A country that works for all children and young people

An evidence-based plan for improving children's oral health with and through education settings

Child of the North

N8 RESEARCH PARTNERSHIP

HEALTH EQUITY NORTH

CENTRE FOR YOUNG LIVES

Contents

Please sign our petition if you share our vision for building a better UK that invests in its future (the next generation of children and young people)

Foreword by Anne Longfield and Camilla Kingdon

A recent survey revealed that over a quarter of 15-year-olds say they are too embarrassed to laugh or smile due to the condition of their teeth.

We should be shocked at the poor condition of many of our children's teeth, particularly as the trajectory of dental disease suggests oral health in childhood predicts oral health in adulthood. Despite the huge advances in oral health over recent decades, fewer than four out of ten children have good oral health.

These dental problems are getting worse, and they are starting early in many children's lives. One in ten 3-year-olds already have tooth decay, rising to three in ten by the age of five. A 2023 survey of Year 6 school children in England found that 16% had experience of tooth decay in their permanent teeth. This increased to 19% in North West England and 20% in North East England and Yorkshire, with each child having on average two decayed permanent teeth by the time they left primary school.

We know that families living in deprived areas are more than twice as likely to have tooth decay, and that there are much higher levels of tooth decay in children in the North compared with elsewhere in England.

The impact of tooth decay on the lives of children are of course more than just cosmetic. Tooth decay has a direct impact on a child's quality of life. Untreated disease can cause toothache and pain, sleep disruption, and alter eating habits. Poor oral health may also impact negatively on the development of speech and language as well as lowering confidence.

Tooth decay is also the most common reason for hospital admission in 5-to-9-year-olds, and research looking at tooth extractions in children in North West England hospitals has found that a quarter of children had missed days from school due to dental pain and infection.

We also know that in the long-term, oral health is better in those who visit their dentist more regularly. Yet in 2023, the proportion of children who had visited an NHS dentist within the recommended maximum period of 12 months was 52%, and for those under five years, it was just 29%. Last year, 27,000 children in England were on NHS waiting lists for dental care by specialists, with 12,226 children on waiting lists for dental procedures under general anaesthetic with average waiting times of up to 80 weeks.

This report – the eighth in a series of Child of the North/Centre for Young Lives reports to be published during 2024 – focuses on preventing the tooth decay which is causing pain and discomfort in many children's daily lives and looks at how best to develop good oral health behaviours in early childhood.

It calls for Government to develop a national child oral health strategy and puts forward evidence-based recommendations to reduce sugar consumption among children, optimise fluoride exposure, and increase access to dental care.

The implementation of this strategy would be overseen by a national board including representatives from Government departments, local government, dental organisations and specialist societies, universities, and the third sector.

There is no doubt that many children are consuming too much sugar, and this report urges the Government to reduce sugar consumption through an expansion of the Soft Drinks Industry Levy to include other sugar-sweetened drinks. It calls for new restrictions on food marketing, advertising, and promotions. It also proposes restricting the sale of caffeinated energy drinks to under 16-year-olds.

As part of a national plan, the report also recommends increasing children's exposure to fluoride through community water fluoridation alongside targeted programmes such as supervised toothbrushing at school.

Indeed, tackling and preventing tooth decay early in children's lives is crucial and greater co-design of interventions with health visitors, nurseries, and schools need to be developed. Many parents need extra support to encourage their children to improve oral health at home.

"Tooth decay has a **direct impact** on a child's quality of life."

"We should be shocked at the **poor condition** of many of our children's teeth."

We also need to widen children's access to dental services. Attending dental appointments makes a huge difference to the management of tooth decay and the monitoring of dental development, as well as activities that prevent dental disease. To achieve this will require the Government to work with the dental profession to reform the dental contract and encourage Integrated Care Boards (ICBs) to prioritise access for children. Better mechanisms for allocating funding also need to be introduced.

This report highlights innovative approaches which are already addressing children's oral health problems. Local government has a key role to play in reducing sugar consumption and many local authorities have their own strategies to reduce consumption of foods and drinks high in fat, sugar, and salt. We showcase interventions like Sheffield's Sweet Enough, a five-year initiative commissioned by Sheffield City Council to support residents' understanding of the harms of consuming too much sugar, working in the most deprived areas, and HABIT, a public health intervention to support health visitors and their wider team to have effective oral health conversations with parents of infants in Bradford.

We also showcase projects like the BRIGHT trial, a behaviour change intervention using SMS to smartphones to promote toothbrushing among secondary school children. Meanwhile, Liverpool's Smile Squad Initiative, a collaboration between the University of Liverpool Paediatric Dentistry team, a local dental practice and the Liverpool Football Club Foundation, delivers over 50 programmes to schools and community venues across Merseyside.

RAISED In Yorkshire, co-created with Year 12-13 students, offers oral health lessons to Year 7 pupils. Recently qualified dental professionals train Year 12 students, who in turn deliver teaching to pupils in local schools about the importance of oral health.

Improving our children's oral health should be a public health priority for the new Government. We cannot wait for more and more children to grow up with decaying teeth. Many children, particularly those in families on low incomes, are not only missing out on NHS dental healthcare, but are more likely to suffer tooth decay from a younger age. Targeted interventions are urgently needed, and the Government's proposals to boost teeth-brushing in schools are an excellent step forward, as is its overall focus on boosting children's wellbeing.

This report encourages Ministers to go further.

We shouldn't be afraid to intervene to give all our children their smile back.

Anne Longfield CBE,
Executive Chair of
the Centre for Young Lives

Dr Camilla Kingdon,
Former President of the
Royal College of Paediatrics
and Child Health

Guest editorial by Paula Waterhouse

I welcome this report, not only as President of the British Society of Paediatric Dentistry (BSPD), which advocates for the improvement in the oral health of children and young people (CYP) across the UK, but also as a clinical academic at Newcastle University with an honorary NHS contract spanning almost 35 years. Many of our CYP in England who are most in need are being failed.

This report sadly highlights that this failure hits CYP hard, particularly in the North of England where inequalities exist in various guises. There is clear evidence that higher levels of deprivation and associated unmet dental need are more seriously impacting CYP living in the North of England compared with their southern counterparts.

Whether implemented as a national programme or at the dental chairside, oral health improvement strategies should be firmly based upon rigorous evidence. The evidence demonstrated clearly in this report underlines the urgent need to enact a multi-faceted preventive approach to improve the oral health of those CYP in most need. The report relates directly to the associated current and alarming statistics pertaining to dental decay prevalence across all age cohorts of CYP in England. This is compounded further by the unacceptably high rates of hospital admissions and dental extractions in CYP.

Dental decay is occurring early in children's lives and once symptomatic, brings with it associated pain and infection leading to reduced quality of life, and loss of both sleep and educational opportunity.

It is time to establish an oral health strategy for CYP across England. The evidence base garnered by existing oral health research should be used to inform government strategy and implementation of both national and local policies. Although oral health is listed as a policy priority within the Department for Education and the Department of Health and Social Care, we must now "rally" to work towards transforming these policies into workable, evidenced-based interventions which are fit for purpose and involve all relevant agencies. For oral health preventive interventions, one size does not fit all and so it follows that initiatives must also address needs at the local level. The logistical complexities should not be underestimated, but nor should they be perceived as insurmountable barriers.

Evidence contained within this report should be used in further planning and development; but all the work is not yet done, and I urge policymakers to recognise that our universities are well placed to be enabled and facilitated to undertake future oral health related research and evaluation.

Fifteen years ago, The Steele Report (1) recommended investing in a preventive approach within dental services and, here we are, in 2024, calling for the same but also recognising that we must avail a multi-agency and multi-strategy approach to improve the oral health of our nation's children. Within BSPD's blueprint, we call for every CYP to have a "dental home" so that CYP and their families can have an ongoing relationship with an oral health care provider. The initial work undertaken around Child Friendly Dental Practices illustrates that evidence-based clinical preventive interventions are effective for those most in need, but if this was meshed alongside the wider preventive strategy of community-based water fluoridation and supervised toothbrushing programmes in early education, we may further improve oral health outcomes for our children.

We should be looking to a future where multiple measures are blended across not only dental services but wider health services, education, and social care to target those in most need, whether that is due to socioeconomic deprivation, geography, ethnicity, or disability.

This report, I would argue, highlights that universities, given timely opportunities, can provide essential evidence on which to base policy decisions that serve our children at both local and wider public service levels, so that our limited financial resources can be targeted appropriately and evaluated rigorously. Policies should not only look good, but also do good.

We need to act now... our children's health depends on it and it's everybody's business – parents, dental and medical teams, health visitors, industry, education colleagues, and policy makers. We all have a part to play.

Professor Paula Waterhouse,
President of the British Society of Paediatric Dentistry

"As the mother of a daughter with toothache, I have experienced firsthand how much **tooth decay can impact a child's and a family's daily life.** From my daughter first experiencing toothache, it took almost two years until the **tooth was finally taken out at the hospital, with many trips to our general dentist, courses of antibiotics, and several hospital appointment cancellations.** I had to give her painkillers daily for weeks. I was worried about her being in pain and had many sleepless nights up with her. **I was worried myself that we would never see an end to it.** I am self-employed and had to rearrange or cancel work for dental appointments that would then be cancelled themselves. I made so many phone calls before it was finally sorted out. You want to do anything you can to help your child but I felt helpless. **The whole process was very traumatic for her and for us as parents, and I would not want anyone else to go through it."**

– Parent of child with tooth decay

This report is a collaborative programme of work between Child of the North and the Centre for Young Lives.

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* These authors contributed equally to the work.

A full list of authors and contributors can be found at the end of this report.

A note about language

Children and young people

In this report, CYP is used to refer to children and young people. A "young person" in this context is a person over compulsory school age (the end of the academic year in which they turn 16 years old) and under 25 years old. In keeping with this definition, we use the words "child" and "children" in this report to refer to individuals from birth to the end of compulsory school age.

Schools, nurseries, and educational settings

Please note that this report often uses "schools" as shorthand for "schools, nurseries, and other educational settings". A central message of this report is the need for a "whole system" approach that includes all relevant stakeholders, and this includes all parts of the education system.

Upstream vs. midstream vs. downstream

This report acknowledges that change requires a multilevel approach, including upstream, midstream, and downstream initiatives.

Upstream approaches address the economic, social, and environmental causes of poor oral health, rather than individual risk factors.

Midstream approaches are community-based programmes where oral health is integrated into the work of the wider health, education, social care, and voluntary sector workforce and interventions which are delivered in education or community settings. Initiatives that integrate oral health into trusted and well-established community hubs can provide the opportunity to deliver interventions to those families who need it the most and overcome barriers that are more complex than simply time and costs.

Downstream approaches focus on organisation of dental services and oral health behaviours.

About the Child of the North initiative

Child of the North is a partnership between the N8 Research Partnership and Health Equity North, which aims to build a fairer future for children across the North of England by building a platform for collaboration, high quality research, and policy engagement. @ChildoftheNort1

Who is the Child of the North?

The "Child of the North" is an archetype (like the "unknown soldier"), representing all the millions of children throughout the UK whose lives are blighted by inequalities. We use the Child of the North as a means of illustrating the inequities that affect children and young people. These inequalities are well captured by the differences in opportunities available to the child growing up in the North of England versus the South. But inequalities are present throughout the UK at both a national and regional level. These inequalities are bad for almost everyone and the future of the UK depends on their urgent eradication. The Child of the North represents every child who deserves a better start to life, regardless of where they live.

About the N8 Research Partnership

The N8 Research Partnership is a collaboration of the eight most research-intensive Universities in the North of England: Durham, Lancaster, Leeds, Liverpool, Manchester, Newcastle, Sheffield, and York. Working with partner universities, industry, and society (N8+), the N8 aims to maximise the impact of this research base by promoting collaboration, establishing innovative research capabilities and programmes of national and international prominence, and driving economic growth. www.n8research.org.uk @N8research

About Health Equity North

Health Equity North is a virtual institute focused on place-based solutions to public health problems and health inequalities across the North of England. It brings together world-leading academic expertise, from the Northern Health Science Alliance's members of leading universities and hospitals, to fight health inequalities through research excellence and collaboration. www.healthequitynorth.co.uk @_HENorth

About the Centre for Young Lives

The Centre for Young Lives is a dynamic and highly experienced innovation organisation dedicated to improving the lives of children, young people, and families in the UK – particularly the most vulnerable. Led by former Children's Commissioner, Anne Longfield CBE, who has been at the forefront of children's issues for decades, the Centre's agile team is highly skilled, experienced, and regarded. It is already widely known and well respected across government departments, Parliament, local and regional government, academia, the voluntary sector, and national and local media. The Centre wants to see children and young people's futures placed at the heart of policy making, a high priority for Government and at the core of the drive for a future for our country which can be much stronger and more prosperous. www.centreforyounglives.org.uk @CfYoungLives

About the N8+

Collaboration lies at the heart of "Child of The North". The N8 has proved a useful organising structure but the Child of The North vision is to: (i) use the North-South England divide to show the impact of inequity on all children in the UK; (ii) bring together stakeholders from across the UK to build a better country for CYP. One aspiration is to link researchers from across the UK to support evidence-based approaches to policymaking. In particular, there is a desire to unite Higher Education institutes across the North of England so we can address problems in partnership.

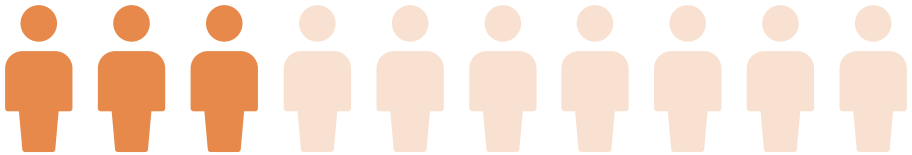
Quotations

The illustrative quotations throughout the report were taken from extensive qualitative and consultation work with children, families, and professionals.

Acknowledgements

We would like to thank the Bradford Priority Education Investment Area and Educational Alliance for Life Chances (and associated DfE colleagues) for their amazing work on addressing inequity and for their support with getting this report off the ground. We would like to thank everyone who participated in the research that is described in this report and would like to particularly highlight the wonderful contributions made by the participants from the Born in Bradford programme, led by Professors Rosie McEachan and John Wright. This work would also not be possible without generous funding from our UK and EU research funding bodies who are an essential part of the system that needs to work together in the best interests of CYP. We would also like to thank the many parents/carers, young people, and professionals who provided valuable insights included in this report.

Key insights



3 in 10 5-year-olds in England have tooth decay.

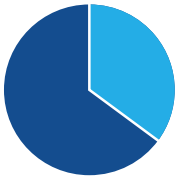
11% of 3-year-olds have tooth decay, with an average of **3 teeth affected.**

27,000

Children in England were on NHS **waiting lists for specialist dental care** in 2023.

The **cost of hospital admissions** for decay-related tooth extractions in children was

£40.7 MILLION



35% of 12-year-olds report being **embarrassed to smile or laugh** due to the condition of their teeth.

The likelihood of **tooth decay** is

2.5X HIGHER

in the **most deprived areas** of England.

In 2023, the average **waiting time** for children to receive dental treatment under general anaesthetic was

80 WEEKS

Only 39% of children in England have good **oral health.**

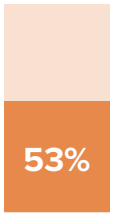
Tooth decay is the most common reason for **hospital admission** in 5-9-year-olds.

During the wait for dental extractions under general anaesthetic:

Of children are in **pain.**

Miss days of school.

Have **sleepless nights.**



Only 53% of children in England **have seen an NHS dentist** in the past 12 months.

Of children have **reported toothache.**

Of children **eligible for free school meals** have reported toothache.

Policy recommendations

Urgent action is needed: the oral health of many CYP, particularly in the North of England, is poor and is affecting their daily lives and future opportunities. Wide socioeconomic inequalities exist that require action on the broad determinants of health and, specifically, tackling the risk factors for tooth decay – including sugar reduction, optimisation of fluoride exposure, and increasing access to dental care. Improving oral health and reducing oral health inequalities in CYP requires strategic multi-sectoral work that includes a combination of upstream policy action, midstream approaches to tackle intermediate factors, and more downstream interventions to orient services towards prevention.

To support the promotion of CYP's oral health, we make three evidence-based recommendations.

1

Develop and implement a national child oral health improvement strategy

A national comprehensive oral health strategy is needed to improve children's oral health and reduce social inequalities including those experienced by CYP in the North of England.

This strategy should be a priority for the new government and include: (1) reducing sugar consumption (which is also associated with other non-communicable diseases) through policy action. For example, expanding the Soft Drinks Industry Levy to include other sugar-sweetened beverages, applying restrictions on food marketing, advertising and promotions, and restricting the sale of caffeinated energy drinks to under 16-year-olds; (2) optimising exposure to fluoride through a combination of community water fluoridation and targeted programmes (such as supervised toothbrushing). Significant opportunities have been identified for increasing the number of programmes involving supervised toothbrushing, expanding existing programmes, and ensuring sustainability.

The implementation of the strategy should be overseen by a national board including representatives from government departments (e.g., health and social care, education), local government, dental organisations and specialist societies, universities, citizen representatives, and charities.

Evaluation of the impact of this work through research and use of routinely collected data is essential and must be embedded throughout the strategy. It is essential that the impact of the strategy on reducing oral health inequalities is captured.

2

Maximise the impact of early years and education-based interventions

In addition to the national child oral health improvement strategy, there are specific opportunities to maximise the impact of children's public health services, early years, and education-based interventions on improving children's oral health due to the prominent position of educational settings in children's lives. While priority is now given to oral health by the Department for Education and Department of Health and Social Care, realising these benefits will require more work to operationalise policies. Examples of such policies include the oral health component of the service specifications for the 0-19 Healthy Child Programme, family hubs, the statutory guidance for Early Years Foundation Stage, and school curricula on health education. Some work, described in this report, has begun with the co-design of interventions involving health visitors, nurseries, and schools. However, further work is needed by a range of stakeholders to ensure these interventions and other much-needed initiatives are developed, adapted for local context, implemented, and evaluated. These discussions should involve a consideration of working with and through educational settings.

3

Re-orient dental services towards prevention of dental diseases in CYP

Dental services, particularly general dental services, play a crucial role as the first point of access to dental care for CYP. Attending regular dental appointments provides the opportunity for the management of disease, monitoring of dental development, and, crucially, dental disease prevention activities. Challenges with accessing dental services have been well documented in recent years (2–4) with only 52% of children visiting an NHS dentist within the recommended maximum period of 12 months (5). In addition to earlier diagnosis and management of dental diseases in primary care, there is a need to improve pathways for those who require specialist care. Working with the dental profession, dental system reform and innovative commissioning, led by integrated care boards (ICBs), provide opportunities to prioritise improving dental services for children, particularly for those with additional needs. Better mechanisms for allocation and distribution of funding must be developed, based on need, but accounting for supply and demand

A renewed emphasis on clinical prevention should include making best use of fluoride treatments, dental sealants and behaviour change interventions to support home-based oral health behaviours with families and children themselves.

These recommendations offer huge potential for improving population oral health as the trajectory of dental disease suggests an individual's oral health in childhood predicts their oral health into adulthood. Whilst there are resource implications, the recommendations do not require unfeasible levels of investment.

Principles

The current state of oral health of CYP in England paints a worrying picture: there is an urgent need to step-up efforts to promote good oral health, reduce inequalities, and lessen the burden of oral disease on the lives of CYP. To do this, we need to work closely with national and local government, with health, education, and social care professionals, and with children, families and communities to improve the oral health of CYP. Consequently, the recommendations within this report take a public health rather than a clinical approach by focusing on prevention as a key priority rather than management of existing disease. As such, the report takes a multilevel approach including measures aimed at upstream socioeconomic and political structural factors, midstream community-based factors, and downstream measures related to dental services and oral health behaviours.

Our recommendations are based on seven principles and the evidence that underpins the recommendations is laid out within this report. The recommendations are pragmatic in nature and recognise that the UK is in a perilous financial state. These recommendations do not pretend there is a magic wand that will immediately fix the system. Rather, they avoid the trap where the impossibility of perfection prevents change. Further, they provide a platform that would allow us to harness research and scientific evidence to learn what works best for which community – noting that science is one of society's most powerful tools for improving education and wellbeing. However, there is a need for the new government to act at pace given the worsening oral health crisis (6).

Our seven principles

1 **Putting our children first** –The future of a country depends on a healthy population, equipped with the skills needed by the economy and society. Childhood determines long-term health, and the state of a child's oral health is the best predictor of their oral health as adults. Prevention of tooth decay through a range of up-, mid-, and downstream measures will not only reduce the burden of poor oral health on CYP but will be an investment for a healthy population across the life course.

2 **Addressing inequity** – The differences seen in the prevalence, severity, and burden of oral disease on children are not fair, with large discrepancies across socioeconomic backgrounds. This inequity appears to be worsening and is not just related to deprivation but also to geography, ethnicity, and disability. Evidence-based preventive programmes should focus on addressing these inequities. By addressing inequity in children's oral health, the financial burden of poor population health on public services will be reduced.

3 **Adopting place-based approaches** – Geography, culture and community factors vary between localities, changing the way that needs manifest and influencing the most appropriate solutions to address unmet needs. For example, so-called "dental deserts" have appeared where access to NHS primary dental care and specialist paediatric dentistry services is severely lacking. New approaches to reaching and helping families must be planned and aligned to the needs and preferences of the locality and its communities.

4 **Working together effectively across our public services** – The needs of CYP and families are complex and cannot be neatly divided into silos such as "health", "education", "social care". We must recognise that our current organisational arrangements are not fit for purpose and find new ways of delivering connected public services so that the necessary holistic ("whole system") solutions to complex problems can be implemented. Indeed, tackling tooth decay is not just the role of dental services. It requires multi-sectoral working across health, education, and social care to improve children's oral health, safeguarding their wellbeing and educational attainment.

5 **Putting education at the heart of public service delivery** – Early years and education settings play a key role in the daily lives of CYP, and the consequences of poor oral health are frequently observed by those working in these settings, particularly in deprived areas. Oral health is now prioritised in policy from the Department of Health and Social Care and the Department for Education, including the service expectations for family hubs, plus statutory guidance for Early Years Foundation Stage and primary and secondary school curricula on health education. Further work is needed on specific interventions to operationalise these policies for delivery at a local level.

6 **Establishing universities as the "Research and Development" departments for local public services** – Universities can bring together insights from across multiple disciplines, ensure decisions about the use of (scarce) resources are based on the best possible evidence, oversee evaluation of service delivery and train future health, social care, and education professionals. There is a wide evidence base relating to prevention of dental disease and promotion of oral health in CYP. Universities are well situated to provide subject experts to support national and local policymakers to draw on the available evidence to improve oral health outcomes, to undertake further research to answer important questions and to present the findings in a meaningful way.

7 **Using and sharing information across public service providers effectively** – Data are currently collected within organisational silos, which fail to reflect the reality of how families interact with services. Only by connecting data from public services (i.e., health, education, and social care etc.) can we begin to understand how families interact with services and enable the essential information-sharing needed to safeguard children. Leadership is needed across government departments (including Department of Health and Social Care, Department for Education, Ministry of Housing, Communities and Local Government) and local government, ICBs, and NHSE Regional Secure Data Environments to enable the development of connected datasets. Including oral health data within these datasets is essential and will support monitoring of population oral health and equitable access to dental services, and the commissioning and evaluation of preventive oral health interventions.

"My tooth started hurting me when I was 7 and **I couldn't concentrate at school,** but all they told me was to get a drink and stuff. **I went to a lot of dentists to try to pull my tooth out but they couldn't and it really hurt.** So I went to the hospital and they gave me anaesthesia and took my tooth out."

– Child with tooth decay

The evidence

Oral health is an essential part of general health and quality of life (QoL). This report considers oral health to include the health of the mouth and teeth which allows a child to eat, speak, smile, and socialise without pain, discomfort, or embarrassment.

This report focuses on the prevention of tooth decay – a key disease of public health importance that is increasingly common, and causes significant impact on children's daily lives.

The oral health crisis

Tooth decay remains the most common oral disease in CYP, particularly for those living in the North of England. A 2020 oral health survey of 3-year-olds in England found that 10.7% had tooth decay, ranging from 6.7% in the East of England to 14.7% in Yorkshire and the Humber (7). Similar wide variation in tooth decay prevalence was found by geographical area in the 2022 National Dental Epidemiology Programme (NDEP) survey of 5-years-olds: almost one-third (29.3%) experienced tooth decay in England as a whole, with rates as high as 38.7% in the North West of England (8) (see Figure 1). There were also inequalities by ethnic group, with a significantly higher prevalence of tooth decay in children whose ethnic group was reported as "Other" (44.8%), and for children in the Asian or Asian British ethnic group (37.7%) (8).

When more advanced tooth decay was assessed – decay that penetrates into the deeper, softer dentine layer under the outer hard enamel – the prevalence in 5-year-olds varied from 19.1% in the South West to 30.6% in the North West of England (8). Notably, 5-year-olds living in deprived areas were over 2.5 times more likely to have advanced tooth decay (35.1%) compared with those living in the least deprived areas (13.5%).

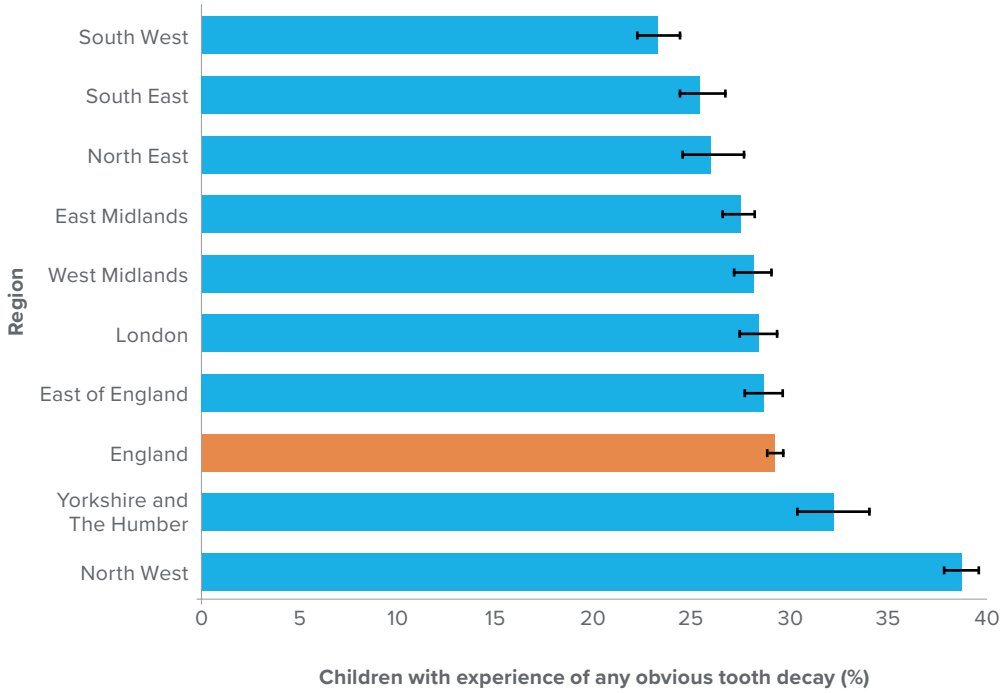


Figure 1. Prevalence of any obvious tooth decay in 5-year-olds in England by region, 2022 (8).

More recently, a 2023 survey of English Year 6 school children found that 16.0% had experience of tooth decay in their permanent teeth (9). This increased to 19.1% in the North West of England and 20.5% in the North East and Yorkshire, with each child having, on average, two decayed permanent teeth by the time they left primary school. Those living in the most deprived areas were more than twice as likely to have decay in their permanent teeth (23%) compared with those living in the least deprived areas (10%).

Similar socioeconomic disparities continue in adolescence. While national survey data on secondary school children are now over ten years old, research involving Year 7 and Year 8 children from deprived areas in the North of England, Scotland, and Wales found that over one-third (34.7%) of pupils had tooth decay in their permanent teeth. Of these, 44.5% reported that their oral health had an impact on their daily lives (10). The factors associated with having tooth decay included eligibility for free school meals (FSM), worse oral health-related QoL, a sugar-rich diet, less than twice-daily toothbrushing, living in a more deprived area, and lower school attendance.

Finally, there is an increasing number of CYP with additional needs for whom the risks of dental disease and its treatment are heightened. For example, autistic CYP have similar levels of tooth decay to the wider childhood population but are less likely to visit the dentist and are more likely to need their dental treatment provided under a general anaesthetic (11). Some autistic CYP experience social communication difficulties, making it hard for them to express if they are in dental pain. Sensory sensitivities can make toothbrushing painful and the experiences within dental settings – such as sounds, touch, tastes, smells, lights, and colours – can be overwhelming. Restrictive or repetitive behaviours may lead to limited diets (often high in sugar) further complicating dental health. These additional challenges highlight the need for targeted oral health interventions to support autistic CYP and their families.

Tooth decay remains the **most common oral disease** in children and young people.

The impact of tooth decay on CYP, families, and society

The impact of tooth decay on the lives of CYP and their families is substantial and wide ranging. Tooth decay has a direct impact on a child's QoL, with untreated disease causing toothache, sleepless nights, and altered eating habits (12). In addition, families report guilt, lack of sleep, and taking time off work as a result of their child's tooth decay (13).

Poor oral health may also impact negatively on the development of speech and language (14). Poor oral health can lower confidence and affected CYP may be less likely to reach their developmental potential.

More than a third (35%) of 12-year-olds and more than a quarter (28%) of 15-year-olds report being embarrassed to smile or laugh due to the condition of their teeth (15). There is evidence to suggest that even when accounting for the different levels of tooth decay, the burden of tooth decay on the lives of children living in deprived areas is more severe (16).

As discussed in the Child of the North report on Addressing Education and Health Inequity, many children experience health barriers to education, including oral health barriers (17). One such barrier to good oral health is school readiness. School readiness is a term used to describe "the likely ease with which a child will transition to formal schooling" and is assessed using a range of academic and non-academic competencies. The competencies are indicators of intellectual, social, and physical development. When school readiness was explored in the Born in Bradford birth cohort, children who were not considered "school ready" were more likely to have tooth decay compared to those who were "school ready" (18).

CYP with tooth decay also experience poor school attendance and performance (19). Research exploring dental extractions in children in hospitals in the North West of England found that 26% had missed days from school due to dental pain and infection, with an average of three days missed (20). Two-thirds of parents (67%) reported their child had been in pain and more than one-third (38%) had sleepless nights because of pain. The average time from referral to operation was 137 days, and wait time significantly predicted the number of sleepless nights (21).

The costs of treating tooth decay in CYP are substantial including costs of primary care and specialist treatment. Hospital admissions for tooth decay-related extractions in 0- to 19-year-olds alone cost the NHS over £40 million in the 2022-23 financial year (22). Yorkshire and the Humber, the North East, and the North West of England had the highest admission rates. For example, in Yorkshire and the Humber, the decayed tooth extraction episode rate was 405 per 100,000 population compared with 80 per 100,000 in the East Midlands.

NHSE's Core20PLUS5 CYP programme was launched to address healthcare inequalities (23) and oral health. In particular, the number of children requiring tooth extractions in hospitals has been recognised as a key area which requires improvement and inequalities to be addressed.

In addition to the financial costs associated with treating tooth decay, there is also a psychological impact associated with receiving dental treatment, both in a general dental practice and in a hospital, particularly at a young age. Dental anxiety is very common, with approximately 10% of children having severe dental anxiety. Moreover, children with dental anxiety have worse oral health and oral health-related QoL than their non-anxious counterparts (24).

Recent data show that over 55% of children living in the North West, North East, and Yorkshire had seen a dentist in the last 12 months compared to the England average of 52.7% (5). However, as there are much higher levels of tooth decay in children in the North compared with elsewhere, greater access to NHS dental services is needed to promote good oral health, to provide key preventive interventions and, if needed, to treat tooth decay before it becomes symptomatic.

Prevention of tooth decay

Prevention of tooth decay is crucial to improve the oral health of CYP – ensuring they do not suffer from pain, have improved QoL, and reach their full potential. Preventing tooth decay also means that CYP will not have to undergo a general anaesthetic in hospital to have decayed teeth removed, which is not without risks, or undergo dental treatment which could cause them to be anxious of the dentist or have dental fear. As well as improved outcomes for CYP and their families and reduced costs to the NHS, prevention also aligns with the environmental sustainability agenda. Prevention reduces carbon emissions through multiple methods including fewer patient journeys, reduced manufacturing, and fewer materials (25). It also means less waste and pollution. It is in everyone's interest to prevent tooth decay in CYP.

The evidence shows that tooth decay can be prevented by addressing the known risk factors including sugar reduction, optimisation of fluoride exposure, and increasing access to dental care.

A multilevel approach requires upstream, midstream and more downstream measures to tackle these risk factors.

> "I would **rather be having my leg cut off** than a little needle [for a dental injection]."
>
> – Child

> "It's annoying me that **I can't do much things 'cause of the pain,** like I can't eat and sleep."
>
> – Child with tooth decay

The introduction of "Sugar tax" (Upstream)

Sugar consumption is a key risk factor for tooth decay as well as other chronic diseases in childhood including obesity and diabetes. As part of an upstream initiative, the Soft Drinks Industry Levy (SDIL) was implemented in April 2018 to reduce childhood obesity and tooth decay by incentivising manufacturers to reformulate high-sugar soft drinks. Manufacturers are subject to a charge of £0.24/L for soft drinks containing more than 8g sugar per 100 mL, £0.18/L for 5-8 g sugar per 100 mL with no levy for less than 5g.

Analyses compared hospital admissions for the extraction of teeth due to tooth decay before and after the announcement of the SDIL. Results found a 12.1% reduction after the SDIL was announced for CYP aged 0-18 years, and this difference was even greater for younger children (0-9 years) (26).

Recent modelling predicts that reductions in sugar due to the SDIL will lead to 3,600 fewer decayed teeth and 64,100 fewer CYP classified as overweight or obese in the first 10 years after implementation, with long-term improvements in life expectancy (27).

The changes in sugar purchasing and predicted impacts on health of SDIL are predicted to be largest for CYP in the most deprived areas. Given the high numbers of children living with obesity in the North – approximately 10% of 4- to 5-year-olds and over 23% of 10-11-year-old children (28) – the levy could result in even greater health benefits for CYP in the North.

While the impact of the SDIL on tooth decay rates, obesity, and health inequalities is encouraging, further work is needed on the commercial determinants of health. These measures could include further expanding the SDIL to include other sugar-sweetened beverages, such as sugary milk drinks, restrictions on food marketing, advertising, and promotions, and restricting the sale of caffeinated energy drinks to CYP under 16-years-old. In addition to the SDIL, which is a specific tax based on sugar content, alternative sugar tax designs, such as ad-valorem taxes, have been implemented in other jurisdictions. These taxes may also use differential tax bases, such as value-added, pre-tax price, volume, or sugar content, which, combined with the local context, can affect the effectiveness of sugar taxes in reducing consumption. For instance, the World Health Organization (WHO) is currently exploring a 20% volumetric sugar tax as a cost-effective intervention for oral health, as part of the "Global Strategy on Oral Health". If implemented, it could reduce sugar consumption by an average of 6.2 g/day, potentially decreasing the occurrence of caries in children by 4.13% over a 10-year period (29).

> "We restrict sugary snacks at home but school doesn't... I have actually written to the local council about this. They offer puddings and cakes at lunchtime as well as fruit as an alternative, but we all know what the children are going to go for."
>
> – Parent

Water fluoridation (Upstream)

Currently, only 6 million people in England are supplied with artificially fluoridated water and around 300,000 are supplied with water containing naturally occurring fluoride – this accounts for less than 10% of the population (30). While water fluoridation has a long history, with previous studies indicating 50-60% reductions in tooth decay (31), the majority of research was carried out when the prevalence and severity of tooth decay was much higher. Since the 1970s, the prevalence of tooth decay has fallen by around half, attributed mainly to the widespread use of fluoridated toothpaste.

The most recent studies have demonstrated that although water fluoridation still produces a benefit, the absolute reduction is smaller than that reported in older studies. This reduction in the potential benefit may be attributed to decreased tap water drinking (32) and increased consumption of processed, pre-packaged foods that do not require the use of tap water in home cooking. A recent study indicated a 4% absolute difference observed between children living in a fluoridated and non-fluoridated area in Cumbria (33). These results align with the latest Office for Health Improvement and Disparities report, which indicated a 5% absolute difference in the prevalence of decay between 5-year-olds living in a fluoridated (above 0.7 ppm) and non-fluoridated (below 0.1 ppm) area (34).

Similar differences have been observed in studies conducted with a comparable population and disease level, including a 2015 Australian study showing an absolute difference of 5% between fluoridated and non-fluoridated areas (35). Research has also indicated that existing water fluoridation programmes in England are cost saving and likely to be considered cost-effective against the NICE-recommended threshold of £20,000 per Quality Adjusted Life Year (33,36).

In 2022, the Health and Care Act moved the power to introduce new fluoridation schemes into the hands of the Secretary of State for Health. Since that time, several areas within England, particularly in the North, have been considering the potential to expand or introduce new water fluoridation schemes (37). Water fluoridation could be particularly relevant in the North as a promising approach for reducing or at least, not exacerbating inequalities, although systematic reviews have not identified sufficient evidence in terms of quality and consistency to support the assumption that water fluoridation reduces oral health inequalities (38).

Water fluoridation is a whole-population upstream intervention with evidence-based effectiveness at reducing the prevalence of tooth decay. However, it should not be relied upon alone and should be considered within an overall strategy of targeted fluoride interventions (for those most at risk of tooth decay), along with other interventions that seek to reduce the consumption of sugary foods and drinks.

Since the 1970s, the **prevalence of tooth decay has fallen by around half,** attributed mainly to the widespread use of fluoridated toothpaste.

Supporting health visiting teams to improve oral health (Midstream)

Health-visiting teams play a vital role in giving children the best possible start in early childhood by encouraging positive health behaviours.

However, there is currently wide variation in the oral health support that is delivered to parents during universal home visits (39). Furthermore, there is a need for oral health resources that health visitors share with parents to be more accessible to the diverse communities they seek to serve, especially those individuals who are not proficient in the English language. Researchers are currently developing such resources via an intervention, HABIT (Health Visitors delivering Advice in Britain on Infant Toothbrushing). This intervention has a component on staff training (40) as well as a wide array of resources for parents and families of infants. Resultantly, the programme has increased parents' knowledge of toothbrushing behaviours, and improved children's oral health behaviours over a three-month period. For example, prior to the intervention, the proportion of parents who complied with toothbrushing guidelines was low (30%) but increased to 68% after the intervention (41,42). See "Innovative Approaches" for more detail about HABIT.

"Obviously, you get a bond with them [health visitors], don't you... so **you're more comfortable with them.**"

– Parent

"**There is something [special] about having an intervention** where you want them to do something and you provide that person with a tool to do it."

– Health visitor team lead

Promoting toothbrushing in schools (Midstream)

Teaching about dental health is required in the Department for Education's statutory guidance on health education (43). However, there are few quality teaching resources available specifically developed for pupils in secondary schools. Researchers are thus currently developing such resources. For example, the Brushing RemInder 4 Good oral HealTh (BRIGHT) trial investigated the clinical- and cost-effectiveness of a behaviour change intervention delivered in secondary schools with above average free school meals (FSM) eligibility. The intervention, developed for pupils aged 11- to-13-years of age, included a lesson pack embedded in the health education curriculum and twice-daily text messages to promote toothbrushing and reduce the prevalence of tooth decay (44). Inclusion in the intervention resulted in the increase of twice-daily toothbrushing at 6-months, with particular benefits for pupils eligible for FSM. This suggests that a targeted approach has the potential to reduce socioeconomic inequalities in tooth decay. See "Innovative Approaches" for more information on BRIGHT.

Supervised toothbrushing in early years settings (Midstream)

Supervised toothbrushing involves children brushing their own teeth as a group, overseen by staff in early years settings to supplement toothbrushing at home. While supervised toothbrushing is both clinically and cost-effective, the uptake and maintenance of toothbrushing programmes in England is fragmented (45).

The BRUSH (optimising toothBrushing pRogrammes in nUrseries and ScHools) project has investigated provision of supervised toothbrushing programmes across England through national surveys and geographical mapping.

Figure 2 includes maps from these surveys for each local authority in England, showing how the number of children in supervised toothbrushing programmes has increased from 2022 to 2024. However, there remains significant opportunities for increasing the number of programmes and expanding existing programmes so more children can benefit. A further survey is planned for 2025.

The findings from this project have been useful for commissioners of supervised toothbrushing programmes to help track changes over time in the location, size, and extent of programmes. In addition, it has helped to identify where new or expanded programmes are most needed.

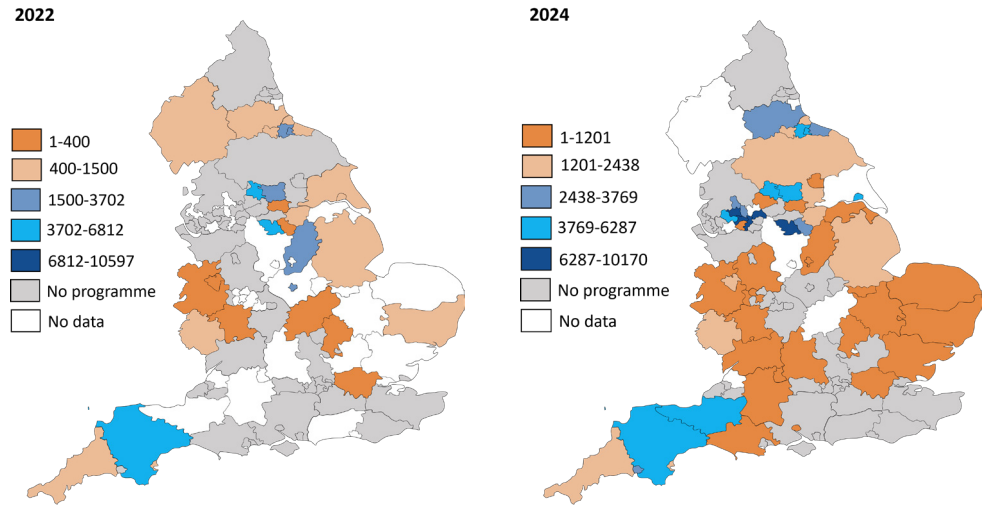


Figure 2. The number of children in supervised toothbrushing programmes in 2022 and 2024 (BRUSH).

Improving primary dental care for children (Downstream)

Improving child oral health requires more downstream interventions, including orienting health and dental services towards prevention.

Dental system reform and commissioning arrangements by ICBs offer opportunities to make these improvements (4).

General dental practices play a crucial role in protecting and promoting child oral health. Research shows that long-term, oral health is better in those who visit their dentist more regularly (46,47). Clinical prevention such as fluoride treatments, dental sealants, and behaviour change interventions are downstream approaches that are an essential part of promoting oral health. A universally accessible dental service providing enhanced support to individuals with the highest needs is an important component of reducing social inequalities. However, issues with access to dental services have been well documented in recent years (2,3). In 2023, the proportion of children who had visited an NHS dentist within the recommended maximum period of 12 months was 52%, and for those under the age of five, it was just 29%. However, only 55.6% of courses of dental treatment included the application of fluoride varnish, a common preventive measure (5).

To understand NHS dental provision, it is important to be aware of how services are commissioned and remunerated. ICBs became responsible for commissioning dental services in April 2023 and hold contracts with general dental practices.

General dental practices are reimbursed for their clinical activities through contracts which use "units of dental activity" (UDA) as the currency.

Under this contract, the outputs of practices are restricted to a certain target each year, which they should not exceed or fall below to avoid financial penalties. This contract, which was introduced in 2006, has been criticised for failing to adequately prioritise and reward the delivery of preventive care or to cover the additional time required to provide treatment for higher need groups (1), including young children with decay, who often require multiple visits to acclimatise and build confidence with dental treatment. Such children may be referred into salaried specialist paediatric dental services.

Waiting times for specialist paediatric dental services are very long, with children often waiting in severe pain, with repeated dental infections, multiple courses of antibiotics, sleepless nights and days lost from school for over 12 months (21,48).

Allocations of financial resource (number of UDAs and amount paid to practice per UDA) to individual practices mainly rely on historical amounts of service delivered by the practice. This is unlikely to reflect current need.

"Flexible commissioning" is where commissioners direct existing or additional dental service funding to support and incentivise the delivery of preventively focused care, outreach activities and early intervention for those with the highest needs including children (49). Before ICBs assumed responsibility for dental commissioning, NHSE trialled different flexible commissioning programmes across several areas of England. In 2019, NHSE Yorkshire and the Humber implemented a flexible commissioning programme which aims to support the delivery of evidence-based prevention – as described by the Delivering Better Oral Health toolkit – to provide targeted prevention for specific groups, improving access to care and utilisation of skill mix by the whole dental team. The 0-19 years health and social care workforce, including health visitors, school nurses and those working with looked after children are able to refer directly to flexible commissioning practices to ensure children at the highest risk of poor oral health receive timely care. These children also receive enhanced prevention by a designated oral health champion. For practices in the flexible commissioning programme, the activity is achieved by substitution of a percentage of contracted UDAs in exchange for the delivery of the elements of the programme. Over a 2.5-year period, the programme has resulted in the delivery of over 17,000 targeted prevention appointments for children with high dental needs (50).

A realist evaluation of the flexible commissioning-based In-Practice Prevention (IPP) (51) focused on the barriers and facilitators to the implementation of the preventive oral health conversation in primary care dental settings. Five key themes were identified to be critical to successful adoption: clinical leadership, skill mix, financial incentive, practice culture, and behaviour change. Furthermore, the DIAMOND project has identified that current allocation of dental budgets does not reflect need after controlling for both supply and demand. They recommend that nationally and within ICBs develop robust mechanisms for allocating financial resource based on need, similar to the allocation formulas used in general medical practice and pharmacy.

In order for the best use of resources to be made, as the 42 ICBs across England develop their commissioning plans, it is important that evaluations of innovations, such as flexible commissioning programmes, are conducted and learning shared across the system.

Supporting dental teams to have effective behaviour change conversations with parents of young children (Downstream)

Home-based oral health behaviours – parent-led twice-daily toothbrushing with fluoride toothpaste and reducing sugar consumption – are influenced by a wide range of individual, family, community, societal, and environmental factors. Interventions that acknowledge these challenges, incorporate lessons learned from successes and failures, and embrace complex methodologies to change behaviour are most likely to be effective. Indeed, the Delivering Better Oral Health toolkit includes an extended chapter on behaviour change.

Attending a dental practice early in childhood is a key policy of the British Society of Paediatric Dentistry and other national dental organisations, who have established campaigns such as Dental Check by One to ensure all children see a dentist as their teeth erupt or by their first birthday. These visits provide dental teams with the opportunity to focus on prevention and support parents to undertake optimal home-based oral health behaviours. The use of behaviour change theory to guide the content of these conversations is important if they are to have maximum impact.

The content of oral health conversations undertaken by dental teams is variable and research has highlighted the challenges in providing high-quality support appropriate to the needs of patients. In response, researchers have conducted focus groups and developed a structured training course for Foundation Dentists including behaviour change theory, small group work, and forum theatre (52). This provides dentists in the early stages of their career a safe space to develop their skills and practise difficult conversations. Within Yorkshire and the Humber, this training has been rolled out to other members of the dental team. To increase the reach to other dental professionals, a behaviour change module was developed on the NHS e-learning for health Hub with videos available on YouTube, providing practical strategies to promote effective oral health conversations.

In the "Strong Teeth" programme, a training package and toolkit was developed to support dental teams to undertake effective oral health conversations with parents of young children. The toolkit provides a conversational flowchart, waiting room priority cards, toothbrushes, and videos to support these conversations. An early-stage evaluation of the Strong Teeth intervention reported acceptability to parents, feasibility of delivery for dental teams and short-term improvements in children's oral health

behaviours (2-3 months after the conversations) (53,54). Strong Teeth resource packs have been distributed to over 50,000 dental practices across UK and Europe.

The ongoing CHOICE trial investigated the impact of a dental nurse-delivered behaviour change conversation with parents and aims to enrol around 900 young children and their parents from 40 NHS dental practices across England and Northern Ireland. This trial is building on earlier work conducted in secondary care which found that after two years, 62% of children developed tooth decay in the control group as compared with 44% of children in the group who received the intervention (55).

"I didn't know you had to brush for two minutes so I used to do it for one minute but now I do it for two minutes."

– Teenager

Integrating oral health data into connected datasets

While commissioning oral health surveys remains a statutory responsibility of local authorities, oral health and dental service data have largely been excluded from connected routine datasets and birth cohorts. As a result, it is difficult to understand how oral health interacts with wider factors such as education, employment, or social care. The lack of oral health data within connected datasets has prevented researchers, public health teams, and NHS commissioners from using these key assets to improve patient care, health outcomes, and to unlock potential savings.

There are several reasons for the lack of oral health assets. These include:

- **Fragmented information about dental diseases is recorded across the public sector.** For example, patients with dental problems may seek care from a variety of health and dental services including emergency departments, 111, urgent dental services, primary dental care, general medical practices, or pharmacies. Data about oral health improvement programmes can be held by local authorities, community dental services, or independent providers. Dental extractions under general anaesthetic may or may not be recorded on Hospital Episodes Statistics depending on the provider of those services.
- A **lack of mandatory recording of an NHS number** for primary dental care summary records and other datasets to facilitate linkage with connected datasets. Without additional personal identifiers, the integration of these data assets would be more difficult or impossible.
- The **permissions and governance** around dental data assets have historically been both challenging and time consuming. The recent development of NHS Secure Data Environments and funding for linkage work will generate knowledge, good practice, and publicity about what is possible and how different dental data assets can be included.

In the North of England, connected datasets such as Connected Bradford and birth cohorts such as those in Liverpool (C-GULL), Bradford (Born in Bradford, Born in Bradford Better Start) and BaBi (birth cohorts running across 12 local authority areas predominantly in the North of England) provide opportunities and examples of good practice.

Replication of connected datasets across England led by the "Data Improvement Across Government group" together with ICBs and NHSE Regional Secure Data Environment will enable monitoring of population oral health, enhance equitable commissioning, and provide routine data for further evaluation and research.

Only by connecting our public service data can we: (i) begin to understand how services intersect and interact within families; (ii) allow the essential information-sharing that will safeguard CYP; (iii) understand how CYP move through different health providers such as urgent dental care services or referral from general practice to specialist services and back; and (iv) enable data-driven, community and family co-produced "whole system" approaches to improve and evaluate CYP's oral health.

Future research to inform policy

Funders have previously supported a range of child oral health research projects to tackle some of the key clinical and public health issues, but there is now a need to focus more on research to inform the developing national and local policy agenda. In 2018, a research priority setting exercise was undertaken by the James Lind Alliance (JLA) with many of the priorities being particularly relevant to improving children's oral health through the prevention of dental diseases and ways to improve access to dental services (56). Most of the priority areas have not since been addressed and there remains many unanswered research questions of policy importance related to improving children's oral health.

"The classroom-based session was a good idea because we've got **a lot of kids losing their teeth** so I felt it was definitely worthwhile. One of the girls who was in the class told me **she was 12 and had already have eight teeth out** so that made it feel like it is important."

– Secondary school member of staff

Innovative approaches trialled in the real world

The recommendations made within this report are based on innovative ways of working that have been trialled in real-world settings. In this section, we highlight seven evidence-based approaches - new tools and ways of working - designed in alignment with the principles set out in this report.

These examples demonstrate good practice that others can draw on, offered here not as blueprints for copying, but to inspire new thinking and practice.

1

Sheffield's Sweet Enough

Sheffield's Sweet Enough is a five-year initiative commissioned by Sheffield City Council to support residents' understanding of the harms of consuming too much sugar. The campaign took a two-pronged approach. Firstly, there was an overall city approach, with a focus on working in the most deprived areas (that typically have higher rates of obesity, tooth decay, and diet-related ill-health) and working with diverse communities such as the Roma community who have higher decay rates in national surveillance reports. Secondly, a place-based approach was taken working with local businesses, leisure centres, schools, early years services, and dentists.

The initiative had both a physical and digital presence with the use of billboards and advertising space plus a website. The website contains assets developed based on requests from the local community, co-produced to include lesson plans, a "feed your family for less" pack, and weaning resources. Partnerships with local businesses were developed including with the Co-Operative supermarket and "Places for People", a social enterprise which runs leisure centres across the city.

"I didn't realise how much hidden sugars were in food, particularly things like yoghurts aimed at children. As a parent I find this really misleading and **now know what to check on the label."**

– Parent

2

toothPASTE

In response to calls from parents in West Yorkshire for practical and autism-specific advice on how to improve oral health habits, the toothPASTE project collaborated with autistic CYP, their families, and early-years professionals to co-design a support package. Tailored to the specific needs of autistic CYP and their families, this package includes resources such as a website and training for early-years professionals, which will be available from Autumn 2024. The training aims to ensure various early-years professionals, not just within healthcare, feel confident in providing oral health support that is sensitive to the unique needs of autism. The programme is accessible irrespective of receipt of a formal diagnosis or not. This whole-system approach will be continuously refined in collaboration with local authorities and key stakeholders to ensure its relevance and effectiveness, drawing on lessons from other successful programmes such as Healthier Together and Autism Central. The toothPASTE project aims to demonstrate how targeted interventions and collaborative approaches can improve oral health outcomes for CYP and parental empowerment.

"We have tried numerous toothbrushes, toothpastes, and techniques, **but the process remains a daily battle."**

– Parent of autistic children

3

The Westend foodbank, Newcastle

In the North East, Newcastle University and Newcastle Hospitals NHS Foundation Trust dental staff and students worked in partnership with the Westend foodbank to increase dental access for children (0- to 16-years-old) whose families engaged with the foodbank over a five-day period in April 2024. Each child who attended the foodbank was offered a dental check and application of fluoride varnish or silver diamine fluoride. In total, 141 children were assessed. Fifteen children had silver diamine fluoride applied, 125 had fluoride varnish and one refused. Five children had signs of severe tooth decay or abscesses and were signposted to student dental clinics. Engaging with the foodbank provided a unique opportunity to reduce barriers and provide care for the most vulnerable children. Parents/carers and staff spoke of the importance of their trust in the foodbank being an important factor in encouraging them to engage with the dental team present.

"She had an abscess in her mouth and when they pulled the tooth out it just went pop. It was horrible to see but **how much longer would she have had to wait** to get the treatment that she needed?"

– Parent

4

Child Friendly Dental Practices

Child Friendly Dental Practices (CFDPs) were first established in the South of England to provide treatment to children referred from their own dentist to the specialist paediatric service, where there were long waiting times. The aim was to provide timely access to dentists who have a particular interest in treating young children, have received additional training, and are remunerated for the additional time needed with these patients. The pilot indicated substantially reduced wait times for children seen through a CFDP compared to the traditional specialist paediatric dental pathway, with a large proportion (over 50%) being treated successfully within CFDPs and with less distance to travel for patients. The CFDP scheme is currently being evaluated as part of the PANDA study, which will utilise a "realist approach" to determine the impact of this pathway on dental outcomes, costs to the NHS, and patient experiences (57).

"If we don't help them now, they are going to grow up to be adults with **a mouth full of rotten teeth** who will need very difficult extractions, who are **terrified to come in.**"

– General Dental Practitioner

5 HABIT

HABIT (Health Visitors delivering Advice in Britain on Infant Toothbrushing) is an intervention that supports health visitors and their wider team in having effective oral health conversations with parents of infants.

The series of online resources were co-produced by health-visiting teams and parents across Bradford. The website contains a section for professionals, directing them to training resources, as well as sections for parents and families of infants. Working with Better Start Bradford, resources were created to be accessible and easily usable by those with English as an Additional Language. They share information on the importance of brushing, eating and drinking for good oral health, practical tips for visiting the dentist, and how to correctly brush your child's teeth.

Moving forwards, the HABIT intervention is now being integrated into health-visiting services across Bradford and Wakefield for universal home visits. Researchers are also working to include HABIT conversations within the Maternal Early Childhood Sustained Home-visiting (MECSH) programme.

6 BRIGHT

The BRIGHT project (Brushing RemInder 4 Good oral HealTh) has developed a secondary-school based intervention for pupils aged 11-13-years to promote toothbrushing and reduce the prevalence of tooth decay. First, the students take part in a classroom-based lesson about dental health based on behaviour change theory. The session is delivered by teachers, who are given a detailed lesson pack, including interactive activities. This can be followed by a series of twice-daily text messages sent to pupils own mobile phones to promote tooth brushing. It has been endorsed by the Personal, Social, Health and Economic (PSHE) Association for Key Stage 3 children and the resources have already been downloaded over 900 times.

7 BRUSH

BRUSH (optimising toothBrushing pRogrammes in nUrseries and ScHools) works with a range of stakeholders, aiming to learn how best to implement toothbrushing programmes and how to increase their uptake and success in the longer term. The toolkit serves as a centralised hub, bringing together good practice and both new and existing resources that can be downloaded and adapted for the local context to help support the implementation of supervised toothbrushing programmes and clubs. Resources provide information for parents, early years settings, service providers, and commissioners. The toolkit has been launched with the support of national and local government departments covering health and education, ICBs, and early-years teams. In the first 6 months, the toolkit received over 10,000 unique visitors from across the world.

Moving forwards, in-depth pilot testing of the toolkit at several sites will be undertaken to understand further the implementation journey and refine the toolkit to ensure the benefits of supervised toothbrushing are realised for more children across the country. Additional work will be undertaken with special schools, Holiday Activities and Food programmes, and childminders to provide appropriate guidance and resources for these settings.

NIHR Applied Research Collaboration Yorkshire and Humber

The NIHR Applied Research Collaboration (ARC) Yorkshire and Humber is an important programme of applied research, hosted within Bradford Institute for Health Research, and delivered through a partnership of organisations, including NHS organisations, local authorities, universities, third sector organisations, and industry. The themes of healthy childhood, mental health and multimorbidity, older people and urgent care are the priorities that have been identified by NHS partners and the public and ensure the region benefits from cutting-edge innovation. The ARC undertakes research to better understand the causes and consequences of living with both mental and physical health problems; and by working with people with lived experience, and NHS, social care, and third sector partners to develop and test new approaches and put research findings into practice. The ARC ensure NHS and social services can improve effectiveness and impact to benefit our patients and their families – and this includes a major focus on oral health in children.

Inspiring the next generation of dental professionals

In the North of England, Universities of Liverpool, Central Lancashire, Manchester, Leeds, and Newcastle provide extensive outreach programmes for their students with dental care provided to a wide range of communities, often in areas with high dental needs.

Outreach training, Sheffield

The outreach programme is run by the School of Clinical Dentistry at the University of Sheffield. It has approximately 72 dental students and 24 dental hygiene and dental therapy students per year providing dental treatment in seven placements in general dental practices and community clinics in deprived areas of South Yorkshire. Every year, each student provides prevention-oriented care for approximately 30 children and gains valuable experience in delivering care to families in areas where the prevalence and severity of tooth decay are high.

The Smile Squad initiative, Liverpool

Formed in 2022, the "Smile Squad" is an exciting and innovative collaboration between the University of Liverpool Paediatric Dentistry team, a local dental practice (Elbow Lane Dental Care) and the Liverpool Football Club (LFC) Foundation. The LFC Foundation delivers over 50 programmes to schools and community venues across Merseyside and beyond.

Two-thirds of LFC Foundation participants are from the country's 20% most deprived wards. The goal of the Smile Squad is to identify children with unmet dental needs within the Liverpool City region, provide them with evidence-based prevention and signpost dental services. In addition, the initiative aims to expand the knowledge and training of dental students beyond the traditional dental setting.

During primary school visits, Smile Squad teams of dentists, dental therapists, and dental students help set up supervised toothbrushing schemes for children in Years 3-6 in primary schools. In addition, dental teams perform a "look in the mouth" for each child and any children identified with dental disease without access to a local dentist are offered the opportunity to attend the dental students' clinics.

The programme has expanded from a pilot in three primary schools in the 2022/23 academic year to being integrated into the university curriculum in 2023/24 – ten primary schools have been visited, 1,049 children assessed and of those, 40% have been deemed to need further dental care.

Other Smile Squad activities include attending LFC Foundation evening and holiday football training for CYP in the Merseyside region to offer oral health advice and screening. The Smile Squad also visited a nearby hotel hosting refugee families struggling to access dental care and liaised with the local authority team to provide oral health support to over 150 children. The Smile Squad provided toothbrushing advice to the families, screened the children for dental disease and facilitated dental access via local services. Collaborations with community dental services, general dental practices and Alder Hey Children's Hospital have enabled a streamlined approach to ensure each child receives the appropriate management and care.

In addition, the programme regularly visits family hubs within the city to provide oral health advice and dental checks for children aged 0- to 5-years-old. To date, 299 children have been reached in community settings. Finally, the Smile Squad is working with local dentists to support oral health improvement and develop strong community engagement in the education of dental professionals.

"Overall, **I learnt a lot and really developed my clinical skills...** [I] feel much more confident treating patients in a huge variety of situations."

– Sheffield dental student

RAISED In Yorkshire (RiY)

In West Yorkshire, RAISED In Yorkshire (RiY) has been co-created with students from Year 12 and 13 (16-18-years-olds) as a sustainable peer-led Citizen Science project that provides oral health lessons to Year 7 (11-12-year-olds) from secondary schools in deprived areas. In this programme, recently qualified dental professionals from Leeds University train Year 12 students (known as "RiY Student Research Fellows") who in turn deliver teaching to pupils in local schools about the importance of oral health. There is an ongoing evaluation of the programme including the impact on career aspirations of the peer-to-peer delivery approach, changes in child oral health knowledge, skills, and behaviours plus the effect on the oral microbiome.

Graduating RiY Student Research Fellow – Mariya

Mariya was a RiY Student Research Fellow in 2018/2020. She described how taking part in RiY gave her valuable work experience, which she included in her university application form. She successfully gained a place to study dentistry at the University of Leeds and graduated in 2023 with a distinction. She is now working as an NHS dentist back in her local West Yorkshire community, which has high rates of tooth decay and where access to dental services is challenging. In 2023/24, Mariya provided training to new RiY Student Research Fellows and continues her support for the RiY programme.

End word

Fiza Ahmed

Fourth Year dental student (BDS4),
University of Liverpool

For many of us, dental care and healthcare is quite easily available on demand. We have grown up in communities where regular dental checkups are emphasised and seen as being included in overall health. The Smile Squad dental screening program enabled us to extend this care to the wider community.

Interacting directly with the community was an eye-opening experience. It became clear that there is a significant need for accessible dental care, especially in underserved areas and amongst certain population groups. Many of the patients we screened had not seen a dentist in years, and it was rewarding to provide them with essential screenings and advice. This experience highlighted the disparities in healthcare access and reinforced my commitment to addressing these issues.

Furthermore, the experience deepened my appreciation for the impact of preventive care. Many dental issues can be mitigated with early detection and appropriate education, and this programme provided a tangible way to promote those principles. I can now appreciate that preventive measures not only improve individual health outcomes but also reduce the long-term burden on the healthcare system.

As part of the Smile Squad initiative, we were fortunate to get involved with the youngest members of a very marginalised refugee community, whose incredible strength and resilience is likely to mask the underlying worries and fears. Communication with children required a different approach as many of them were initially anxious, especially those who had never previously visited a dentist. By explaining the process through engaging stories and demonstrating brushing on teeth models, we made the experience less intimidating. Working with the children was a very rewarding experience and was indeed a steep learning curve.

It was inspiring to observe my tutors display remarkable adaptability and resourcefulness. In situations where resources were limited or unexpected challenges arose, they remained calm and found innovative solutions such as using disposable sterile dental instruments and headlights to mimic a ceiling-mounted dental light. Whether it was improvising with available materials or adjusting their approach based on the cultural context of the community, their flexibility ensured that the screenings were both effective and respectful of the patients' backgrounds.

Attending Smile Squad visits, taught me that being a healthcare provider is not just about technical expertise; it is about compassion, communication, and a deep commitment to improving the lives of the patients we see. I now understand that as we progress in this career, it is my duty, alongside my colleagues, to ensure dentistry is a profession which upholds poverty proofing as a core principle. To me, Smile Squad visits have reemphasised the prime goal of why I had chosen this career: to be able to provide dental care and educate patients, persistently creating new solutions to overcome healthcare barriers.

"I can now appreciate that preventive measures not only improve individual health outcomes but also **reduce the long-term burden on the healthcare system.**"

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