'I guess the actual programme has been successful already we've managed to implement every part of what they've asked for in the guidelines, a couple of starting hiccups along the way but now it's just a part of "Practice name"... it's automatically done everybody knows what it is and they know it has to be done and it's just done really so yeah I guess it's successful already.' (PPC)

One commissioner mentioned that the broad principles of the programme and the experience of "doing something different" had led to other developments such as analogous programmes for residents of care homes.

Generalisability of findings

The structured nature of the programme at the outset was felt to be advantageous in that core elements were already available:

'I think that the way the programmes been developed and the implementation toolkit it's almost exactly what NHS England commissioners have been looking for a scheme that has everything that you could possibly need to make it work. There's a business case in there there's data collection tools there's a communications plan there's launch event guidance there's an evaluation plan there's everything you possibly need it's easy to simply take it down change the name change the locality and then launch it somewhere else so it is very easy to replicate.' (Local Commissioner)

Some caution has to be exercised in interpreting these findings as the programme was undertaken with volunteer dental practices which might not be reproducible with other practices.



4 Conclusions

The Starting Well programme has provided a unique opportunity to explore the utility of commissioning activities from dental practices that have not been a feature of dental practice since NHS dental care commenced in 1948.

The establishment of the programme was clearly successful and dental teams engaged enthusiastically with the programme. The development of innovative roles in practices has potential and the role of support from bodies such as Health Education England seems key.

Whilst the evaluation has significant limitations, given the short timescales and, towards the end of the evaluation, the impact of the COVID-19 pandemic, there were indications of changes in preventive practice and increased access by young children. It was not possible, given the diverse nature of implementation and the limited timescale of the evaluation, to assess whether the programme had resulted in improved oral health in the target populations and whether oral health inequalities had reduced, nor was it possible to undertake more in-depth analysis of possible secondary impacts, such as on adult access or provision of operative dental care.

Implementing and maintaining the programme presented challenges for commissioners and providers; the programme was more complex for commissioners to implement, monitor and support and required practice teams to acquire new skills and foster new relationships with local partners.

The ability to integrate with the wider health and social care system, both in terms of drawing on support for promoting uptake of dental care and in disseminating key health messages was judged essential to successful programme delivery. Dental practices at times reported difficulty in engaging with other aspects of the local health and social care system and those localities with more developed relationships found this easier.

5 Acknowledgements

We are indebted to the local team members and national organisational representatives who gave their time to be interviewed and to The NHS Business Services Authority for providing summaries of key data.



Appendix IV: Overview of online SW13 data capture tool



NHS England Starting Well Programme: Overview of online data capture tool

Under 5s Prevention Programme - Starting Well

Contract information

This form should be used to submit your monthly data for the Starting Well pilot.

The form will only be available to make submissions from the 1st day of each month until the 12th working day of each month.

To continue please provide the following information about your primary dental contract:

Contract number:
(Please ensure you enter the full 9 digits of your Contract Number and 4 digits of your Contract Number Tag, including all trailing zeros. For example: 000000000 or 000010001)

Practice name:

Practice postcode:

Page 1

[Reset](#) [Next →](#)

Under 5s Prevention Programme - Starting Well

Contract information

Are you an Advanced Starting Well practice?
 Yes No

Does your submission include data for any additional contract numbers?
 Yes No

Please provide the additional contract numbers covered:

Contract number 2:

Contract number 3:

Contract number 4:

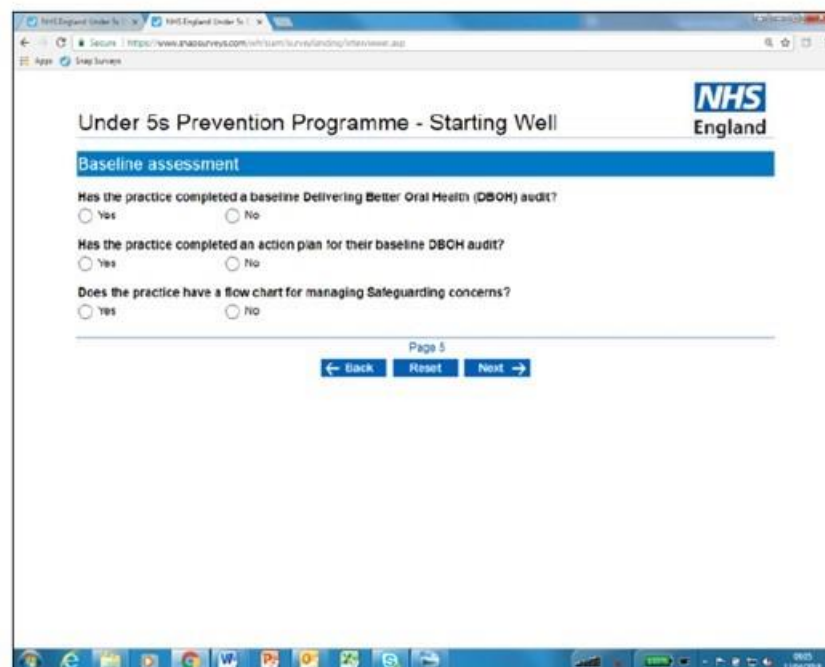
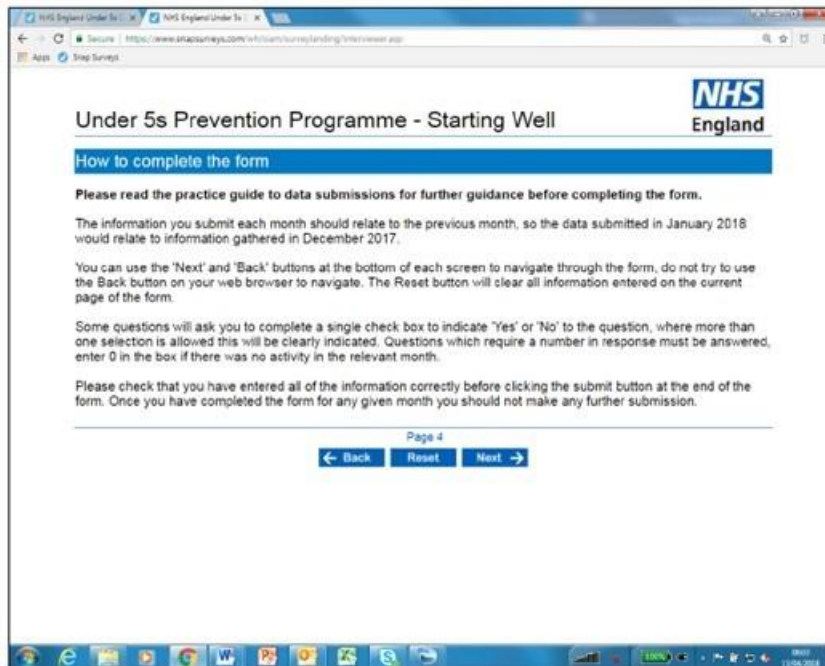
Contract number 5:

Contract number 6:

Contract number 7:

Page 2

[← Back](#) [Reset](#) [Next →](#)





The screenshot shows a web browser window displaying the 'Starting Well' survey for the 'Under 5s Prevention Programme'. The page title is 'Under 5s Prevention Programme - Starting Well' and the NHS England logo is in the top right. The section is titled 'Prevention Champion'. It contains three questions, each with 'Yes' and 'No' radio button options:

- Does the practice have a prevention champion in post?
- Has the practice held a monthly meeting for all dental team members on preventative practice and Starting Well?
- Has the champion attended the most recent locality prevention network meeting?


At the bottom of the page, it says 'Page 6' and has three buttons: 'Back', 'Reset', and 'Next'.

The screenshot shows the next page of the survey, titled 'New patients'. It contains three questions with radio button options:

- Is the practice actively taking on new patients who are under 5 years old?
- Has the practice had an open day in the previous month?
- Has a target high risk group/locality* been identified through the local prevention network?

The third question has three options: 'Yes' (which is selected with a checkmark), 'No', and 'Unsure'. A small note below reads: '*as defined locally - please confirm agreed high risk group/locality with commissioner'. Below the questions is a text input field for 'The number of patients under 5 the practice has taken on from the high risk group/locality.' At the bottom, it says 'Page 7' and has three buttons: 'Back', 'Reset', and 'Next'.



Under 5s Prevention Programme - Starting Well 

New patients

The number of patients attending the practice who have been signposted to the practice from a named adopted setting.

The number of patients attending the practice who have been referred by health and social care staff.


The total number of patients (without a regular dentist) who have been referred to the practice post extraction under general anaesthesia/sedation (include children under 5 and their siblings).

The total number of patients who have attended the practice, having been referred to the practice, post extraction under general anaesthesia/sedation (include children under 5 and their siblings).

The total number of patients from the high risk group/locality* who have been referred from the practice for extraction under general anaesthesia/sedation (include children under 5 and their siblings).

*to define locality - please confirm agreed high risk group/locality with commissioner

Page 0
[← Back](#) [Reset](#) [Next →](#)

Under 5s Prevention Programme - Starting Well 

Engagements with children's services

The number of health and social care staff engaged with during the month.

Which types of health and social care staff have been engaged with?
(Please select all that apply)

- Social worker
- Nurse
- GP
- Health visitor
- Other (please specify)

Page 1
[← Back](#) [Reset](#) [Next →](#)



Under 5s Prevention Programme - Starting Well **NHS England**

Oral health promotion

Does the practice have an oral health improvement display with content that has been agreed by the network?
 Yes No

The number of parents or carers of patients under 5 who have had a 'Make Every Contact Count' contact.

Is the practice advertising it is a breast feeding friendly practice?
 Yes No

The number of tooth brushing packs given to patients under 5.

Page 10
← Back Reset Next →

Under 5s Prevention Programme - Starting Well **NHS England**

Oral health promotion

Does the practice support a tooth brushing club?
 Yes No

The number of other oral health events and initiatives the practice has supported in the previous month (include both in-practice and wider setting activities, but not tooth brushing clubs).

Please provide details of the other oral health events and initiatives supported.

Has the practice adopted any new settings in the previous month that have been agreed by the Network?
 Yes No

Please provide details of the type of activities at the settings adopted in the previous month.

Page 11
← Back Reset Next →



NHS England Under 5s

Under 5s Prevention Programme - Starting Well

DBOH audit

Have you completed the DBOH audit?

Yes
 No

Prevention advice and treatment given to all 0 to 2 year olds

	Number of records reviewed	Number achieved	Percentage achieved (%)
Parents should brush twice daily as soon as teeth erupt	<input type="text"/>	<input type="text"/>	<input type="text"/>
Parents should brush last thing at night and on one other occasion	<input type="text"/>	<input type="text"/>	<input type="text"/>
Use a smear of toothpaste containing at least 1000ppm fluoride	<input type="text"/>	<input type="text"/>	<input type="text"/>
Breast feeding provides the best nutrition for babies	<input type="text"/>	<input type="text"/>	<input type="text"/>
From the age of six months, babies should be introduced to drinking from a free-flow cup. Bottle feeding should be discouraged from 12 months old	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sugar should not be added to weaning foods	<input type="text"/>	<input type="text"/>	<input type="text"/>
Frequency and amount of sugary foods and drinks should be reduced	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sugar free medicines are recommended	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tooth brushing instruction	<input type="text"/>	<input type="text"/>	<input type="text"/>
Prescribe sugar free medicines	<input type="text"/>	<input type="text"/>	<input type="text"/>

Page 13

[← Back](#) [Reset](#) [Next →](#)

NHS England Under 5s

Under 5s Prevention Programme - Starting Well

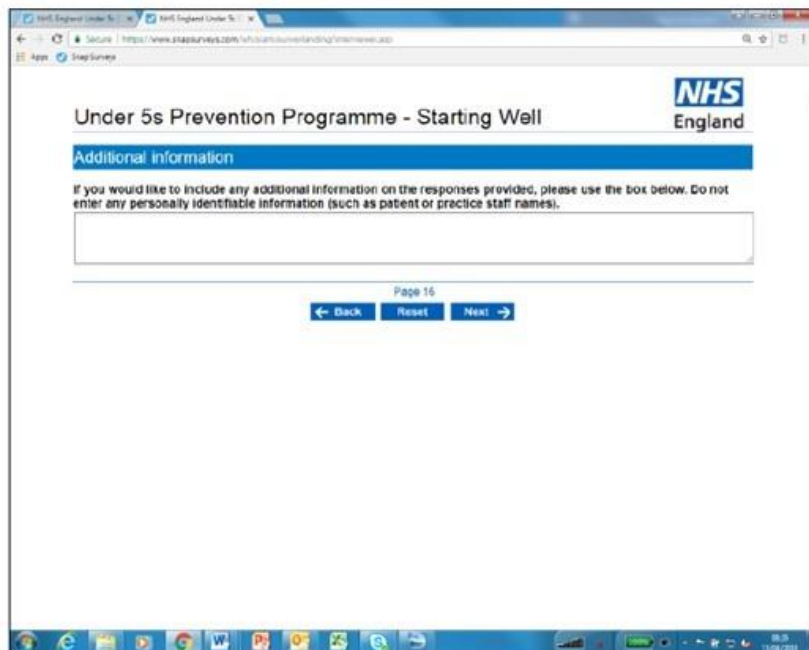
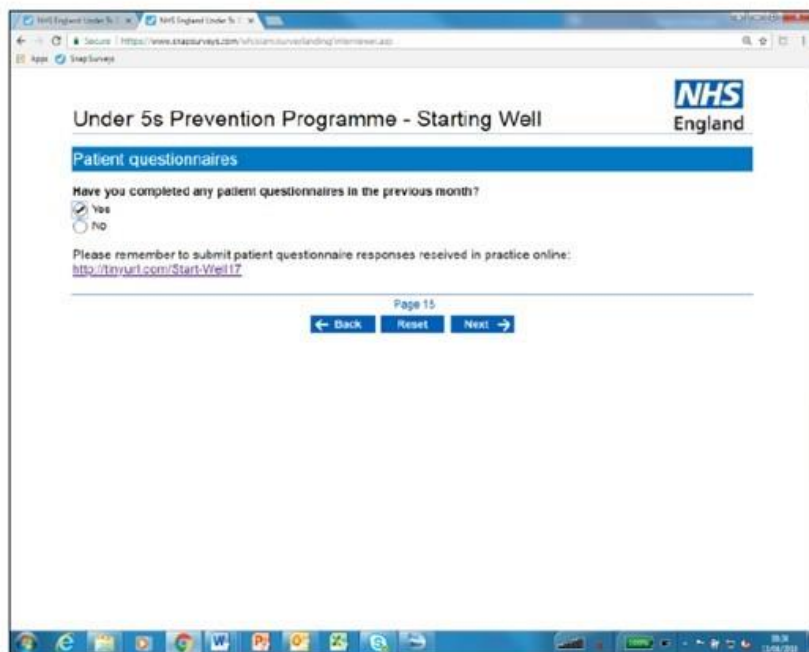
DBOH audit

Prevention advice and treatment given to all 3 to 4 year olds

	Number of records reviewed	Number achieved	Percentage achieved (%)
Brush last thing at night and on one other occasion	<input type="text"/>	<input type="text"/>	<input type="text"/>
Brushing should be carried out/supervised by an adult	<input type="text"/>	<input type="text"/>	<input type="text"/>
Use a pea-sized amount of toothpaste containing more than 1000ppm fluoride	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sgt do not rinse	<input type="text"/>	<input type="text"/>	<input type="text"/>
Frequency and amount of sugary foods and drinks should be reduced	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sugar free medicines should be recommended	<input type="text"/>	<input type="text"/>	<input type="text"/>
Application of fluoride varnish for all children twice a year	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tooth brushing instruction	<input type="text"/>	<input type="text"/>	<input type="text"/>
Prescribe sugar free medicines	<input type="text"/>	<input type="text"/>	<input type="text"/>
Use 1350-1500ppm fluoride toothpaste	<input type="text"/>	<input type="text"/>	<input type="text"/>
Application of fluoride varnish for high risk children more than twice a year	<input type="text"/>	<input type="text"/>	<input type="text"/>
Investigate diet and advise in line with the Eat Well Guide	<input type="text"/>	<input type="text"/>	<input type="text"/>

Page 14

[← Back](#) [Reset](#) [Next →](#)





Under 5s Prevention Programme - Starting Well **NHS England**

Declare and submit

Please check your answers carefully before completing the declaration.

I declare that:

- the answers provided are true and accurately reflect how the practice is meeting the requirements of the Starting Well pilot.
- the practice has evidence to support the answers given and can provide this to NHS England or the NHGBGA for the purpose of probity or validation if requested.

Name of person completing declaration:

Role of person in practice/organisation:

Email address of person completing declaration:

Please press the submit button to complete the process.

Page 17

[← Back](#) [Reset](#) [Submit ✓](#)

Under 5s Prevention Programme - Starting Well **NHS England**

Thank you

Your Starting Well monthly return has been submitted.



Appendix V: Communications

A. Journal Publications

- Salomon-Ibarra, C.C., Ravaghi, V., Hill, K., Jones, C.M., Landes, D.P. and Morris, A.J. (2019): Low rates of DA by the age of one and inequality between local government administrative areas in England. *Community Dental Health* **36**, 22-26.
[doi: 10.1922/CDH_4390Salomon-Ibarra05](https://doi.org/10.1922/CDH_4390Salomon-Ibarra05)
- Salomon-Ibarra, C.C., Rezaee, A., Morris, A.J. and Ravaghi, V. (2020): Deprivation and child DA in England: exploring the shape and moderators. *Community Dental Health* **37**, 161.
[doi: 10.1922/CDH_00020Ravaghi06](https://doi.org/10.1922/CDH_00020Ravaghi06)
- Sofi-Mahmudi, A., Moradi, S., Salomon-Ibarra, C.C., Morris, J. and Ravaghi, V. (2020): Greater child dental health inequality in England compared to Wales and Northern Ireland, despite lower average disease levels. *Community Dental Health* **37**, 138-142.
[doi: 10.1922/CDH_00007Ravaghi05](https://doi.org/10.1922/CDH_00007Ravaghi05)

Editorials

- Ravaghi, V., Salomon-Ibarra, C. and Morris, J. (2020): Child oral health; is there anything more to know? *Community Dental Health* **37**, 108-109.

B. Poster Presentations

- BASCD Scientific Meeting. Cardiff, England. April 2020. (Cancelled due to COVID-19 pandemic).

Candy C. Salomón-Ibarra, Sofi-Mahmudi, A., Moradi, S., C.C., Morris, J. and Ravaghi V. Greater child dental health inequality in England compared to Wales and Northern Ireland, despite lower average disease levels.

- International Association of Dental Research (IADR), 97th General Session and Exhibition. Vancouver, BC, Canada. 19th – 22nd June 2019.

Salomon-Ibarra, C.C., Rezaee, A., Morris, A.J. and Ravaghi, V. Predictors of DA by Young Children in England.

- BASCD Spring Scientific Meeting 2019. Manchester, England. 23rd – 24th May 2019.

Salomon-Ibarra, C.C., Ravaghi, V., Hill, K. and Morris, A.J. Inequalities in child DA in England: exploring the shape and moderators.

- International Association of Dental Research (IADR), 96th General Session and Exhibition. London, England. 25 – 28th July 2018.

Salomon-Ibarra, C.C., Ravaghi, V., Hill, K. and Morris, A.J. Inequality in Children's DA between English Local Authorities.

