



# Oral Health

## JSNA Report

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## Executive summary

Oral health is a key component of general health and wellbeing and, since 2012, it has been the role of the local authority to monitor the oral health of their population, alongside providing appropriate oral health improvement services.

There is a clear social gradient when it comes to poor dental health, with rates of tooth decay rising with increasing levels of deprivation (1). Knowsley is the second most deprived Local Authority (LA) in England, with 46% of the population living in the 10% most deprived areas, as defined by the Indices of Multiple Deprivation (IMD) 2019 (2,3). There is direct correlation between deprivation and oral health, which translates to significantly worse oral health reported within the district compared to the England average. In 2022, 37.7% of Knowsley's five-year-old children experienced tooth decay, in comparison to an average of 29.3% across England. Additionally, an adult oral health survey conducted in 2018 found 90.1% of individuals attending a dentist in Knowsley needed treatment higher than both the regional (78.8%) and national (70.5%) average suggesting that more people may seek a dentist for treatment as opposed to a standard check-up (4).

The rate of oral cancer diagnoses in Knowsley are the third highest in the country and the oral cancer mortality rate is the second highest in the country (5). It has been estimated that 65% of hospital admissions and 64% of deaths due to oral cancer in England were attributed to smoking (2). Although rates of smoking are decreasing in Knowsley, they remain higher than the regional and England average. Alcohol is also a known risk factor for oral cancer with evidence high levels of consumption can cause tooth decay(6,7). Knowsley has consistently had a significantly higher rate of alcohol related hospital admissions than the England average.

A number of oral health improvement actions have been recognised as priorities for the council including:

- Supervised tooth brushing in early years settings
- The provision of fluoride toothpaste and toothbrushes via Health visitors
- Oral Health training for wider workforces and professionals
- Oral Health training for care staff/carers
- Protocols for oral care in care settings

The future challenges that have been recognised locally include, an ageing population, the ongoing cost-of-living crisis and limited access to NHS dental health service provision, as well as funding for continued resource for oral health improvement programmes.

## Draft Recommendations

The recommendations outlined below have been drawn from the existing evidence and data as well as engagement with relevant groups and stakeholders. This oral health needs assessment refers to the recommendations throughout the report, with evidence and prioritisation of interventions outlined in Section 4.

Recommendation		Lead(s) / vehicle
Strategy		
1	Integration of oral health across relevant programmes and workstreams, through embedding oral health early intervention and prevention into health improvement strategies with a focus on at risk groups, for example, children, smokers, individuals with high alcohol consumption.	Public Health NHS Knowsley
Public Health Intelligence		
2	Continue to participate in local and national dental surveys to monitor trends and oral health needs of the population	Public Health
Prevention		
3	Deliver training programmes for front line health and social care teams to increase knowledge and skills to deliver oral health improvement messages and interventions	Commissioned Service by Public Health
4	Deliver oral health improvement interventions which reduce inequalities within vulnerable groups	Commissioned Service by Public Health
5	Continue to improve the oral health of vulnerable older adults within care homes through collaborative working with the social care sector to implement NICE and Care Quality Commission (CQC) guidance	Oral health promotion group Commissioned service by Public Health
6	Continue to improve the oral health of children and young people through collaborative working with the education sector to implement evidence-based interventions to increase fluoride availability	Oral health promotion group Commissioned Service by Public Health
7	Advocate for future funding provision of oral health improvement programmes, ensuring they continue on a long-term basis.	Public Health NHS Knowsley
8	Improve early diagnosis of oral cancer through promoting awareness of signs and symptoms amongst general public and ensuring dentist do oral cancer screening examination as part of the dental check up	Oral health promotion group Commissioned Service by Public Health  NHS

Dental service quality and accessibility		
8	Develop and implement strategies to increase primary and secondary dental care usage and access particularly among under 2's and vulnerable groups such LAC	NHSE NHS Knowsley Public Health
9	Explore and work to address, local specific barriers to accessing dental care across population. A recent Healthwatch report found significant access issues – with 75% of comments relating to access showing negative results.	NHSE Healthwatch

## 1. Introduction

### 2.1 Purpose of report

#### Aim

The purpose of this report is to set out current understanding of issues relating to oral health in Knowsley, based on analysis of the latest available data and make recommendations to improve the oral health of the population and reduce inequalities.

#### Objectives

- to describe the oral health needs in the Knowsley population
- to describe the current oral healthcare and dental public health services provision
- to identify any gaps in service provision
- to identify the key issues to consider for the future development of high quality, evidence based, and outcomes focused oral healthcare and dental public health services across Knowsley

### 2.2 Data and intelligence

Data on the oral health of the population comes from epidemiological surveys and service level data in the main. Whilst the oral health data for children offers us some insight, there are gaps in availability of adult dental health data.

In some of these areas, an attempt has been made to gather some local information. Furthermore, due to the nature of such studies it is not always possible to analyse trend data for population cohorts which means data may be influenced by age or cohort effects. Some data may also be relatively dated.

The report contains detail on the following populations groups throughout the life course:

- Children
- Adults

- Vulnerable groups – specifically those with learning disabilities, those with mental illness and substance misusers

### 2.3 Why oral health is important

Poor oral health is a significant public health issue due to its inequitable distribution, associated morbidity, and its wider economic and societal costs including treatment costs and days of school or work lost (8).

Oral health is a key indicator of overall health, well-being, and quality of life (9). Oral health improvement not only encompasses looking after teeth it also looks at the wider issues including: diet, tobacco and alcohol consumption as well as access to the right dental health services.

WHO defines oral health as:

*“the state of the mouth, teeth and orofacial structures that enables individuals to perform essential functions such as eating, breathing and speaking, and encompasses psychosocial dimensions such as self-confidence, well-being and the ability to socialize and work without pain, discomfort and embarrassment” (10).*

However, it means more than simply having “good teeth”, oral health is integral to general health and well-being. Toothache, infections and tooth loss can have a significant effect on wellbeing and oral health can have a direct effect on other serious health issues. Poor oral health exists across and within differing population groups of all ages however social determinants do have a significant impact. Furthermore, despite tooth decay being largely preventable it is the leading reason for hospital admissions in children aged five to nine years (11). Overall, the monetary cost of dental health to the NHS stands at £3.4 billion with an additional £2.3 billion spent privately (12). There was a total of £40 million spent on tooth extractions for children alone in 2018 (13).

Poor dental health impacts every aspect of a child’s life, including their ability to eat, sleep, socialise and attend school (14,15). On average, children miss three days of school each year due to poor dental health (15). Missed school days have broader implications, impacting educational attainment, future social mobility, and parental income due to days of work lost (16). Furthermore, tooth decay is the leading reason for hospital admissions in children aged five to nine years (11). In 2018, over 26,000 children aged 5-9 years were admitted to hospital for tooth extraction in England (11,17).

The Health and Social Care Act (2012) put the responsibility of promoting and improving the dental health of a population into a local authority setting. However, all clinical services are commissioned by NHS Cheshire and Merseyside (18). The local authority is therefore

responsible for commissioning oral health improvement programmes which are most appropriate for their populations needs. In November 2022, the power to implement water fluoridation has transferred to the secretary of state after recognition of the administrative barriers, for instance cross boundary water supply at a local authority level (19).



## Data and intelligence – The Knowsley Picture

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### 3.1 Children's oral health

#### Background

In 2021/22, 31.2% of five-year-old children in Knowsley experienced tooth decay compared to an average of 23.7% across England (20). Additionally, the average number of decayed missing or filled teeth (dmft) in Knowsley for five-year-old children stands at 0.89, significantly higher than the England average of 0.80 (21). Data are based on national survey estimates, making data less reliable at a more granular level due to small numbers; therefore, data below LA level is not presented. Furthermore, parents must consent for their child to partake in the survey, parents of children with poor oral health may be less likely to take part (22).

There are 35,585 children aged 0-18 years in Knowsley, accounting for 23% of the total population (23). Identifying the contributory factors to poor dental health allows a more explicit focus on the most appropriate interventions (24). There is a lot of emphasis on lifestyle factors when it comes to dental health, with poor oral hygiene and eating habits given predominant attention. However, as we know, there is a clear social gradient when it comes to poor dental health, with rates of tooth decay increasing with higher levels of deprivation (1). Knowsley is the second most deprived LA in England, with 46% of the population living in the 10% most deprived areas (2,3). Additionally, 8,660 children are living in relative poverty, and there are 290 looked after children, these factors have been shown to put children at an increased risk of poor dental health (8,25,26). Therefore, implementing interventions that consider the environmental and social barriers to poor dental health practices will have the most significant impact.

#### Three-year-old children

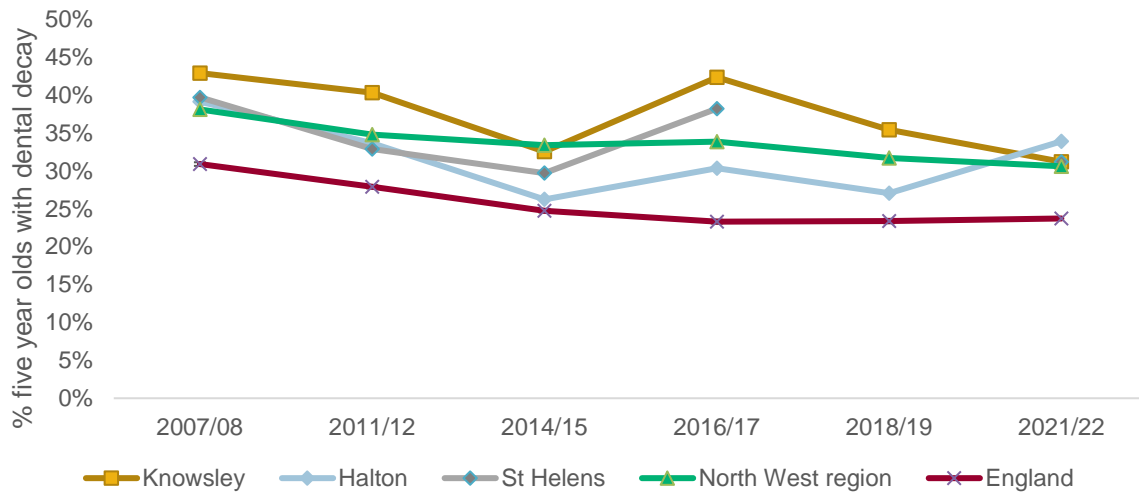
In the school year 2012/13 the first ever national survey to assess the dental health of 3-year-old children was undertaken. This data is no longer presented due to how out of date it is to offer insight into the current picture. There was a recurrence of this survey in 2020, however due to the pandemic and capacity, Knowsley Council did not take part with this commission, it is not known what year this will be repeated.

#### Five-year-old children

The proportion of five-year-old children with dental decay in Knowsley has been consistently significantly higher than the England average since the surveys were first conducted in 2007/08 (**Figure 3.1**). In 2021/22, 31.2% of five-year-old children experienced tooth decay in

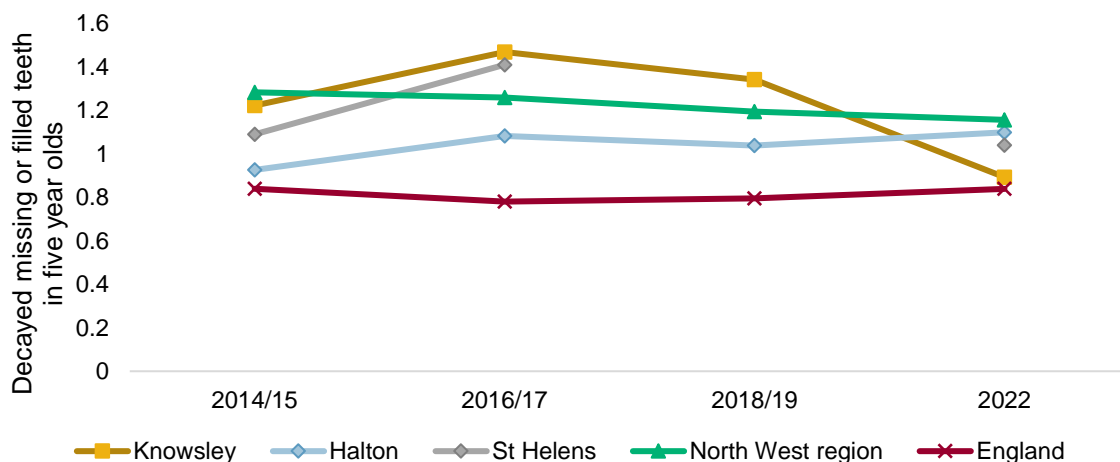
comparison to an average of 23.7% across England. Although there are slight fluctuations between years the rate dental decay has remained relatively stable

**Figure 3.1:** Proportion of five-year-old children with dental decay. **Data source: Public Health profiles**

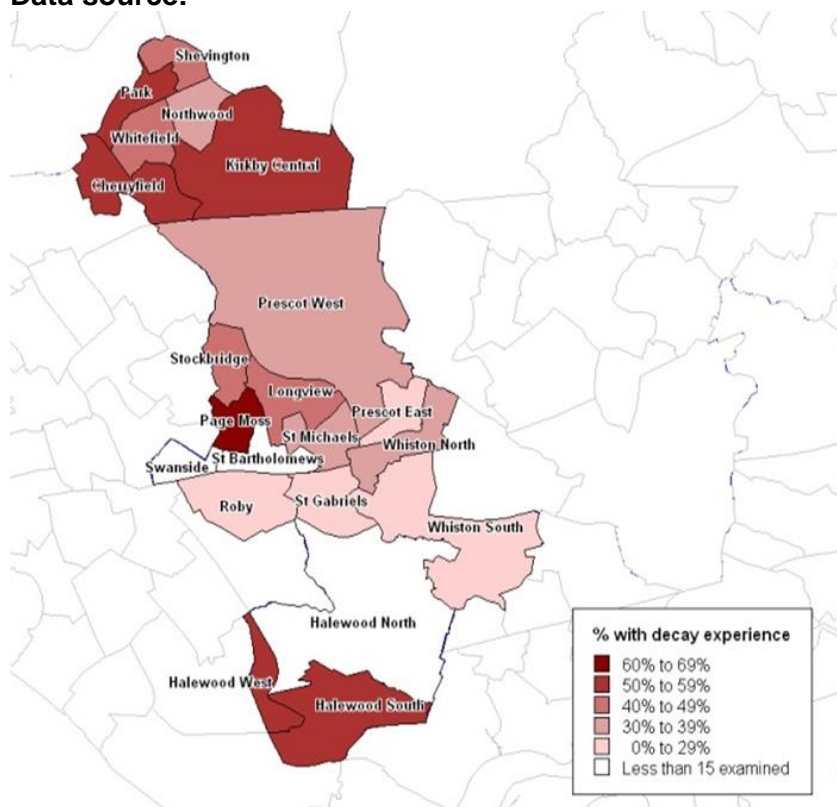


The average number of decayed missing or filled teeth (dmft) in Knowsley for five-year-old children stands at 0.89 this is a decrease seen on previous years, with the last recorded number of dmfts at 1.34 (**Figure 3.2**). The average number of dmft is now similar to the England average 0.83 and below both the regional average and statistical neighbours, however, with overlapping confidence intervals due to a small sample size we cannot say whether this is truly significantly different.

**Figure 3.2:** Proportion of five-year-old children with decayed missing or filled teeth (dmft). **Data source: Public Health profiles**



**Figure 3.3:** Proportion of five-year-old children with dental decay by ward in Knowsley District.  
**Data source:**



### 12-year-old children

The oral health survey of 12-year-old children conducted in 2009 shows the percentage of Knowsley children who have experienced tooth decay as 56.1% which was much higher than the Northwest (39.8%) and England average at 33.4%. This survey also reported that amongst children self-reported oral health problems and impacts varied by socioeconomic position. Children aged 12 and 15 years who were eligible for free school meals were more likely to report toothache in the past 3 months. Twelve-year olds who were eligible for free school meals were also more likely to report bleeding or swollen gums (21%) or a broken tooth (12%) in the previous 3 months than their counterparts who were not eligible for free school meals (14% and 7%).

The next National Dental survey will be undertaken on year 6 children; this is replacing the historic 12-year-old survey. Knowsley Council is currently partaking in this, and results will be due in 2024. As well as the survey providing national and local statistical data it will also provide information on possible impacts of the Covid-19 pandemic on oral health and oral health inequalities.

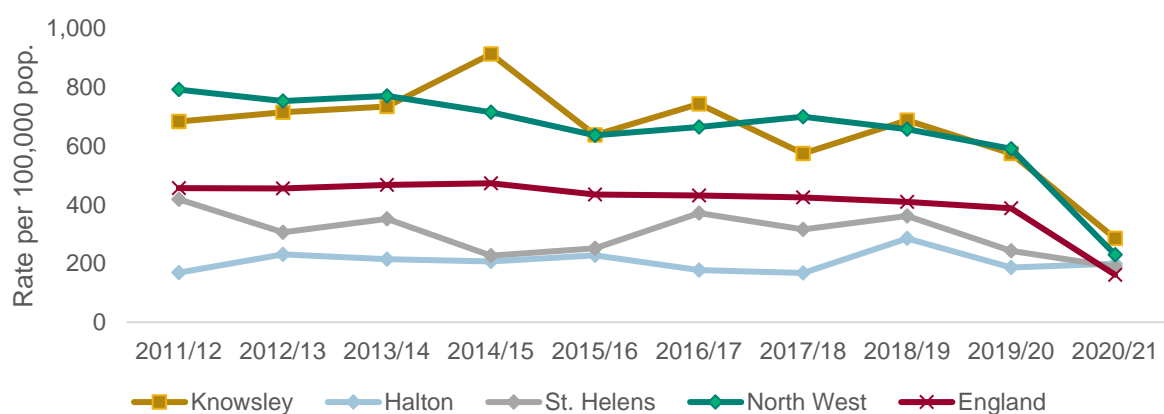
## Special support schools

The results of a 2014 Dental Health survey of 5-year-old and 12-year-old children attending special support schools shows that nationally for both age groups, the severity and prevalence (% of children affected) of tooth decay was slightly lower than for children of the same age attending mainstream school (27). However, in both age groups, where children attending special support schools do have tooth decay, they tend to have more teeth affected than the children attending mainstream schools. Similar to the surveys undertaken in mainstream schools, this survey demonstrates regional and local variations. The Northwest has the highest levels of dental decay at both 5 years old and 12 years old. Unfortunately, due to low numbers included in the survey there is no local information available for Knowsley children. Further information on special schools can be found here [SEND-JSNA.pdf \(knowsleyknowledge.org.uk\)](https://knowsleyknowledge.org.uk/SEND-JSNA.pdf).

## Hospital admissions for tooth extractions

The rate of tooth extractions in Knowsley has been consistently higher in comparison to our statistical neighbours and England average but remain in line with the regional North West trend since 2011/12. There was a decrease observed in the rate of tooth extractions in Knowsley in 2020/21, however, this was potentially impacted by a decrease in access in 2020/21 due to Covid-19.

**Figure 3.4:** Tooth extractions due to decay for children admitted as inpatients to hospital, aged 10 years and under. **Data source: NHS Digital, 2023 (28).**



## Limitations

Data are subject to several limitations. First, all information except hospital admissions data are survey based and may underestimate total burden as parents of children with less dental decay may be more willing to partake in the survey. Second, due to small numbers identifying

difference at a local geography area must be interpreted with caution as undue differences may be detected. Third, data does not cover all age groups with data on older children being especially limited.

## **2.2 Adult oral health**

In 2018, an oral health survey of adults attending general dental practices was conducted. In total there were 147 participants in Knowsley of which 132 had a clinical examination (4).

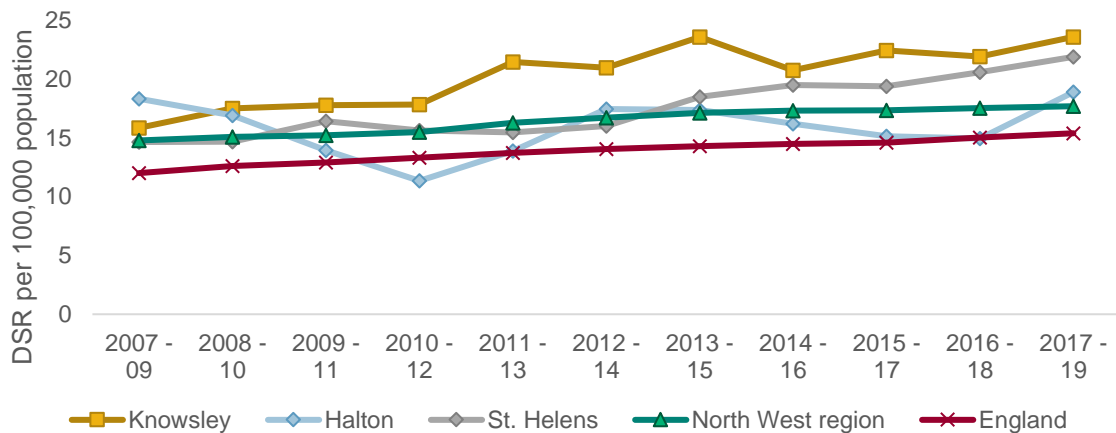
The survey found that almost one in three had active decay, 88.6% had filled teeth in line with the national average. There was a higher proportion of individuals with dentures 24.2% in Knowsley versus 15.4% in England. Bleeding gums (on probing) was experienced by 75% of individuals examined in Knowsley, higher than both the regional (58.8%) and national average (52.9%). Of all the individuals examined, 90.1% had a treatment need, which was higher than both the regional (78.8%) and national (70.5%) average suggesting that more people may seek a dentist for treatment as opposed to a standard check-up. However, only a slightly higher proportion had not seen a dentist in the preceding two years (8.8%) versus 7.9% in England. Furthermore 25.2% reported experiencing one or more impacts of poor oral health 'fairly' or 'very often' in the previous year.

Although the survey suggested it was representative of the general population overall, only those who attended dental practices were surveyed, which mean findings may not be representative of those unable to access an NHS dentist. Additionally, further population breakdown with relevant demography was not provided for Knowsley, so we should be hesitant to make the same assumption based on these data.

## **Oral cancer**

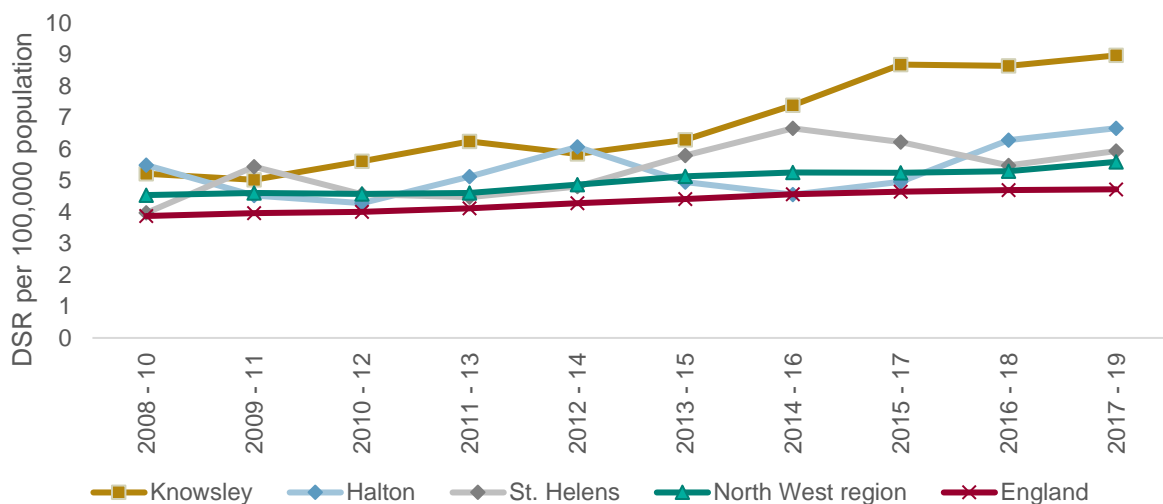
The rate of oral cancer diagnoses are significantly higher in Knowsley in comparison to the regional and England average (5). However, Knowsley follows a similar pattern to St Helen's; a statistical neighbour located in the region. The rate of oral cancer diagnoses in Knowsley are the third highest in the country, with a rate significantly higher than the regional and England average.

**Figure 3.5:** Directly standardised rate of oral cancer registrations in Knowsley, statistical and geographical neighbours St Helen's and Halton, and the regional and England average. **Data source: Public Health profiles**



Knowsley has the second highest rate of oral cancer mortality in the country with a rate significantly higher than the England and North West region (5). Knowsley has the highest rate of oral cancer mortality amongst all the statistical neighbours. The mortality rates of oral cancer in Knowsley have increased in recent years with a directly standardised age rate of 6.3 per 100,000 between 2013-2015 equating to 24 deaths and a rate of 9.0 per 100,000 (37 deaths) in 2017-2019.

**Figure 3.6:** Directly standardised mortality rate of oral cancer registrations in Knowsley, statistical and geographical neighbours St Helen's and Halton, and the regional and England average. **Data source: Public Health profiles**



## 2.3 High risk groups

The Office of Health Improvement and Disparities have recognised certain individuals who are at higher risk of poor oral health due to their personal circumstances (8). These groups include homeless people; prisoners; travellers; people with longstanding medical conditions; refugees; looked-after children; sex workers, individuals with a learning disability and individuals with a mental health issue. There are no specific local data looking at the prevalence of poor oral health in relation to these groups in Knowsley. However, for the majority of these identified higher risk groups Knowsley has significantly higher rate than the England average.

**Table 3.1:** Number and rate of individuals who are within a vulnerable group in Knowsley population. **Data source: Public Health Profiles**

	Number	Knowsley rate per 10,000	England rate per 10,000		Year
Looked after children	299	89	64	Significantly worse	2018
Statutory homelessness: rate per 1,000 households	43	7	40	Significantly better	2017/18
Mental health admissions to hospital (2019/20 Q1)	95	32.7	27	Significantly similar	2019/20 Q1
	<i>Number</i>	<i>% (95% CI)</i>	<i>England %</i>		
Estimated prevalence of common mental disorders: % of population aged 16 & over	24,958	21% (19.6% - 22.7%)	16.90%	Significantly worse	2017
% with a long standing health condition (2022)		61.9% (59.8% - 64.1%)	53.50%	Significantly worse	2022
Learning disability: QoF prevalence (2020/21)	1146	0.7% (0.6% to 0.7%)	0.50%	Significantly worse	2020/21

## 2.4 Risk factors

### Tobacco

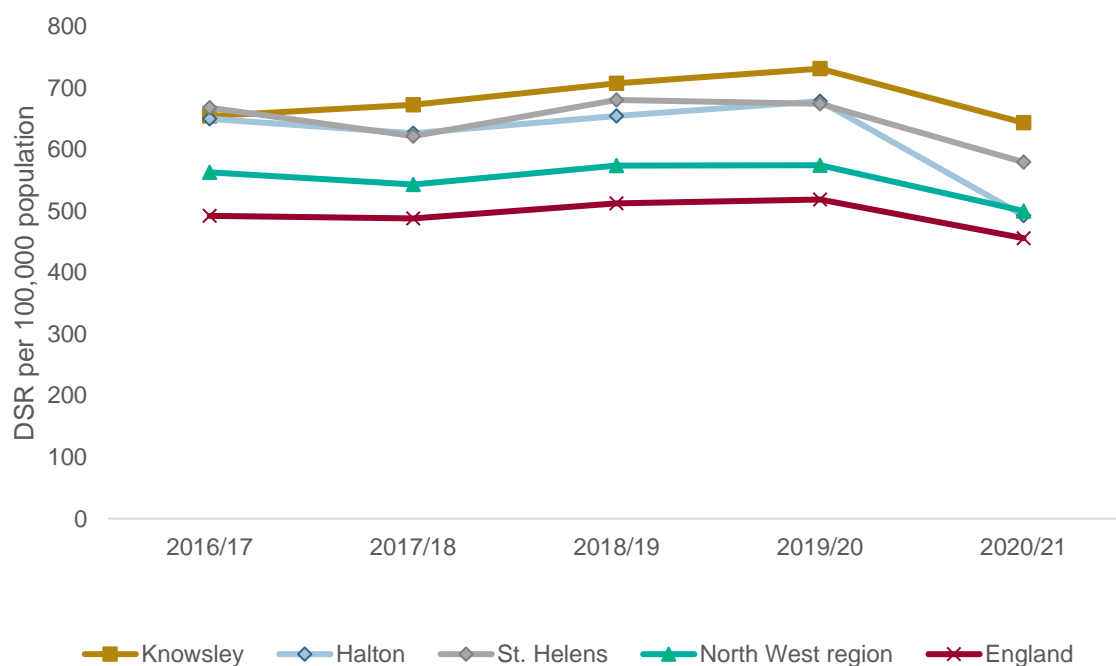
Tobacco is a known risk factor for oral cancers (1). It has been estimated that 65% of hospital admissions 64 % of deaths due to oral cancer in England were attributed to smoking (2). Oral cancer registration is therefore a direct measure of smoking-related harm.

There are two separate data sources for estimating the smoking prevalence within the district – GP prevalence estimates and the Annual Population Survey (APS). The GP prevalence data estimate the prevalence of current smokers to be 19.7% for adults 15+ and the APS estimate the prevalence to be 14% for those aged 18+. Although the overall prevalence varies from these sources both show an overall decreasing trend in the past decade with rates higher than the regional and England average.

### Alcohol consumption

Alcohol is also a known risk factor for oral cancer it is also strongly linked to tooth decay. A strong predictor of alcohol consumption across the district is the rate of hospital admissions for alcohol related conditions (**Figure 3.7**). Knowsley has consistently had a significantly higher rate than the England average. However, it does appear that rates are decreasing in the younger age groups.

**Figure 3.7:** Admission episodes for alcohol-related conditions. Directly standardised rate - per 100,000. **Data source: Public Health profiles**



### Unhealthy diet

An unhealthy diet is a known risk factor for poor oral health, with foods high in sugar having a detrimental impact to oral health. One indicator for assessing the level of healthy eating within the district is the proportion of the adult population meeting the recommended '5-a-day' on a 'usual day'. In 2019/20 43.8% of adults in Knowsley were meeting this guideline, significantly below both the regional (51.2%) and national average (55.4%).



Another key indicator of a healthy diet are the levels of overweight/obesity. Knowsley has the third highest rate of overweight children in reception (31.1%) and fourth highest rate (43.2%) by year six across all local authorities in England. This is potentially indicative of a poor diet with an impact on oral health.

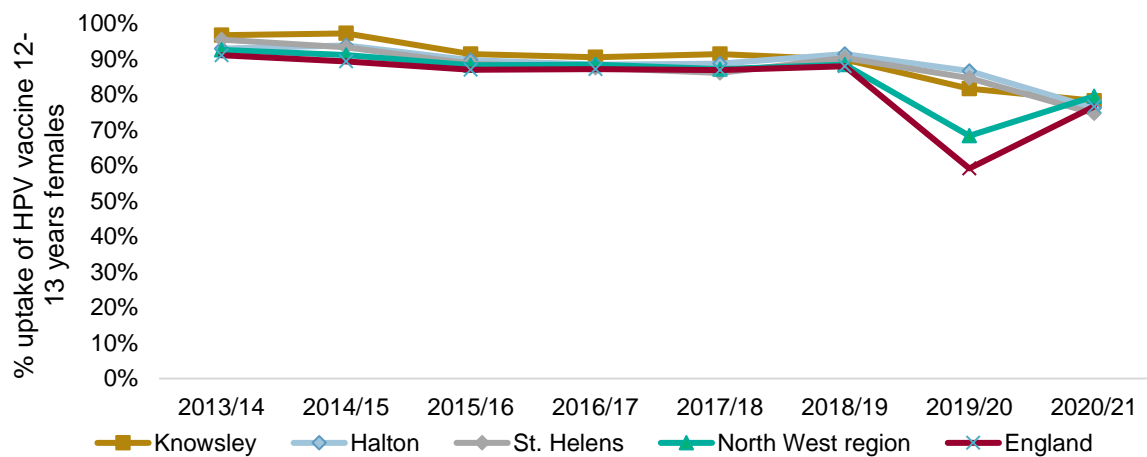
### HPV – (human papillomavirus)

HPV is also known to be a cause of oropharyngeal cancers though estimates of the proportion of cases which can be attributed to HPV vary widely and range from 6% to 71%(29). Individuals are at an increased risk of oral cancer due to HPV based on the age of their first oral sex experience (30–32).

A vaccine to protect against HPV infection was introduced in the UK in 2008 and was initially just rolled out to girls aged 12-13 years to protect against cervical cancer. From September 2019, young males aged 12-13 years were also universally offered the vaccine.

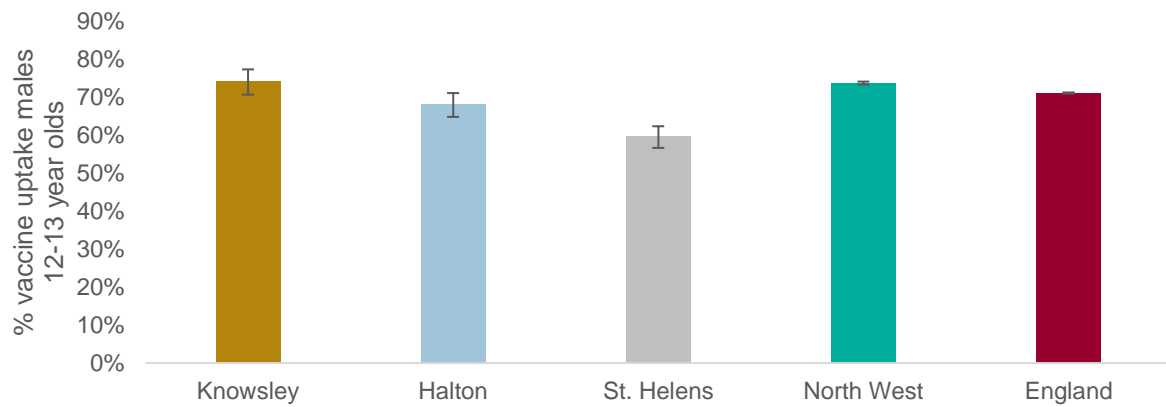
The Covid-19 pandemic appears to have had significant impact of the vaccine uptake of 12–13-year-old females with a substantial drop seen in 2019/20 in England and the North West Region. The drop in uptake was not as significant in Knowsley. However, while uptake increased in England and the North West uptake has continued to decline in Knowsley.

**Figure 3.8:** Proportion uptake of HPV vaccine 12–13-year-old females. **Data source:** Public health profiles



As the HPV vaccine was only recently introduced to males in September 2019 there is limited trend analysis possible to ascertain the impact of the Covid-19 pandemic. Currently the uptake in Knowsley is similar to both the North West and England average.

**Figure 3.9:** Proportion uptake of HPV vaccine 12–13-year-old males 2020/21. **Data source:** Public health profiles



# Oral health promotion interventions – evidence of what works

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## 4.1 Background

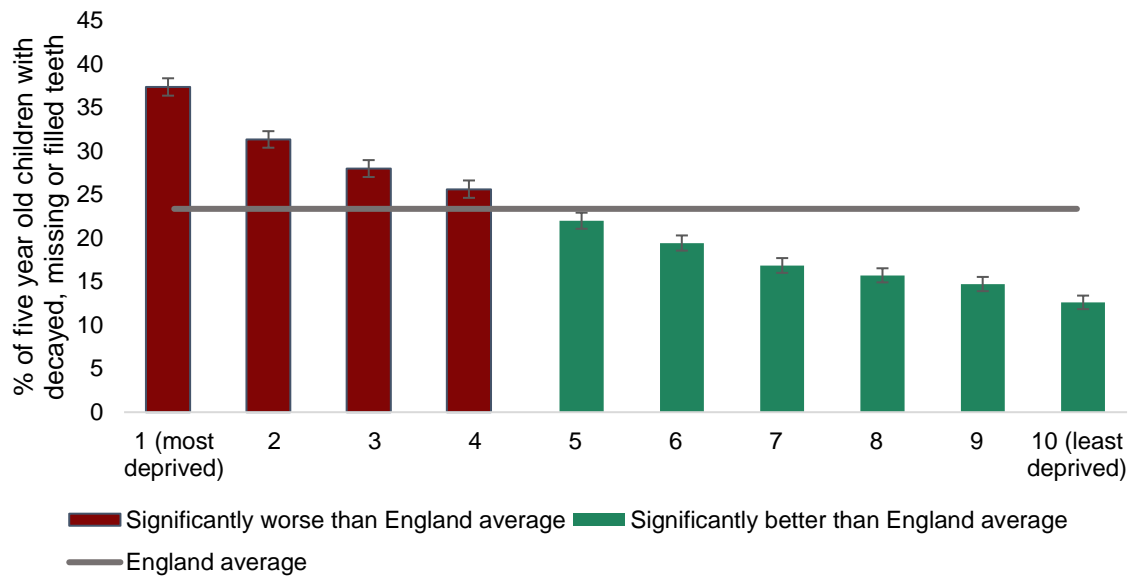
The Health and Social Care Act (2012) put the responsibility of promoting and improving the oral health of the population into a local authority setting, with all clinical interventions remaining under the remit of the NHS (18). The local authority is, therefore, responsible for commissioning oral health improvement programmes most appropriate for their population's needs. In 2014, the National Institute for Health and Care Excellence (NICE) published guidance for developing and oral health strategy at a local authority level (12). At the same time, Public Health England published a toolkit for commissioning oral health for children and young people at a LA level (14). These resources were drawn on for outlining the interventions discussed below.

A prioritisation exercise has been conducted by a working group in Knowsley and this has identified several different programmes across the life course. The exercise used the prioritisation tool developed by the NHS Institute for Innovation and Improvement. A 'Priority Selector' process is used to score against proposed projects which can be assessed against a variety of criteria. These proposed projects are assessed in terms of 'Importance' and 'Doability'.

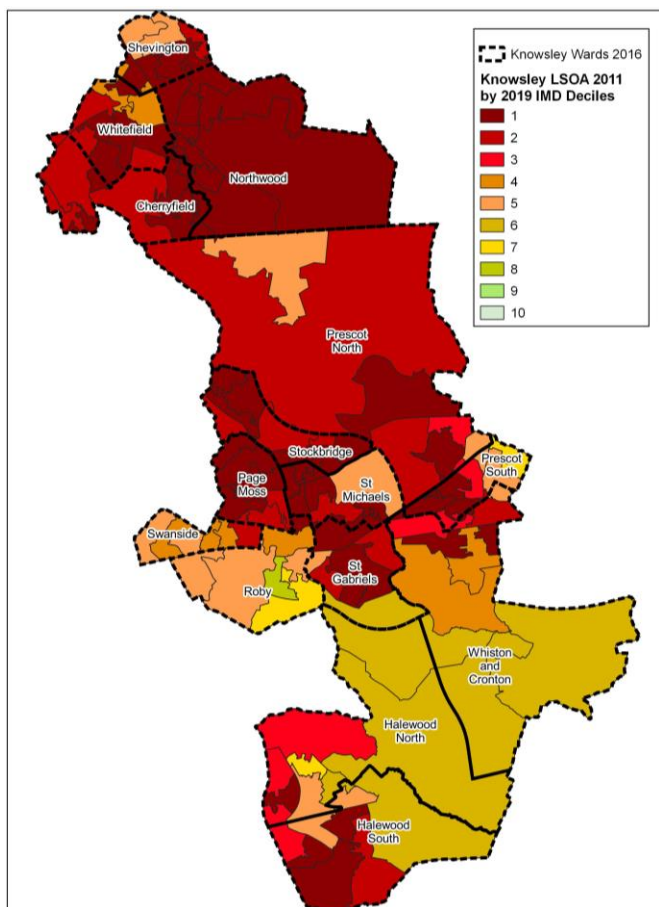
These include, for children and young people, targeted provision of toothbrush and toothpaste packs, supervised toothbrushing in targeted childhood settings (early years), oral health training of the wider professional workforce. For vulnerable older adults, oral health training for care staff / carers and protocols for oral care in care settings. Additionally, offering support in relation to oral health prevention and dental access to community groups. This document is a live tool, therefore as and when there is new evidence of effectiveness it can be amended.

There is a lot of emphasis on lifestyle factors when it comes to dental health, with poor oral hygiene and eating habits given predominant attention. However, as we know, there is a clear social gradient when it comes to poor dental health, with rates of tooth decay increasing with increasing levels of deprivation **Figure 4.1** (1). Knowsley is the second most deprived LA in England, with 46% of the population living in the 10% most deprived areas **Figure 4.2** (2,3). Therefore, implementing interventions that consider the environmental and social barriers to poor dental health practices will have the most significant impact.

**Figure 4.1:** Percentage of five-year-olds with visually obvious dental decay by index of multiple deprivation decile – England data. **Data source: Public Health Profiles(1).**



**Figure 4.2:** Map of Index of Multiple Deprivation deciles (national benchmark) by lower super output area in Knowsley local authority. **Data source: Ministry of Housing Communities and Local Government (3)**



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## 4.2 Children

### Supervised tooth-brushing

NICE and the Office for Health Improvement and Disparities (OHID) recommend that LA's commission supervised tooth brushing in early years and primary school settings as a dental health improvement measure (12,14,15). A randomised control trial (RCT) conducted in China found a 30.6% reduction in caries incidence in children who received supervised toothbrushing after two years (33). Though it is difficult to ascertain whether these results would be generalisable to Knowsley, promising results were also identified in Scotland, where supervised toothbrushing was implemented nationally in 2001/02, correlating with a significant reduction in dental decay (34). However, data are based on population-level grouped data, so it is not possible to attribute reduction at an individual level (22,34). Despite these shortcomings, there is clear, strong evidence in support of brushing teeth with fluoride toothpaste (35).

From a cost-effectiveness perspective, supervised toothbrushing performs favourably in comparison to other population-level interventions, with a return on investment of £3.06 for every £1 spent (36). Using existing assets within the community (e.g., primary schools) makes this approach an efficient use of resources and an effective way of engaging the community (24). In 2009, supervised tooth-brushing was previously supported in early years settings in Knowsley (37). This support included training for all staff, a protocol for delivery and the provision of toothbrushes, fluoridated toothpaste, and storage devices. However, funding for this intervention ceased in 2014 as a consequence of national cuts in funding to the public health grant (37,38). It should be noted that Knowsley LA has experienced some of the highest financial cuts in the country over the last decade (39).

### Provision of toothbrushes and fluoride toothpaste

The provision of toothpaste and toothbrushes via health visitors is also recommended by OHID (14). It has been estimated that after five years, 2,566 days of school would be gained per 5,000 children through this intervention (40). Furthermore, this intervention has shown to be cost-effective, feasible and practical to implement with a return on investment of £4.89 for every £1 spent after five years (14,41). Health visitors currently provide dental health advice and toothbrushes and toothpaste to children in Knowsley at both twelve months, and two years of age (37). Additional provision is given to more vulnerable children and children in care through further contact points (42). School nurses also distribute toothbrushes and toothpaste for year 2 pupils.

## Healthy food and drink provision in early years and school settings

Exposure to food and drink high in sugar is one of the main contributory factors to poor dental health in children (9,24). Therefore, creating an environment that ensures a diet that is conducive to good dental health is essential. Addressing environmental exposure to food and drink is an upstream common risk factor approach, with potential wider health impacts beyond oral health, making it an efficient use of resources (41). A systematic review published in 2022 investigated the relationship between the food environment and poor oral health (43). The review identified five studies which focussed on the school environment, and the results consistently showed improved oral health outcomes when the food environment was considered healthier.

### *Early years settings*

In 2017, the government published guidelines, example menus and recipes for early years settings (44). However, there has been no review on whether any early years settings within Knowsley Council adhere to this guidance or whether they find it useful for meal planning. Most early years settings within Knowsley are privately run; therefore, it is more difficult for the local authority to implement a legislative, social change approach in this context (24).

### *School settings*

In the academic year 2021/22, 40.6% of all Knowsley pupils were eligible for free school meals (45). For some disadvantaged pupils, a school meal may be the only meal they receive in the day (46). All LA-maintained schools and academies that opened before 2010 must adhere to the national nutritional standards set out in 2014 (47). However, there is currently no measure of compliance to these standards within Knowsley. Furthermore, the standards fall short in some areas for ensuring diet reflects good dental health. For instance, although desserts must contain 50% fruit twice a week and confectionary items are not permitted, biscuits, cakes and pastries are allowed (48). There is scope for local standards to be implemented, which may address these gaps.

## **4.3 Adults**

### **Mouthcare matters**

A recent cluster randomised control trial measuring the effectiveness of mouth care matters found that when all certified nursing assistants were provided with training there was a significant improvement observed in oral health of residents (49). 'Mouth Care Matters' programme was launched prior to Covid-19 in Knowsley. The aim of this programme is to reduce oral health inequalities through raising awareness of good oral health and personalised

care for residents of care settings, promoting individual health care plans. Training did begin being delivered to staff in care home settings but unfortunately this was brief and had to be paused due to the pandemic. During the past few years NHSEI and Health Education England have worked to develop the training as a free on-line package which raises awareness of NICE guidance and CQC standards.

### **Risk factors**

Oral health is impacted by adult related specific risk factors including alcohol consumption and tobacco exposure. There are a number of interventions currently being undertaken at a local authority level seeking to address these risk factors. For further information surrounding these interventions please refer to the alcohol and tobacco strategies.

## **4.4 Whole population**

### **Advocate for water fluoridation**

There is currently no water fluoridation program in place within Knowsley LA, despite evidence supporting its cost-effectiveness and ability to reduce dental health inequalities (50). The power to introduce water fluoridation now sits with the secretary of state, and no longer local authorities, as per the Health and Care Act, 2022 (19). At a local level, local authority public health teams can advocate for the introduction of water fluoridation, ensuring local political and council leaders are informed of its benefits. Furthermore, using community assets to improve oral health should increase awareness of its importance within the population's health and wellbeing. In turn, this will impact on the importance of oral health within the local political agenda (24).

## Current Dental Service Provision

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### 5.1 NHS Dental Services in Knowsley

NHS dental care is provided for all ages. There is a fee for service users to access NHS dentistry. Free access to dental treatment is provided for those who are:

- Under 18 years old, or under 19 years-old and in full-time education
- Pregnant or have had baby in the last 12 months.
- Being treated in an NHS hospital and your treatment is carried out by the hospital dentist.
- Receiving low-income benefits, or you're under 20 and a dependant of someone receiving low-income benefits (51).

Local Integrated Care Boards (ICB) have responsibility for the commissioning of general dental services, orthodontic services, urgent dental services, specialist dental services and domiciliary dental care within the North West, with funding provided from NHS England. NHS Business Services Authority (BSA) process claims provided by high-street dentists for dental care provided (52). Dental activity (measured as Units of Dental Activities - UDA) impacts on the payment a dental provider receives for a course of treatment. UDAs are received for providing activity and exchanged for remuneration in NHS dentistry's internal market. The number of UDAs received by a provider is dependent on the amount and type of work undertaken, ranging from 1-12 (Appendix A.). UDA values, received by providers, were set when the new dental contract was introduced in 2005.

Primary care dentists are self-employed which means they can provide a mixture of private and NHS funded care. [Dental contracts](#) between the NHS and dentist outline service delivery (53) Under the dental contracts, dentists are required to provide a set number of UDAs, this therefore does not equate to the number of patients but the amount of activity(54). If a dentist providing NHS treatment has provided the set amount of UDAs outlined in their contract there is no obligation or remuneration in the provision of further NHS care. A recent Healthwatch report produced nationally found individuals seeking NHS treatment may have to wait up to three years for an appointment whereas private patients were able to get an appointment within a week (55). In 2022, 9 out of 10 dental practices UK-wide were unable to offer NHS appointments to new adult patients and 8 in 10 were not accepting new child patients (56). A House of Commons Committee report published in July 2023 described NHS dentistry as facing a crisis of access, resulting in a decline in oral health, with many patients unable to see an NHS dentist or forced to pay to see one privately (if they could afford to) (57).



As outlined later in this report, findings from both Healthwatch Knowsley and the Knowsley Offer consultation highlighted Knowsley residents are also experiencing difficulty when accessing NHS dental services.

In England, total funding for NHS dental care has reduced by 8% from £3.36 billion in 2010/11 to £3.10 billion on 2021/22(54). In January 2022, the government announced that the NHS would receive an additional £50 million, to provide 350,000 more dental appointments nationally, particularly for those within specific vulnerable groups. The North West received a total of £7.31 million of the £50million announced by the government. It should also be noted that this financial offering does not match the funding shortfall of £250 million over the past decade and there were difficulties, as this funding had to be used before the end of the 2022 financial year.

Regular dental attendance within primary dental care is extremely important, as it allows for the early detection of dental disease (reducing treatment burden) and allows for chair-side oral health improvement interventions, as per national guidance (6). For example, increasing fluoride availability can be provided (if required) through a number of different vehicles including increased fluoride concentration toothpaste and fluoride varnish application. In addition, diet advice, advantageous for overall health, can be delivered when a high sugar diet is suspected, for example high consumption of sugary beverages.

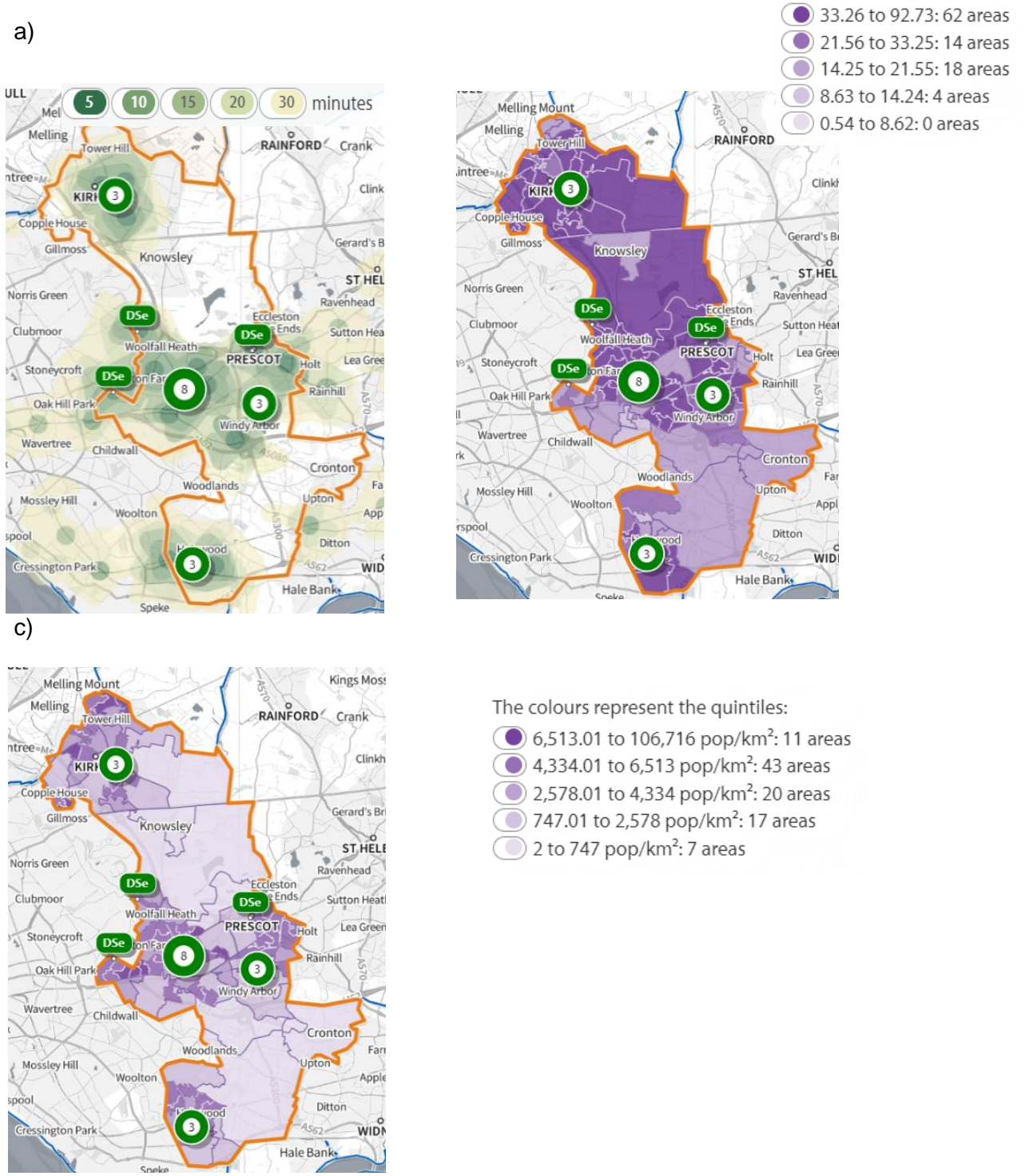
## **5.2 Geographic spread of NHS primary care dental services.**

There are 20 NHS High-street primary dental care practices located in Knowsley local authority. The maps below show the location of dental services within Knowsley, mapped against access by public transport, deprivation, and local population (58)

There is an adequate geographic spread of practices across Knowsley. Most dental practices in Knowsley are accessible by public transport links, with the predominant travel time being less than 15 minutes. However, there is evidence of some areas having over 30 minutes travel times using public transport, particularly in the East of the area.

In Knowsley, there appears to be a reasonable distribution of general dental practices with practices located near or in the highest levels of deprivation and population density. Potential gaps are noted within the North-East of the council **Figure 5.1**. However, the North East of the council is the location of Knowsley Safari park where population density is very low.

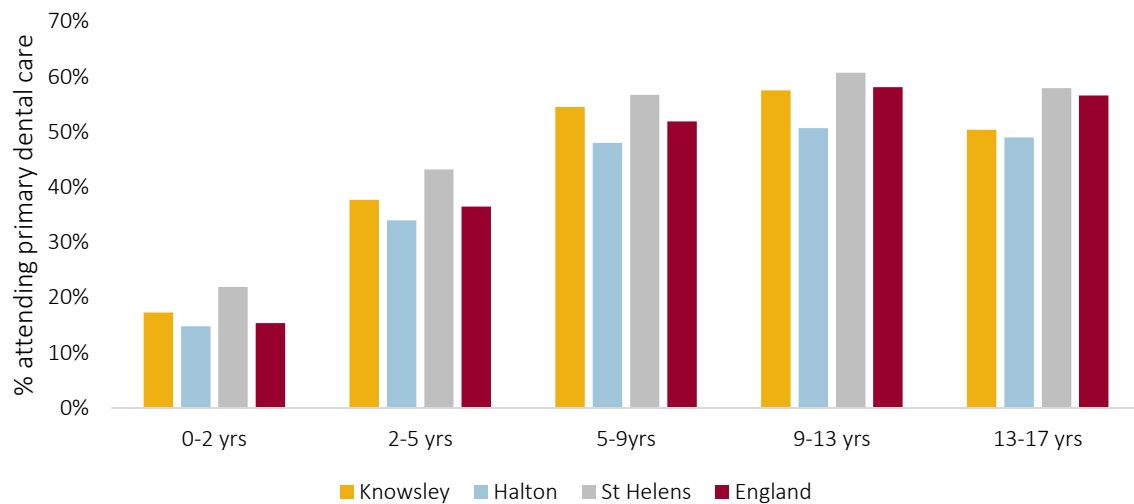
**Figure 5.1** – Map of dental services provided in Knowsley underlaid with (a) travel distance time by public transport, (b) index of multiple deprivation decile 2019 – national benchmark, (c) population density. **Data Source: Office of Health Improvement and Disparities Shape tool, accessed 07 March 2023. Population figures are based on ONS mid-year estimates from 2020.**



### 5.3 NHS dental access for children in Knowsley

National guidance recommends that children should be seen by the dentist at least once a year(59). However, the recall interval may be reduced based on dental recall priorities. 15,739 (45.7%) children (aged 0 – 17 years) were seen by an NHS dentist in the 12 months up to 30 June 2022, compared to 42.2% in Halton, 50.7% in St Helens and 46.9% across England **Figure 5.2**. Knowsley had comparable access across the statistically significant neighbours and England. Low level of dental access is noted in the 0–2-year-olds, a persistent trend across time. National guidance highlights the importance of dental checks by one year old (60)

**Figure 5.2** Percentage, by age group, of children who saw an NHS dentist in the 12 months up to 30 June 2022 in Knowsley, Halton, St Helens and nationally. **Data source: NHS Digital, ONS**

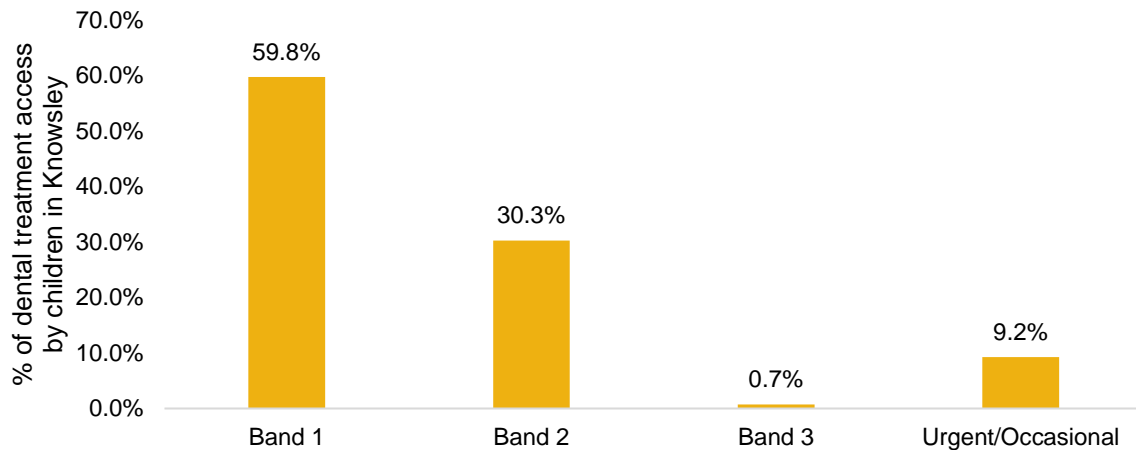


As seen in Appendix A, NHS dental service provision is divided into four bands (61):

- band 1 (simple treatment like check-ups, radiographs),
- band 2 (fillings, root canals or removal of teeth)
- band 3 (crowns, dentures, bridges and other laboratory work)
- band 4 (urgent or occasional dental care which consists of urgent care in a primary care NHS dental practice such as pain relief or a temporary filling(56))

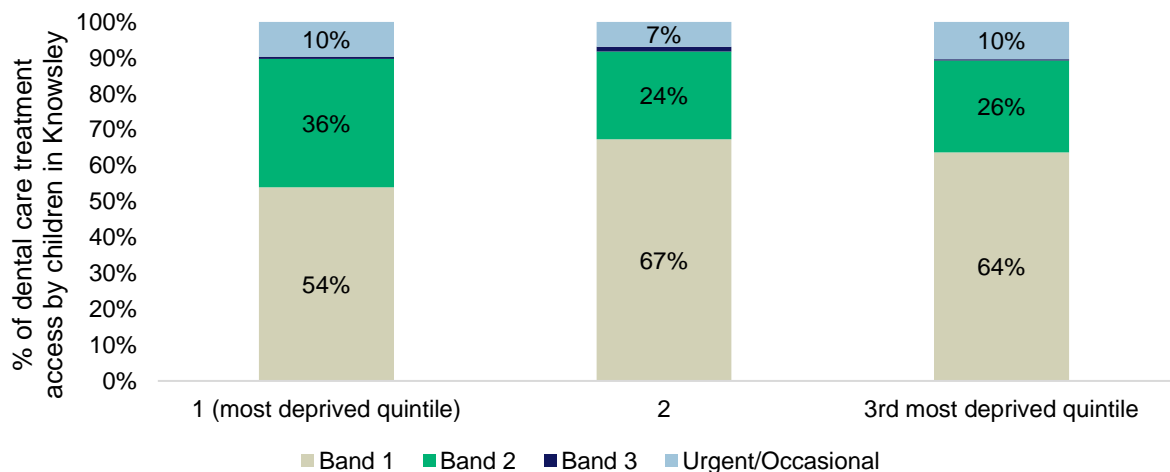
Band 1 accounts for the majority (59.8%) of dental care service provision for children in Knowsley, followed by Band 2 (30.3%, **Figure 5.3**). Urgent or occasional dental care accounted for 9.2% of all dental care service provision.

**Figure 5.3.** Percentage of children’s dental treatment via an NHS dentist in the 12 months up to 30 June 2022 in Knowsley across the differing bands. **Data source: NHS Digital**



NHS primary dental care treatment remained relatively similar when assessing usage based on the location of the dental practice in relation to index of multiple deprivation quintiles (**Figure 5.4**). There was however, a slightly higher proportion of Band 2 service provision in the most deprived quintile. Although this give us a proxy for dental service provision by deprivation, data are not based on the individuals accessing dental services but the location of the dental practices. Therefore, we cannot make direct assertions as to whether treatment provision does vary by levels of deprivation.

**Figure 5.4.** Distribution of care delivery for children based on NHS primary dental care practice Index of multiple deprivation (2019) quintiles\* in the 12 months up to 30 June 2022. **Data source: NHS Digital**

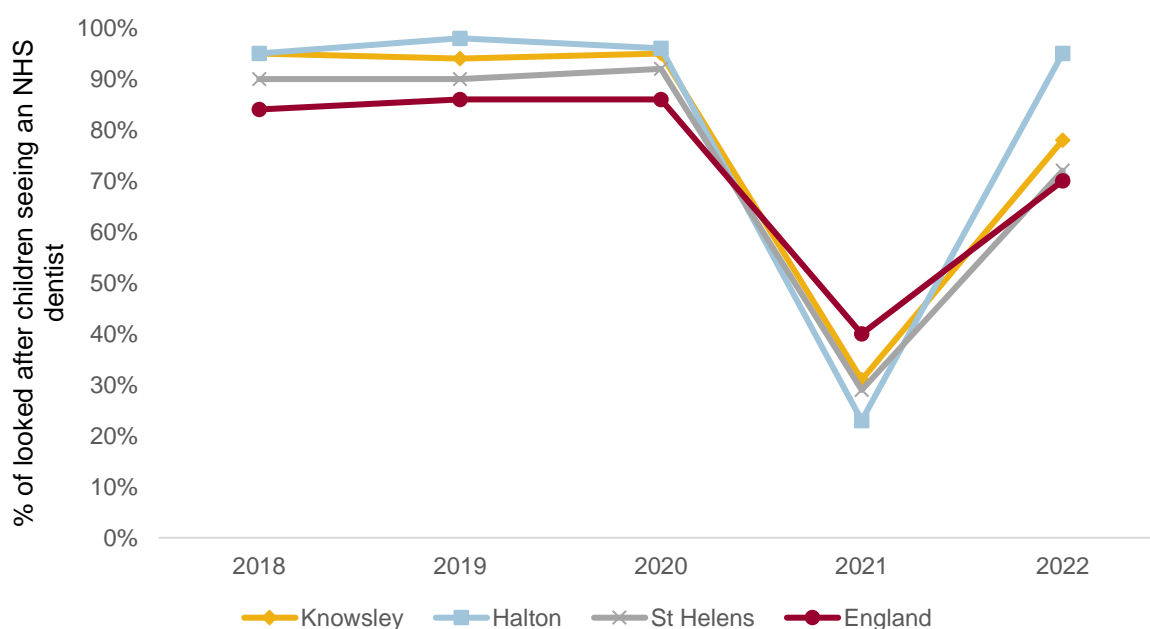


\*no NHS dental practices were located in the 4<sup>th</sup> and 5<sup>th</sup> least deprived quintiles

## Looked after children (LAC)

Due to the pandemic access to dental care became challenging for all, not only LAC. In partnership with key stakeholders NHSEI piloted an E-referral pathway for LAC in June 2021. This supported the LA statutory obligation of every child who is looked after having to see a dentist within the previous 12 months. The pathway has since been extended and enables easy access to dental care to those who are unable to access through the normal channels. In 2022, 78% of all LAC in Knowsley saw an NHS dentist, compared to 95% in Halton, 72% in St Helens and 70% nationally **Figure 5.5**(62). Knowsley has made positive post-Covid recovery (noted in the decline in access between 2020 – 2021) but remains lower than previous access rates of 95% (2018 - 2020).

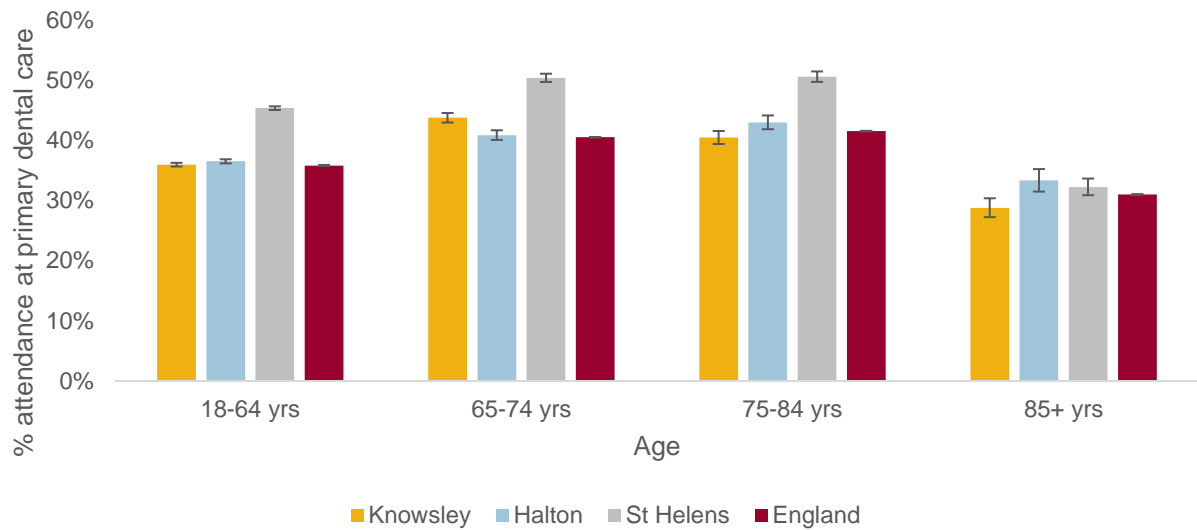
**Figure 5.5** Percentage of LAC who visited a dentist from 2018 – 2022 in Knowsley, Halton, St Helens and across England. **Data Source:** (62)



## 5.4 NHS dental access for adults in Knowsley

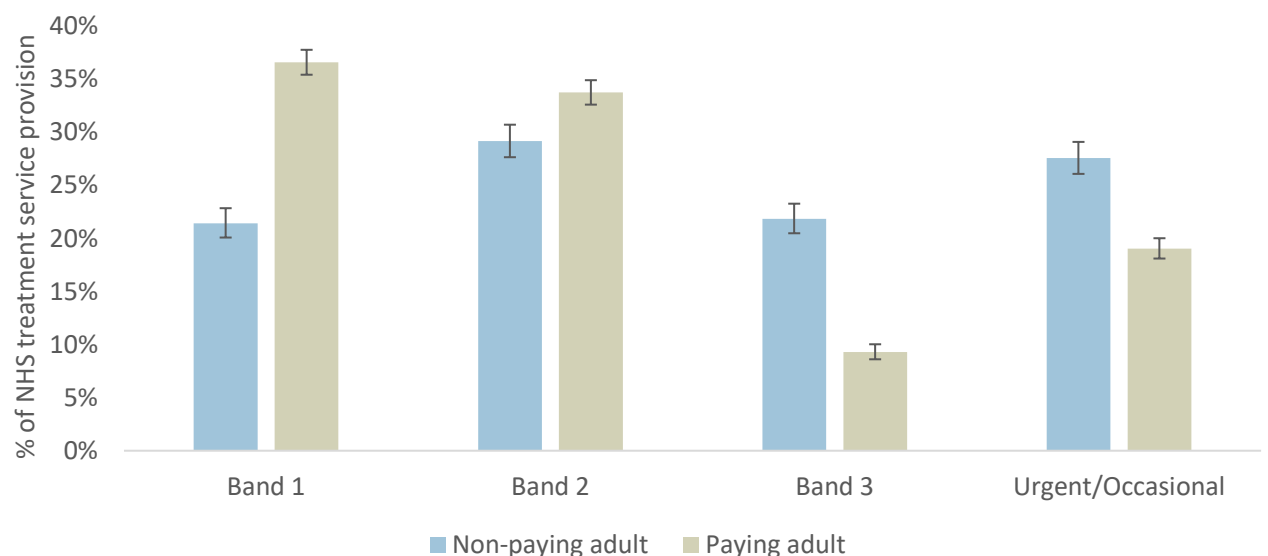
National guidance recommends that an adult should be seen by the dentist at least once every two years (59). However, the recall interval may be reduced based on oral health needs. 37.9% of adults (aged 18+ years) were seen by an NHS dentist in the 24 months up to 30 June 2022, compared to 37.5% in Halton, 46.9% in St Helens and 37.4% across England. Across differing age groups in Knowsley, dental access remained consistently around the national value, similar to Halton but statistically less than St Helens **Figure 5.6**.

**Figure 5.6.** Percentage of adults in Knowsley, Halton, St Helens and England who saw an NHS dentist in the 24 months up to 30 June 2022. **Data Source: NHS Digital**



There is a clear difference in the utilisation of NHS dental services by paying adults versus non-paying adults (**Figure 5.7**). There is a greater proportion of paying adults accessing services for Band 1 treatment services. Whereas for non-paying adults there is a greater proportion requiring band 2, band 3 and urgent dental care service provision.

**Figure 5.7** Percentage of paying and non-paying adult dental treatment in Knowsley at an NHS dentist in the 12 months up to 30 June 2022 across the differing bands. **Data source: NHS Digital**



## 5.5 Mersey Care NHS Foundation Trust

Mersey Care NHS Foundation Trust provide general dental services for both adults and children with additional needs that cannot be catered for in a general dental practice setting.

Within Knowsley there are a total of 2.4 whole time equivalent dentists located in two locations, Nutgrove Villa, Huyton and St Chads Health Centre, Kirby. Individuals must be referred by a dentist or GP to access treatment through this service. In July 2023, the waiting times for assessment were 10 weeks in Huyton and seven weeks in Kirby.

In addition, paediatric dental extraction under general anaesthetic is also provided by Mersey Care NHS foundation Trust in Whiston Hospital. In 2022/23, a total of 202 Knowsley children underwent dental extractions under general anaesthetic.

## **5.6 Prescribing in dental practice**

NHS dentists can prescribe from a list of drugs included in the dental British National Formulary (BNF). This predominantly includes anti-microbials, anti-virals, anti fungals, anti-anxiety, painkillers, saliva replacement and fluoride formulations. Limited data relating to these prescriptions are captured at a regional level by NHS BSA. Dentists working outside the NHS can prescribe any medicine from the whole BNF on a private prescription; however, they should 'only prescribe medicines to meet the identified dental needs' of their patients. As these data are not routinely captured, and NHS BSA only capture data related to where scripts are dispensed (not by which dentist/in which practice they were written) there is limited granularity. The last open release data from NHS BSA relates to data between April 2020 and December 2021, and so is impacted by COVID-19 (63). It is therefore, currently, not advisable to make conclusions on prescribing rates at the Knowsley-level from available data.

It is, estimated that 10% of all oral antimicrobials prescribed in England are from dentists. This group are required, by legislation, to ensure appropriate use of such medications (64) This is important in the context of the antimicrobial resistance (AMR) agenda, and dentists should reduce their antimicrobial prescriptions rates wherever possible. One such tool, offering advice for clinicians and service users, is the dental antimicrobial stewardship toolkit (65)

## Stakeholder engagement

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As part of the JSNA, commissioners of services that work with vulnerable groups were consulted and asked for feedback on how their services support oral health. The key vulnerable groups for oral health were identified through the review published by Public Health England *Inequalities in Oral Health in England* (8).

**Homeless:** The Principal Homeless Officer for Knowsley Council was contacted for feedback on current provision for individuals experiencing homelessness. It was stated that within new hostel/supported housing contracts all providers were to encourage people experiencing homelessness to register with a dentist. A dentist does not do any home visits in these schemes as there are no housebound residents.

**School nurses:** This service undertakes reception health interviews for all parents / carers with their child. The school nurses promote and discuss oral health during these sessions. Additionally, the provision of toothpaste and toothbrushes to year 2 pupils is done through school nurses.

**Health visitors:** This service offers oral health advice during each core contact excluding the birth visit. When the re-instatement of the 6-8 week contact and the 12-16 week contact commences health visitors will be promoting taking babies to a dentist before the child's 12-month developmental assessment and bottle swaps to cups at weaning. Oral health advice is also offered during a child's 12mth and 2-2.5yr assessments – giving out toothpaste and toothbrush.

**Looked after children:** In 2018, there were 299 Looked After Children in Knowsley local authority. Looked After Children have an entry into care medical and receive a health assessment which will look at their health needs in broad terms. Conversations and advice are given to carers as required during these assessments. These tend to relate to physical and emotional health, but oral hygiene may well also be discussed.

In addition, there is an expectation that all looked after children see a dentist routinely (annual check). In 2021/22, 181 looked after children in Knowsley had their teeth checked by a dentist (66). This is monitored within Looked After Children reviews and via our performance data to ensure we can keep a track and that appropriate monitoring of oral hygiene and dental care is available to them. In 2022, 78% of all LAC in Knowsley saw an NHS dentist, compared to 95% in Halton, 72% in St Helens and 70% nationally.

**Nursery and childcare settings:** Oral health survey sent- full report can be found in the appendix B. A summary of key lessons included that there was a relatively high proportion



childcare/nursery settings providing supervised toothbrushing. However, settings more engaged with oral health may have been more likely to respond to the survey, the true estimate may be much lower. The majority of childminders who currently do not provide toothbrushing were interested in providing it, with one setting stating they had not previously considered it. This result may suggest that there is a potential for engaging more nursery/childcare settings in providing supervised toothbrushing. Nearly all nurseries/childcare settings who had previously received training for oral health were providing supervised toothbrushing. Indicating that training may be useful to encourage supervised toothbrushing in this context. Only one nursery provided training on oral health for children on induction, this may lead to new staff not feeling as confident to deliver supervised toothbrushing. It may be useful to encourage nurseries to include oral health as part of their induction program through a new starter training pack or eLearning tutorial. Fourteen of the nursery/childcare settings stated they would be happy to receive further information on potential further training.

**Care home settings:** Oral health survey sent- full report can be found in appendix C. The key findings included oral health assessments do appear to be common practice amongst the care homes that responded. However, what was included in the oral health assessments varied between care homes. A standard protocol could be developed and shared for all care homes across the district A similar finding was present for oral health training – with most care homes including some form of training for staff. However, this was not consistent across care homes with some potential major gaps present. For instance, assessing the need for urgent dental care and labelling of dentures. A standard training program for all care homes should identify any potential gaps. There was a recognition of gaps in dental service provision with some care homes noting that it was difficult for their residents to access an NHS dentist. More than half of all care homes did not include oral health training as part of the induction for new staff. Communication on the importance of this should be shared, with resources available for care homes to enable them to provide the training with ease on induction.

**Healthwatch Knowsley:** Healthwatch Knowsley received a total of 816 enquires between October 2021 and March 2023. Some key themes identified over this period were treatment and care and comments in relation to staff where 67% and 61% of comments made were positive respectively. However, key themes which were predominantly negative included gaining access to a dental practice and communication, where 75% and 69% of comments made were negative. Many of the dental practices featured in the report were also outside of Knowsley District, reflecting a lack of NHS provision within the district. Additionally, Healthwatch Knowsley noted the decreasing provision being met with an increase in demand widening the gap in met dental health service provision. Healthwatch Knowsley is working closely with NHS England to direct individuals to emergency dental treatment when necessary.

Moreover, Healthwatch has communicated concerns over access to NHS dental treatment locally and nationally following a report published in October 2021 which highlighted the difficulties of patients accessing NHS treatment.

**Knowsley Offer:** Similar feedback, was found when we spoke to Knowsley residents as part of [The Knowsley Offer](#) consultation, which took place in the summer of 2022.

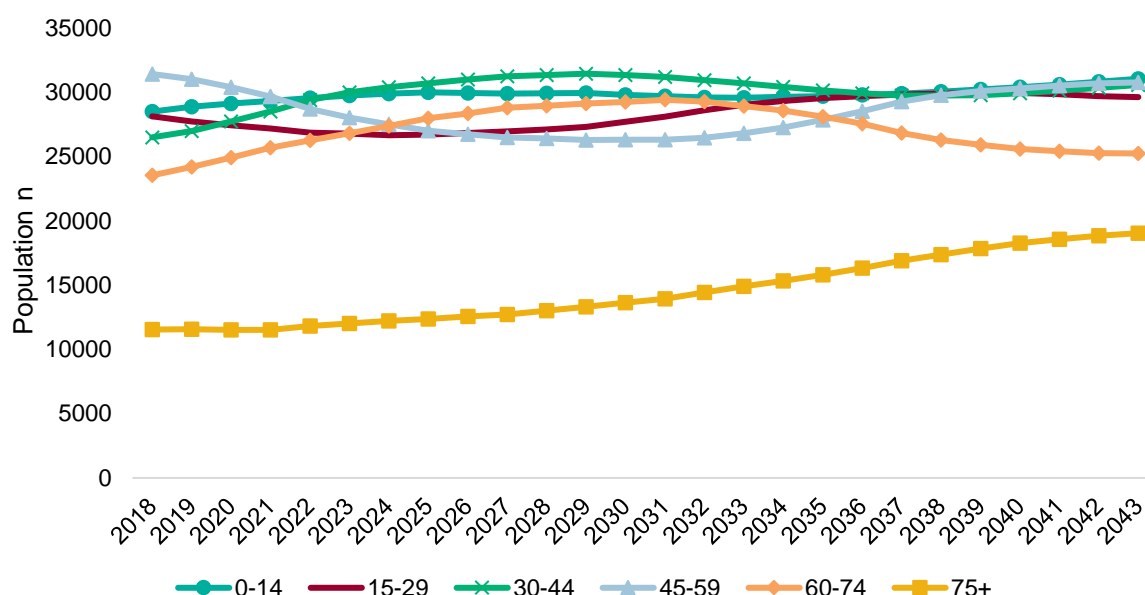
Residents wanted more, more dentists, more appointments and more availability. They were concerned about access, particularly to NHS dentists in times of need. Cost was also a factor, some feeling excluded from essential services due to finances and privatisation. Some dentists were only accepting child patients, meaning they were unable to see a dentist as a family.

## Future challenges

### Ageing population

Based on the ONS population projections it is estimated that the number of individuals in the 75+ age group is set to increase by 58% by 2043 **Figure 6.1** (67). This potential increase adds further weight to the need for extra support to our care home settings in facilitating further oral health improvement and engagement with the elderly population. Though, it is important to note that these projections are based on 2018 mid-year estimates from the 2011 census and therefore do not reflect any changes in population demographics because of the Covid-19 pandemic.

**Figure 7.1:** Population projections for Knowsley local authority broken down by age group.  
**Data source:** ONS population projections (67)



### Cost of living crisis

The current cost of living crisis is pushing more people into financial hardship, the longer this persists the more individuals will be forced below the poverty line. This increase in income deprivation will likely lead to worse oral health outcomes as previously stated with increasing levels of deprivation come increasing levels of poor dental health outcomes.

### Resources

The overall public health grant had decreased by 24 per cent in real terms per capita since 2015/16. Knowsley local authority experienced some of the highest levels of cuts in the country equating to £725 per head of population between 2015/16 and 2020/21 (39). Although there

is available resource to commission for health improvement interventions for the next three years there is no indication that this funding will continue. As evidenced oral health improvement measures are highly cost-effective, it is therefore essential that funding continues to support these measures.

#### NHS dental health service access

Following the COVID-19 pandemic, it has become increasingly difficult for individuals to access NHS dental health practices, with demand outweighing current availability(68). This lack of availability will lead to an increasing barrier for individuals accessing affordable dental health services.

## Appendix A – Units of Dental Activity (UDAs)

<b>Band</b>	<b>Treatment included</b> <i>(Includes any number of treatments per band. If multiple bands are spanned (e.g., crown PLUS 1 extraction AND 3 fillings), UDAs for the highest band ONLY are received (i.e., 12 UDAs)</i>	<b>UDAs to practice</b>	<b>Patient Charge</b> (At time of writing; May 2023)
1	<ul style="list-style-type: none"> <li>- adjusting false teeth (dentures) or orthodontic appliances, such as braces</li> <li>- applying sealants or fluoride preparations to the surfaces of your teeth</li> <li>- a clinical examination, assessment, and report</li> <li>- marginal correction of fillings</li> <li>- moulds of your teeth – for example, to see how your teeth bite together</li> <li>- an orthodontic assessment and report</li> <li>- a scale and polish (if clinically necessary)</li> <li>- coloured photographs</li> <li>- taking a sample of cells or tissue from your mouth for examination</li> <li>- treating sensitive cementum (the tissue that covers the root of a tooth)</li> <li>- X-rays</li> </ul>	1	£25.80
2a	<ul style="list-style-type: none"> <li>- an addition to your dentures – such as adding a clasp or a tooth</li> <li>- apicectomy – removing the tip of the root of a tooth</li> <li>- a mouth guard to correct your "bite" (does not include a laboratory-made appliance)</li> <li>- fillings</li> <li>- free gingival grafts – when healthy tissue from the roof of your mouth is attached to your teeth where the root is exposed</li> <li>- frenectomy, frenoplasty or frenotomy – surgery to the folds of tissue that connect your tongue, lips and cheeks to your jawbone</li> <li>- treatment for severe gum disease – such as root planing (cleaning bacteria from the roots of your teeth), deep scaling and a polish, or a gingivectomy (removal of gum tissue)</li> <li>- oral surgery – such as removing a cyst, or soft tissue surgery to the mouth or lips</li> <li>- pulpotomy – removing dental pulp (the soft tissue at the centre of a tooth)</li> <li>- relining and rebasing dentures</li> <li>- removing teeth (extraction)</li> <li>- sealant to fill small holes or grooves in your teeth</li> </ul>	3	£70.70

	<ul style="list-style-type: none"> <li>- splinting loose teeth – for example, after an accident (this does not include laboratory-made splints)</li> <li>- transplanting teeth</li> </ul>		
2b	<ul style="list-style-type: none"> <li>- non-molar endodontics (root canal) to permanent teeth OR</li> <li>- a combined total of three or more teeth requiring permanent fillings or extractions.</li> </ul>	5	
2c	<ul style="list-style-type: none"> <li>- molar endodontics (root canal) to permanent teeth</li> </ul>	7	
3	<ul style="list-style-type: none"> <li>- bridges – a fixed replacement for a missing tooth or teeth</li> <li>- crowns – a type of cap that completely covers your real tooth</li> <li>- dentures</li> <li>- inlays, pinlays and onlays – used to restore damaged teeth</li> <li>- orthodontic treatment and appliances such as braces</li> <li>- other custom-made appliances, not including sports guards</li> <li>- veneers and palatal veneers – new surfaces for the front or back of a tooth</li> </ul>	12	£306.80
4	<p>This band relates to urgent treatment only:</p> <ul style="list-style-type: none"> <li>- examination, assessment, and advice</li> <li>- X-rays</li> <li>- dressing of teeth and palliative treatment</li> <li>- pulpectomy or vital pulpotomy</li> <li>- fixing a tooth that has been knocked out and any necessary treatment</li> <li>- repairing and refixing inlays and crowns</li> <li>- refixing a bridge and adding temporary bridges</li> <li>- removing no more than 2 teeth</li> <li>- aftercare, including treatment for infections</li> <li>- adjustment and alteration of dentures or orthodontic appliances</li> <li>- urgent treatment for acute conditions such as ulcers and herpetic lesions</li> <li>- treatment of sensitive cementum or dentine</li> <li>- draining an abscess</li> <li>- other treatment needed after trauma</li> <li>- 1 urgent permanent filling (routine and non-urgent fillings are a band 2 treatment)</li> </ul>	1.2	£25.80
Regulation 11	<p>This band relates to replacement appliances.</p> <p>The appliances covered are:</p> <ul style="list-style-type: none"> <li>- dentures</li> <li>- obturators</li> <li>- bridges</li> <li>- orthodontic appliances</li> </ul> <p>Regulation 11 applies when the original appliance is:</p> <ul style="list-style-type: none"> <li>- lost</li> <li>- stolen</li> <li>- broken by the patient.</li> </ul>	12	£84.80

	<p>- Regulation 11 does not apply where the appliance has become damaged due to wear and tear. The replacement appliance must be the same as the original. This can be claimed regardless of when the original appliance was fitted.</p>		
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## Appendix B - Oral health in the Nursery/Childcare setting

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### Background

The rate of dental decay in three-year-olds in Knowsley is in line with both the national and regional average. However, by five years of age the proportion of children experiencing dental decay in Knowsley increases three-fold leading to a rate significantly higher than the England average. In 2018/19, 35.4% of five-year-old children in Knowsley experienced tooth decay in comparison to an average of 23% across England. Poor oral health has a significant impact on a child's overall wellbeing and can affect a child's ability to eat, sleep, socialise and attend school (69). Additionally, tooth extractions are the leading reason for hospital admissions in those aged five to nine years (70). Early intervention to reduce dental decay is therefore essential and targeted interventions such as supervised toothbrushing in an early year's setting has shown to be effective and has been recommended by the National Institute for Health and Care Excellence (12,69). As well as being deemed clinically effective supervised toothbrushing has also shown to be cost effective with a return on investment of £3.06 for every £1 spent (36).

Given the proven effectiveness of fluoride toothpastes and the evidence that supervised tooth brushing programmes can help to reduce dental decay amongst children, in 2009 Knowsley Local Authority Early Years team integrated a supervised brushing scheme for all children in early years settings (ages 0-4 years). Initially this was funded via the NHS, then the local authority (LA). This included provision of toothbrushes, fluoridated toothpaste, storage devices (brush buses) and training for staff involved on the scheme, as well as a protocol containing all relevant information.

It was offered to children registered for full day care in private, voluntary, independent nursery or children centres. It was run on a positive consent basis and at the time 32 out of 33 settings participated in the programme. The support for this programme ceased in 2014 due to lack of funding.

Since then, the LA has supplied occasional resources to some of these settings when funding allows and in 2018/19 Knowsley Council provided training on supervised toothbrushing to all interested nurseries and childcare settings across the borough.

The LA were aware that some nurseries had continued with the supervised tooth brushing programme despite the loss of support, however there was limited knowledge of the current practices across the borough post the Covid-19 pandemic.



## Method

An electronic survey was sent out via email to all 39 nurseries and 50 childminders across the borough on the 11 October 2022. The survey was open to responses for three weeks closing on the 01 November 2022. The survey included questions around supervised toothbrushing practices, barriers to providing supervised toothbrushing, training provided, training needed and funding arrangement in place.

## Results

There was a total of 17 respondents to the survey, of which, 12 were childminders and 5 were private nurseries, giving a response rate of 24% and 13% respectively.

Over two-thirds of all responders were providing supervised toothbrushing (**Figure A.1**). The only barrier listed by one of the childminders was resources, another childminder stated that they were not aware that supervised toothbrushing was needed. One childminder stated that there were no barriers however, they believed it was not their place to brush children's teeth, they did however, promote oral hygiene through books and roleplay.

The nurseries and childminder settings that do not currently provide supervised toothbrushing were asked would they be interested 5 of the 6 (83.3%) said yes, they would be interested (**Figure A.2**). Of the 11 nurseries providing supervised toothbrushing, in 5 (45%) of the settings 75-100% of 0–4-year-olds were brushing their teeth while in the childcare setting. However, 3 settings stated that less than 25% of 0–4-year-olds brushed their teeth while in their setting (**Figure A.3**).

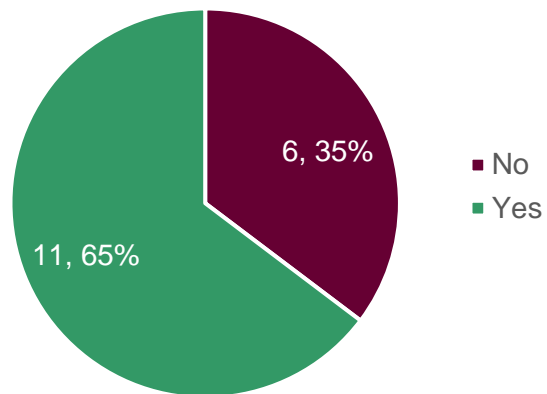
The majority (8,73%) of the settings providing supervised toothbrushing also provide the toothbrushes and toothpastes (**Figure A.4**). Of those that had different methods of provision, 1 private nursery has a fundraiser event, 1 private nursery is funded through the local authority and one individual stated personal finances.

Of all 17 respondents 6 stated they had previously had training in supervised toothbrushing, 6 stated they did not have training, and 2 said they did not know (**Figure A.5**). There was one respondent who had received training but was still not providing supervised toothbrushing. Just 1 of the 17 respondents stated that training on oral healthcare for children was provided for staff on their induction (**Figure A.6**).

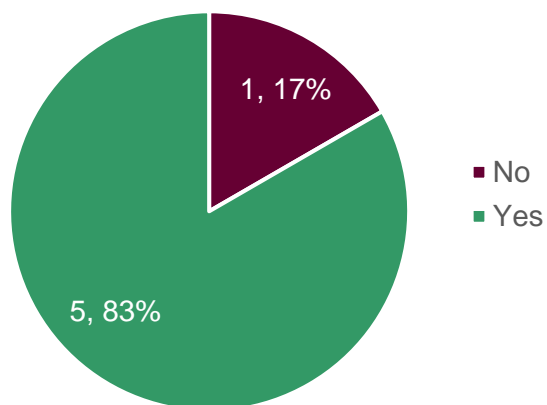
Nine of the respondents stated they would benefit from additional resources, 8 of which included toothbrushes and toothpaste, other resources mentioned included bamboo toothbrushes, toothbrush cases, leaflets to send home and plastic teeth to aid demonstration. Under additional comments, one respondent stated they encourage parents to take children

to a dentist and one respondent said if a child refuses to brush teeth at home they run a weeklong tooth brushing activity which encourages the child to brush at home.

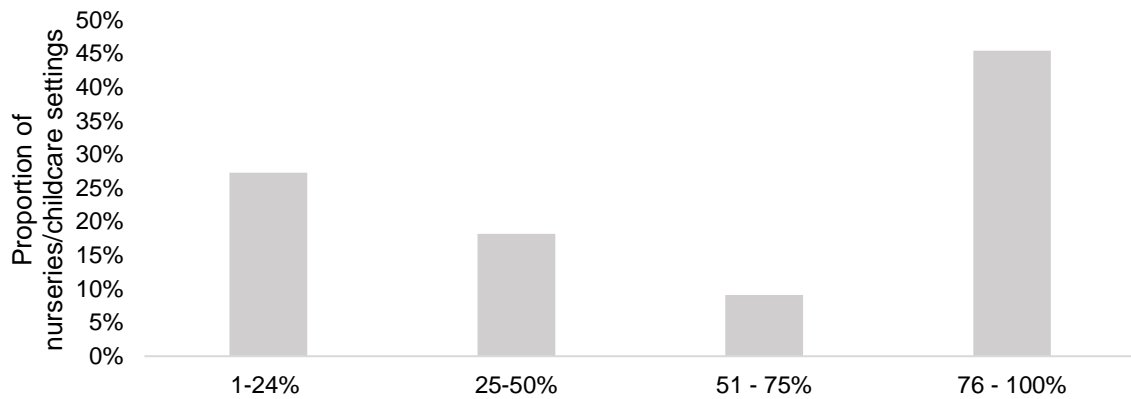
**Figure A.1:** Number providing supervised toothbrushing



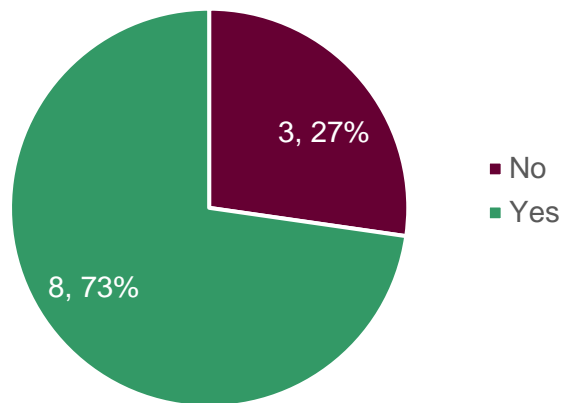
**Figure A.2:** Interested in provided supervised toothbrushing. n=6



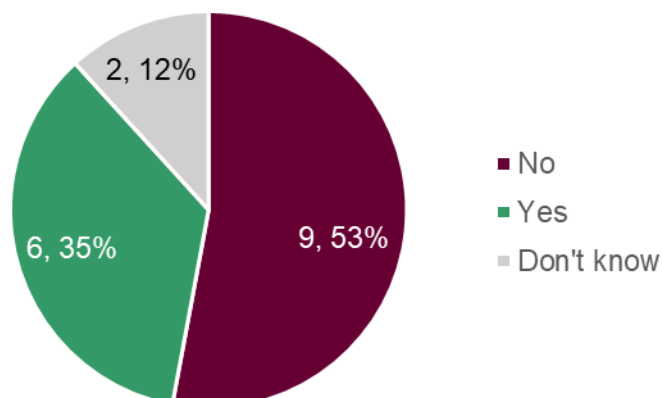
**Figure A.3:** Proportion of children 0-4 years brushing teeth while in the nursery/childcare setting. N=11



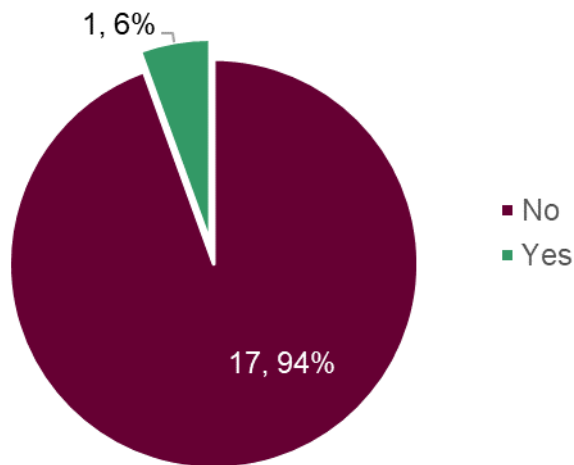
**Figure A.4:** Toothbrushing and toothpaste funded by the nursery/childminder n=11.



**Figure A.5:** Previously received oral health training



**Figure A.6:** Training provided on 'oral health of children' for staff on induction



**Table A.1:** Summary of results

Question	Yes
Supervised toothbrushing provided	11(65%)
If no, interested in providing supervised toothbrushing (n=6)	5(83%)
Proportion that brush teeth while in setting (if yes, to supervised toothbrushing)	
1-24%	3(27%)
25-50%	2(18%)
51 - 75%	1(9%)
76 - 100%	5(45%)
Nursery funds toothbrushes and toothpaste	8(73%)
Previously received training	6(35%)
Training provided on induction	1(6%)
Benefit from training	11(65%)

## Key lessons

- There was a relatively high proportion childcare/nursery settings providing supervised toothbrushing. However, settings more engaged with oral health may have been more likely to respond to the survey, the true estimate may be much lower.
- The majority of childminders who currently do not provide toothbrushing were interested in providing it, with one setting stating they had not previously considered it. This result may suggest that there is a potential for engaging more nursery/childcare settings in providing supervised toothbrushing.
- Nearly all nurseries/childcare settings who had previously received training for oral health were providing supervised toothbrushing. Indicating that training may be useful to encourage supervised toothbrushing in this context.
- Only one nursery provided training on oral health for children on induction, this may lead to new staff not feeling as confident to deliver supervised toothbrushing. It may be useful to encourage nurseries to include oral health as part of their induction program through a new starter training pack or eLearning tutorial.
- 14 of the nursery/childcare settings stated they would be happy to receive further information on potential further training.

## Limitations

- The data presented here are based on the experiences of childminders/nurseries who were willing to respond to the survey, therefore results presented may not be a true representation of all nurseries/childminders.
- The results represent a specific point in time and results may vary if the survey was repeated at another time point.

## Appendix C - Oral health in a care home setting

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### Background

'Mouth Care Matters' programme was launched prior to Covid-19 in Knowsley. The aim of this programme is to reduce oral health inequalities and improve access and equity of dental service provision for the vulnerable and frail older people. Training did begin, being delivered to staff in care home settings but unfortunately this was brief and had to be paused due to the pandemic. During the past few years NHSEI and Health Education England have worked to develop the training as a free on-line package which raises awareness of NICE guidance and CQC standards

A recent cluster randomised control trial measuring the effectiveness of mouth care matters found that when all certified nursing assistants were provided with training there was a significant improvement observed in oral health of residents (49).

There is limited knowledge of the current oral health practices in care homes since the covid-19 pandemic.

### Method

An electronic survey was sent out via email to all care home settings across the district on the 11 October 2022. The survey was open to responses for three weeks closing on the 01 November 2022. The survey included questions around oral health assessments, dental service provision, training provided for staff, training needed and the oral health funding arrangement in place.

### Results

There was a total of 12 respondents to the survey out of a potential 21 care homes resulting in a response rate of 57%. Out of the 12 responders there were 7 residential homes, 2 nursing homes and 3 mixed (nursing and residential). Almost all 11(92%) of respondents performed an oral health assessment on a resident at the point of their arrival, with just one respondent stating they were not sure (**Figure B.1**).

Where an oral health assessment was conducted 100% recorded the presence or absence of dentures, 8(82%) recorded a residents toothbrushing habits, 10 (91%) assessed whether the resident could eat food when they want and 8(73%) identified any urgent oral health needs (**Figure B.2**).

The majority (75%) of care homes stated that residents who come through intermediate care beds receive the same oral health assessment, for the remaining three care homes, 2 stated they were not sure and 1 did not answer **(Figure B.3)**. Almost all, 11 (92%) of the care homes stated that if their residents are able to brush their teeth they are encouraged to do so twice daily, with just 1 care home stating they were not sure **(Figure B.4)**. The same was said for those who needed help or support for brushing their teeth **(Figure B.5)**.

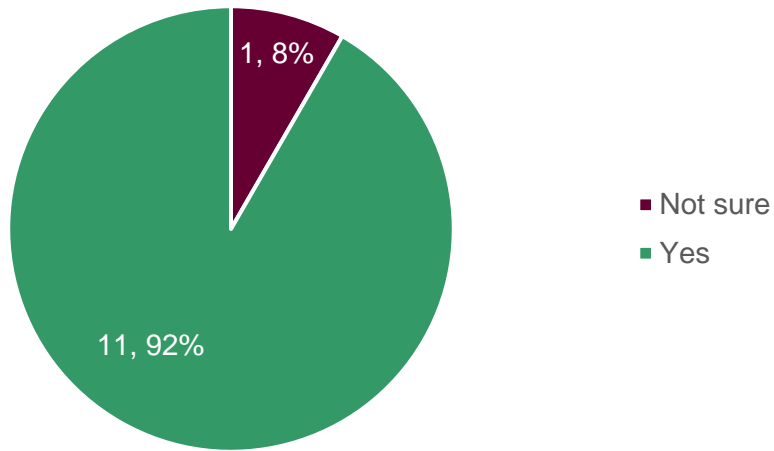
In terms of dental care provision, almost half, 5 (42%) of the care homes used a local NHS dentist where residents attended the dentist in the dental surgery, 3 (25%) had access to a domiciliary dentist, 2 (17%) used both **(Figure B.6)**. The remaining two care homes stated they use the dentist the resident is already registered with; however, one care home noted the difficulty with accessing NHS dentists. The majority (11;92%) of care homes stated that less than a quarter of their residents would be able to access a dentist by themselves. Just over half of all care homes stated that less than a quarter of their residents can consent for themselves.

Almost all care homes 11 (92%) stated they provide some form of training for their staff on oral hygiene **(Figure B.7)**. The most common form of training 10(83%) included assessing a resident's oral hygiene and cleaning a resident's dentures. Just 8 (67%) of care homes stated their staff were trained to arrange for a dental exam or treatment to be provided and just 7(58%) were trained to assess a resident's oral hygiene.

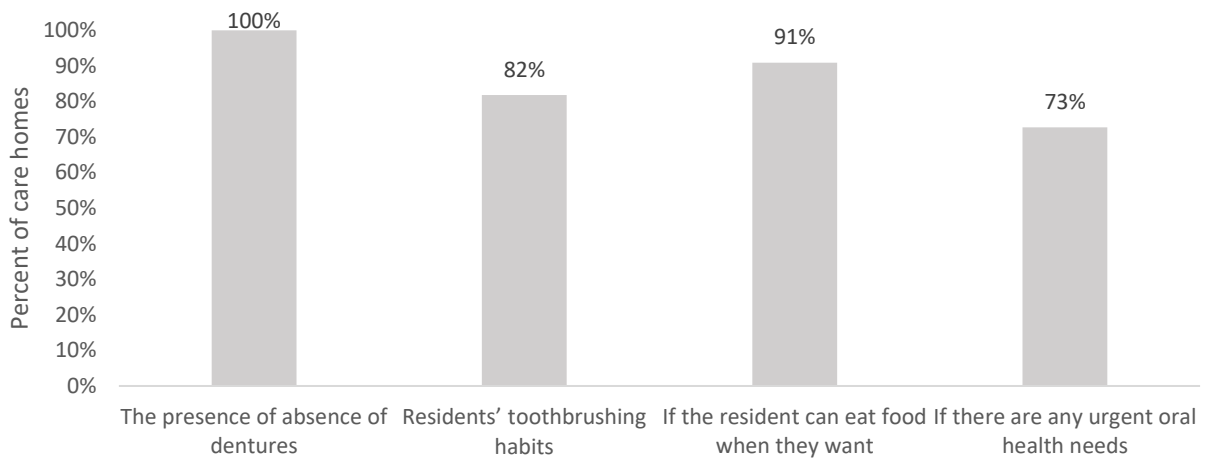
Less than half of care homes were trained for detecting urgent dental health needs of residents and only 3 (25%) were trained for labelling a resident's dentures. However, 7 (58%) of the care homes stated oral health training was not part of a new member of staff's induction **(Figure B.8)**. There was no commonality of how the induction training was provided **(Table A.1)**. Over two-thirds of all care homes stated they received Mouth Care Matters training previously **(Figure B.9)**. Nearly all care homes (11;92%) said they would like to receive Mouth Care Matters training.

Five of the care homes requested further resources, these including toothbrushes dentures, regular and superbrush toothbrush, toothpaste, oral mouth gels for rinsing, Fixodent, denture pots and sterident tablets.

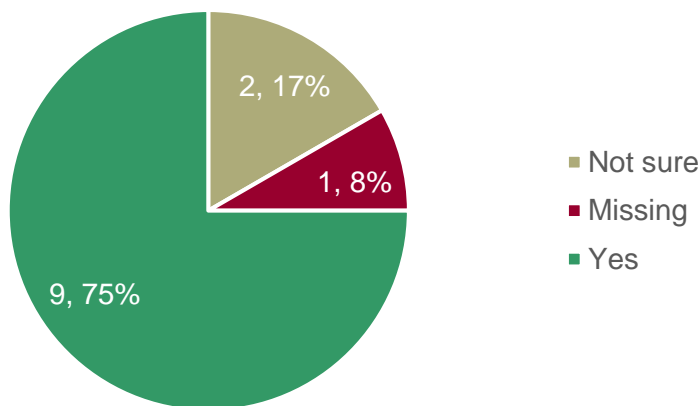
**Figure B.1:** All residents receive oral health assessment on arrival



**Figure B.2:** Information covered in oral health assessment

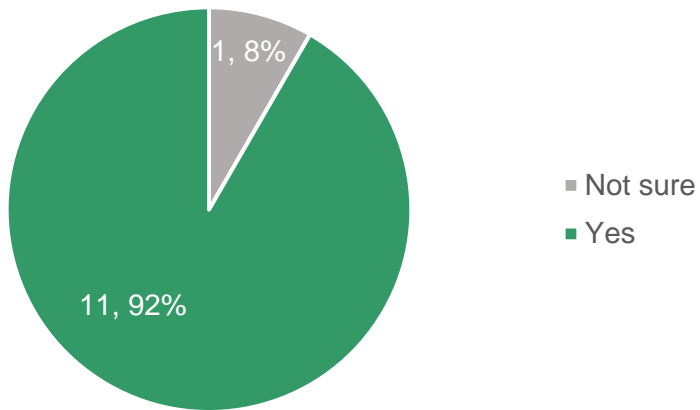


**Figure B.3:** Residents who come through intermediate care beds receive the same oral health assessment

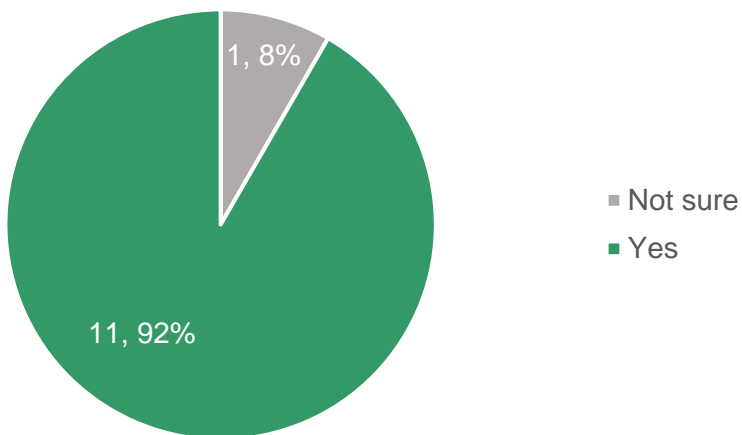




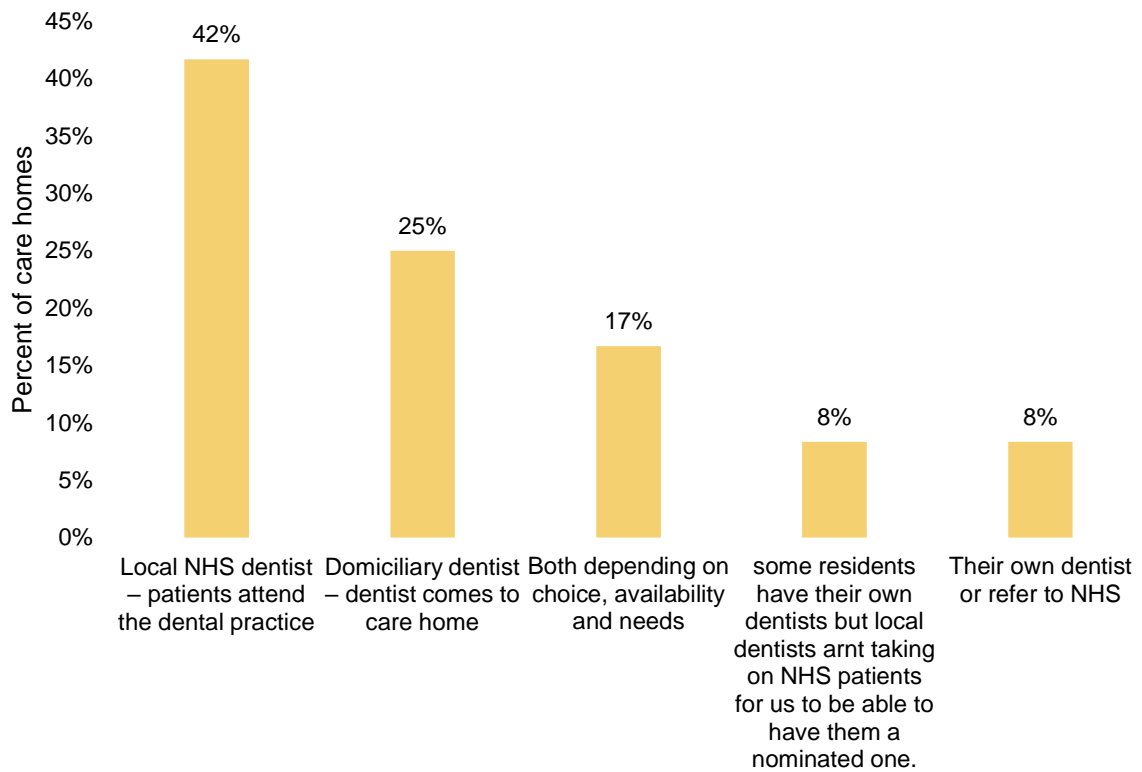
**Figure B.4:** Residents who can brush their teeth/dentures encouraged to do so twice daily



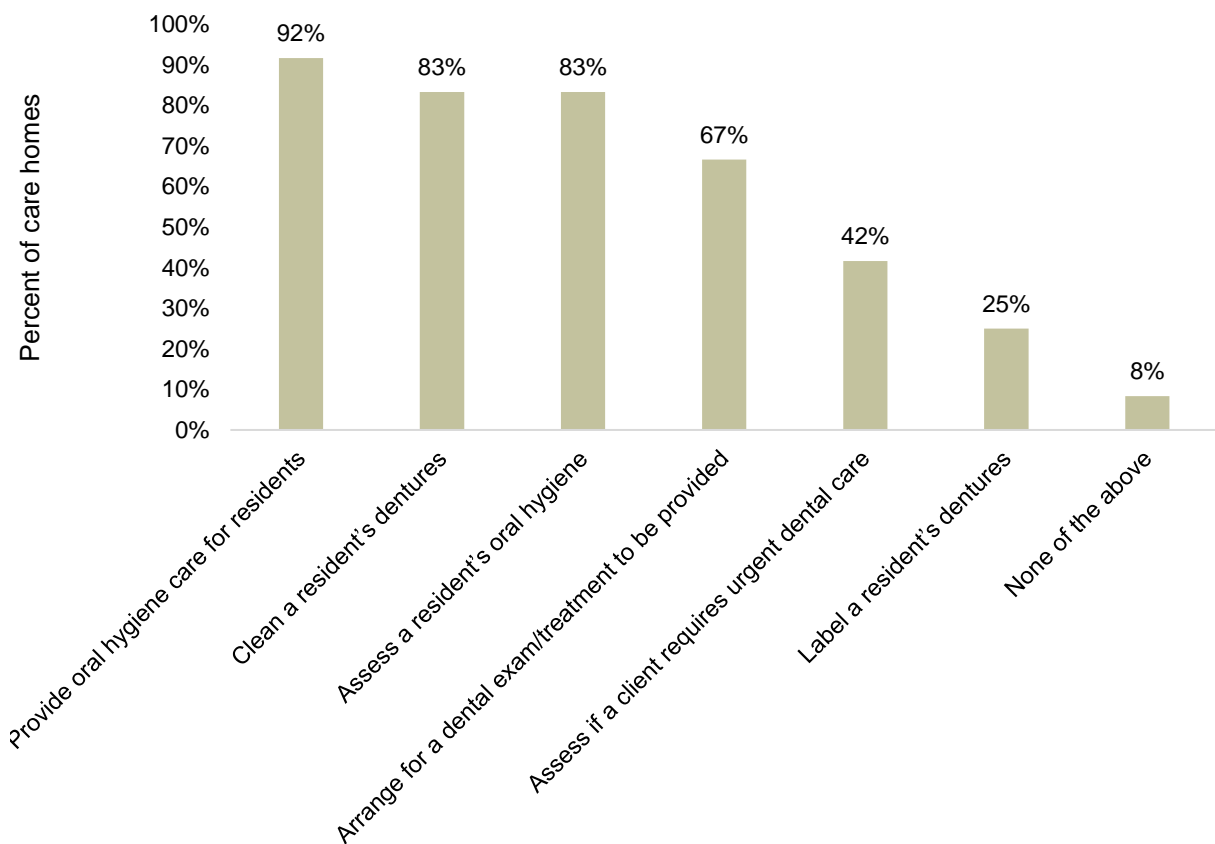
**Figure B.5:** Residents who cannot brush their teeth/denture helped and supported to do so



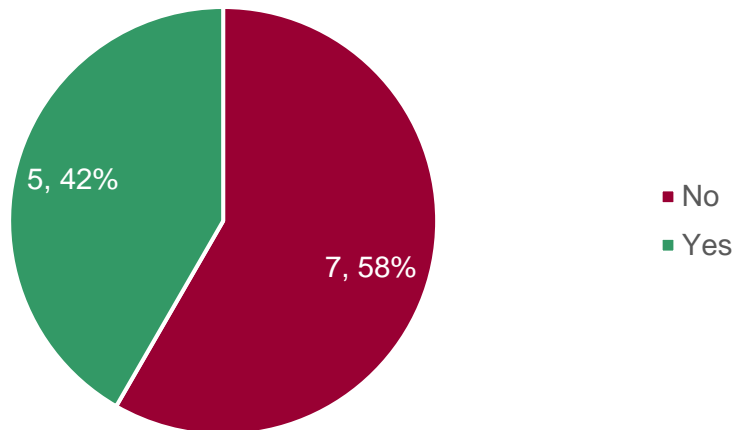
**Figure B.6: Dental care provision**



**Figure B.7: Areas where care home staff are currently provided with training**



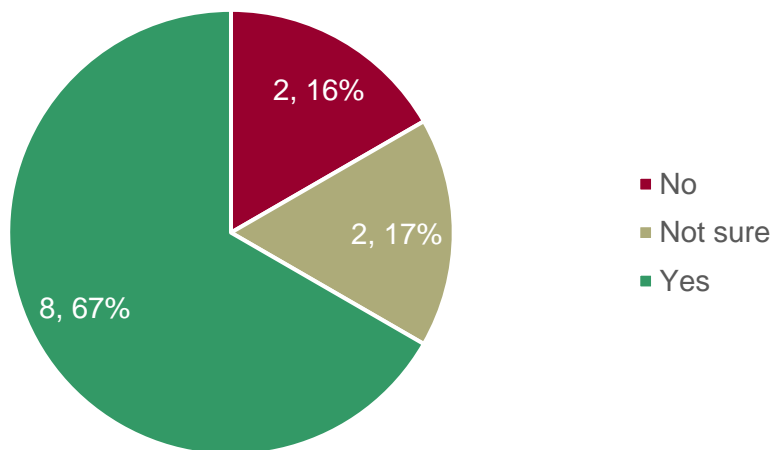
**Figure B.8:** Training on oral health provided on induction



**Table B/1: Method of training provision**

Method of training provision	Number of care homes
Discussion takes place during induction with staff	1
In house, e learning and external providers	1
Knowsley training	1
Online elearning course	1
other staff members who are inducting using mouth care matters CQC document	1

**Figure B.9:** Mouth care matters training provided previously



## Key Lessons

- Oral health assessments do appear to be common practice amongst the care homes that responded. However, what was included in the oral health assessments varied between care homes. A standard protocol could be developed and shared for all care homes across the district
- A similar finding was present for oral health training – with most care homes including some form of training for staff. However, this was not consistent across care homes with some potential major gaps present. For instance, the assessing the need for urgent dental care and labelling of dentures. A standard training program for all care homes should identify any potential gaps.
- There was a recognition of gaps in dental service provision with some care homes noting that it was difficult for their residents to access an NHS dentist.
- More than half of all care homes did not include oral health training as part of the induction for new staff. Communication on the importance of this should be shared, with resources available for care homes to enable them to provide the training with ease on induction.

## Limitations

- The data presented here are based on the experiences of care homes who were willing to respond to the survey, therefore results presented may not be a true representation of all care homes within the district.
- The results represent a specific point in time and results may vary if the survey was repeated at another time point.

## References

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1. Office for Health Improvement and Disparities. Public health profiles - Inequalities [Internet]. 2022 [cited 2022 Nov 1]. Available from: [https://fingertips.phe.org.uk/search/93563#page/7/gid/1/pat/159/par/K02000001/ati/15/are/E92000001/iid/93563/age/34/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/ine-yo-1:2018:-1:-1\\_ine-pt-0\\_ine-ct-115](https://fingertips.phe.org.uk/search/93563#page/7/gid/1/pat/159/par/K02000001/ati/15/are/E92000001/iid/93563/age/34/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1/page-options/ine-yo-1:2018:-1:-1_ine-pt-0_ine-ct-115)
2. Ministry of Housing - Communities & Local Government. English indices of deprivation 2019 [Internet]. 2019 [cited 2022 Nov 1]. Available from: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>
3. Ministry of Housing Communities and Local Government. E08000011\_LAD-LSOA\_IMD2019\_Knowsley.png (3779x2125) [Internet]. 2019 [cited 2022 Dec 27]. Available from: [https://research.mysociety.org/sites/imd2019/media/lsa\\_maps/E08000011\\_LAD-LSOA\\_IMD2019\\_Knowsley.png](https://research.mysociety.org/sites/imd2019/media/lsa_maps/E08000011_LAD-LSOA_IMD2019_Knowsley.png)
4. Public Health England. Oral health survey of adults attending dental practices [Internet]. 2018 [cited 2023 Apr 25]. Available from: <https://www.gov.uk/government/publications/oral-health-survey-of-adults-attending-dental-practices-2018>
5. Office of Health Improvement and Disparities. Public health profiles - OHID [Internet]. 2022 [cited 2023 Apr 25]. Available from: <https://fingertips.phe.org.uk/search/oral%20cancer#page/4/gid/1/pat/6/ati/401/are/E08000011/iid/92953/age/1/sex/4/cat/-1/ctp/-1/yr/3/cid/4/tbm/1>
6. Delivering better oral health: an evidence-based toolkit for prevention - GOV.UK [Internet]. [cited 2023 Mar 14]. Available from: <https://www.gov.uk/government/publications/delivering-better-oral-health-an-evidence-based-toolkit-for-prevention>
7. Khairnar MR, Wadgave U, Khairnar SM. Effect of Alcoholism on Oral Health: A Review. J Alcohol Drug Depend [Internet]. 2017 [cited 2023 Sep 19];5(3):1–4. Available from: <https://www.longdom.org/open-access/effect-of-alcoholism-on-oral-health-a-review-30952.html>
8. Public Health England. Inequalities in oral health in England [Internet]. 2014 [cited 2022 Oct 1]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/970380/Inequalities\\_in\\_oral\\_health\\_in\\_England.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/970380/Inequalities_in_oral_health_in_England.pdf)
9. World Health Organisation. Oral health [Internet]. 2022 [cited 2023 Jan 3]. Available from: <https://www.who.int/news-room/fact-sheets/detail/oral-health>
10. World Health Organisation. Oral health [Internet]. 2023 [cited 2023 Jun 20]. Available from: [https://www.who.int/health-topics/oral-health#tab=tab\\_1](https://www.who.int/health-topics/oral-health#tab=tab_1)
11. Royal College of Surgeons. Number of children aged 5 to 9 admitted to hospital due to tooth decay rises again [Internet]. 2018 [cited 2022 Dec 21]. Available from:

- <https://www.rcseng.ac.uk/news-and-events/media-centre/press-releases/hospital-admission-tooth-decay/>
12. National Institute for Health and Care Excellence. Oral health: local authorities and partners [Internet]. 2014 [cited 2022 Oct 30]. Available from: <https://www.nice.org.uk/guidance/ph55/chapter/4-considerations>
  13. Alsam A. Widening inequalities. *Bdj in Practice* [Internet]. 2021 Jan [cited 2022 Dec 27];34(1):5. Available from: [/pmc/articles/PMC7779895/](https://www.bjpubs.com/doi/10.1039/c1pb90001a)
  14. Public Health England. Local authorities improving oral health: commissioning better oral health for children and young people: an evidence-informed toolkit for local authorities [Internet]. 2014 [cited 2022 Nov 20]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/321503/CBOHMaindocumentJUNE2014.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321503/CBOHMaindocumentJUNE2014.pdf)
  15. Office for Health Improvement and Disparities. Child oral health: applying All Our Health - GOV.UK [Internet]. 2021 [cited 2022 Dec 21]. Available from: <https://www.gov.uk/government/publications/child-oral-health-applying-all-our-health/child-oral-health-applying-all-our-health>
  16. Department for Education. The link between absence and attainment at KS2 and KS4 2013/14 academic year. 2016;
  17. Levine RS. Childhood caries and hospital admissions in England: a reflection on preventive strategies. *British Dental Journal* 2021 230:9 [Internet]. 2021 May 14 [cited 2022 Dec 21];230(9):611–6. Available from: <https://www.nature.com/articles/s41415-021-2945-8>
  18. UK statutory Instruments. The NHS Bodies and Local Authorities (Partnership Arrangements, Care Trusts, Public Health and Local Healthwatch) Regulations 2012 [Internet]. [cited 2023 Jan 3]. Available from: <https://www.legislation.gov.uk/uksi/2012/3094/part/4/made>
  19. Department of Health and Social care. Health and Care Bill: water fluoridation [Internet]. 2022 [cited 2022 Nov 21]. Available from: <https://www.gov.uk/government/publications/health-and-care-bill-factsheets/health-and-care-bill-water-fluoridation>
  20. Office for Health Improvement and Disparities. Public health profiles - Percentage of 5 year olds with experience of visually obvious dental decay [Internet]. 2022 [cited 2022 Dec 19]. Available from: <https://fingertips.phe.org.uk/search/oral%20health#page/4/gid/1/pat/6/ati/401/are/E08000011/iid/93563/age/34/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1>
  21. Office for Health Improvement and Disparities. Public health profiles - decayed, missing or filled teeth in five year olds [Internet]. 2022 [cited 2022 Dec 12]. Available from: <https://fingertips.phe.org.uk/search/decayed%20missing#page/4/gid/1/pat/6/ati/402/are/E08000011/iid/92504/age/34/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1>
  22. Bruce N, Pope D, Stanistreet D. Quantitative methods for health research: a practical interactive guide to epidemiology and statistics. 2nd ed. Oxford: Wiley; 2018.
  23. Office of National Statistics. Nomis - Official Census and Labour Market Statistics - Population estimates [Internet]. 2022 [cited 2022 Nov 10]. Available from: <https://nomis.ons.gov.uk/>

- <https://www.nomisweb.co.uk/query/construct/submit.asp?forward=yes&menuopt=201&subcomp=>
24. Naidoo J, Wills J. Foundations for health promotion. 4th ed. Elsevier; 2016.
  25. Knowsley Council. Knowsley Children's Social Care [Internet]. 2018 [cited 2022 Dec 20]. Available from: <https://www.knowsley.gov.uk/knowsleycouncil/media/Knowsley-Media/Knowsley-Sufficiency-Position-Statement-2018-2021-min.pdf>
  26. Office for Health Improvement and Disparities. Public health profiles - OHID [Internet]. 2022 [cited 2022 Dec 27]. Available from: <https://fingertips.phe.org.uk/search/poverty#page/4/gid/1/pat/6/ati/401/are/E08000011/iid/90630/age/199/sex/4/cat/-1/ctp/-1/yr/1/cid/4/tbm/1>
  27. Public Health England. Oral health survey of children attending special support schools - GOV.UK [Internet]. 2015 [cited 2023 Feb 14]. Available from: <https://www.gov.uk/government/statistics/oral-health-of-5-and-12-year-old-children-attending-special-support-schools-in-england-2014>
  28. NHS Digital. 3.7.ii Tooth extractions due to decay for children admitted as inpatients to hospital, aged 10 years and under - NHS Digital [Internet]. 2023 [cited 2023 Feb 28]. Available from: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-outcomes-framework/march-2022/domain-3---helping-people-to-recover-from-episodes-of-ill-health-or-following-injury-nof/3.7.ii-tooth-extractions-due-to-decay-for-children-admitted-as-inpatients-to-hospital-aged-10-years-and-under>
  29. Ukhsa. Chapter 18a-Human papillomavirus (HPV) Human papillomavirus (HPV) Human papillomavirus (HPV).
  30. Antonsson A, de Souza MMA, Panizza BJ, Whiteman DC. Sexual debut and association with oral human papillomavirus infection, persistence and oropharyngeal cancer—An analysis of two Australian cohorts. *Int J Cancer* [Internet]. 2022 Sep 1 [cited 2023 Sep 26];151(5):764–9. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1002/ijc.33986>
  31. Crotty TJ, Keane E, Cousins G, Brennan S, Kinsella J, Moran T. Sexual Behaviour and Human Papillomavirus-Positive Oral Cavity and Oropharyngeal Cancer: An Irish Perspective.
  32. Roman BR, Aragonés A. Epidemiology and incidence of HPV-related cancers of the head and neck. *J Surg Oncol* [Internet]. 2021 Nov 1 [cited 2023 Sep 26];124(6):920–2. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1002/jso.26687>
  33. Rong WS, Bian JY, Wang WJ, de Wang J. Effectiveness of an oral health education and caries prevention program in kindergartens in China. *Community Dent Oral Epidemiol* [Internet]. 2003 Dec [cited 2022 Dec 29];31(6):412–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/14986908/>
  34. MacPherson LMD, Anopa Y, Conway DI, McMahon AD. National supervised toothbrushing program and dental decay in Scotland. *J Dent Res* [Internet]. 2013 Feb 21 [cited 2022 Dec 28];92(2):109–13. Available from: [https://journals.sagepub.com/doi/full/10.1177/0022034512470690?casa\\_token=leMqVXNFRncAAAAA%3AZpqkIY2dIGf6755wjN7tSZJktCd\\_oHxSkO5PqphQ1HWu33ZRFI\\_r6MbocgPlyjwOEdOifEgwgh2u0](https://journals.sagepub.com/doi/full/10.1177/0022034512470690?casa_token=leMqVXNFRncAAAAA%3AZpqkIY2dIGf6755wjN7tSZJktCd_oHxSkO5PqphQ1HWu33ZRFI_r6MbocgPlyjwOEdOifEgwgh2u0)

35. dos Santos APP, Nadanovsky P, de Oliveira BH. A systematic review and meta-analysis of the effects of fluoride toothpastes on the prevention of dental caries in the primary dentition of preschool children. *Community Dent Oral Epidemiol* [Internet]. 2013 Feb [cited 2022 Dec 29];41(1):1–12. Available from: <https://pubmed.ncbi.nlm.nih.gov/22882502/>
36. Public Health England. Improving the oral health of children: cost effective commissioning [Internet]. 2016 [cited 2022 Nov 23]. Available from: <https://www.gov.uk/government/publications/improving-the-oral-health-of-children-cost-effective-commissioning>
37. Knowsley Council. Oral health improvement programmes Knowsley - email correspondence - Public Health Programme Manager. 2022.
38. Knowsley Council. Oral Health: JSNA Knowsley [Internet]. 2015 [cited 2022 Dec 30]. Available from: <https://knowsleyknowledge.org.uk/wp-content/uploads/2020/01/JSNA-Report-Oral-Health.pdf>
39. Institute of Health Equity. All together fairer: Health equity and the social determinants of health in Cheshire and Merseyside [Internet]. 2022 [cited 2022 Dec 28]. Available from: <https://www.instituteofhealthequity.org/resources-reports/all-together-fairer-health-equity-and-the-social-determinants-of-health-in-cheshire-and-merseyside/executive-summary.pdf>
40. Public Health England. Health matters: child dental health - GOV.UK [Internet]. 2017 [cited 2023 Jan 5]. Available from: <https://www.gov.uk/government/publications/health-matters-child-dental-health/health-matters-child-dental-health>
41. Public Health England. Oral health improvement programmes commissioned by local authorities [Internet]. 2017 [cited 2022 Nov 1]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/707180/Oral\\_health\\_improvement\\_programmes\\_commissioned\\_by\\_local\\_authorities.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707180/Oral_health_improvement_programmes_commissioned_by_local_authorities.pdf)
42. Towards health equity: a framework for the application of proportionate universalism - IHE [Internet]. [cited 2023 Jan 8]. Available from: <https://www.instituteofhealthequity.org/resources-reports/towards-health-equity-a-framework-for-the-application-of-proportionate-universalism>
43. MacKenbach JD, Ibouanga EL, van der Veen MH, Ziesemer KA, Pinho MGM. Relation between the food environment and oral health—systematic review. *Eur J Public Health* [Internet]. 2022 Aug 1 [cited 2023 Jan 4];32(4):606–16. Available from: <https://academic.oup.com/eurpub/article/32/4/606/6645756>
44. Example menus for early years settings in England - GOV.UK [Internet]. [cited 2023 Jan 4]. Available from: <https://www.gov.uk/government/publications/example-menus-for-early-years-settings-in-england>
45. Department for Education. Browse our open data, Data catalogue – Explore education statistics – GOV.UK [Internet]. [cited 2023 Jan 5]. Available from: <https://explore-education-statistics.service.gov.uk/data-catalogue/school-pupils-and-their-characteristics/2021-22>



46. Child Poverty Action Group. GOING HUNGRY? Young people's experiences of Free School Meals [Internet]. 2012 [cited 2022 Dec 17]. Available from: [www.cpag.org.uk](http://www.cpag.org.uk)
47. Roberts N, Long R, Danechi S. School meals and nutritional standards (England) [Internet]. [cited 2022 Dec 27]. Available from: <https://commonslibrary.parliament.uk/research-briefings/sn04195/>
48. Department for Education. The School Foods Standards [Internet]. 2019 [cited 2022 Dec 27]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1084436/School\\_Food\\_Standards\\_140911-V2.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1084436/School_Food_Standards_140911-V2.pdf)
49. Hartshorn JE, Cowen HJ, Comnick CL. Cluster randomized control trial of nursing home residents' oral hygiene following the Mouth Care Matters education program for certified nursing assistants. *Special Care in Dentistry* [Internet]. 2021 May 1 [cited 2022 Nov 29];41(3):372–80. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/scd.12577>
50. Office for Health Improvement and Disparities. Water fluoridation health monitoring report 2022 [Internet]. 2022 [cited 2022 Nov 10]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1060471/water-fluoridation-health-monitoring-report-2022.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1060471/water-fluoridation-health-monitoring-report-2022.pdf)
51. NHS. Free NHS dental treatment | NHSBSA [Internet]. 2022 [cited 2023 Mar 28]. Available from: <https://www.nhsbsa.nhs.uk/help-nhs-dental-costs/free-nhs-dental-treatment>
52. NHS Business Service Authority. What we do | NHSBSA [Internet]. 2023 [cited 2023 Mar 14]. Available from: <https://www.nhsbsa.nhs.uk/what-we-do>
53. NHS Business Service Authority. What are the different types of NHS dental contracts? - Customer Self-Service [Internet]. 2023 [cited 2023 Jun 21]. Available from: <https://faq.nhsbsa.nhs.uk/knowledgebase/article/KA-01910/en-us>
54. Garratt K, Harker R. NHS dentistry in England [Internet]. 2023 [cited 2023 Jun 21]. Available from: <https://commonslibrary.parliament.uk/research-briefings/cbp-9597/>
55. Healthwatch. Twin crisis of access and affordability calls for a radical rethink of NHS dentistry [Internet]. [cited 2023 Jun 21]. Available from: <https://www.healthwatch.co.uk/news/2021-05-24/twin-crisis-access-and-affordability-calls-radical-rethink-nhs-dentistry>
56. British Dental Association. NHS dentistry: Have we reached the point of no return? [Internet]. 2022 [cited 2023 Sep 29]. Available from: <https://bda.org/news-centre/blog/Pages/NHS-dentistry-have-we-reached-the-point-of-no-return.aspx>
57. Health and Social Care Committee. NHS dentistry [Internet]. 2023 [cited 2023 Sep 29]. Available from: <https://publications.parliament.uk/pa/cm5803/cmselect/cmhealth/964/summary.html>
58. Department of Health & Social Care. SHAPE - Shape [Internet]. 2023 [cited 2023 Mar 14]. Available from: <https://shapeatlas.net/>

59. National Institute of Health and Care Excellence. 2020 exceptional surveillance of dental checks: intervals between oral health reviews (NICE guideline CG19) [Internet]. 2020 [cited 2023 Mar 28]. Available from: [www.nice.org.uk](http://www.nice.org.uk)
60. British Society of Paediatric Dentistry. Dental Check By One – Visit a dentist before your child’s first birthday [Internet]. 2023 [cited 2023 Mar 14]. Available from: <https://dentalcheckbyone.co.uk/>
61. Understanding NHS dental charges - NHS [Internet]. [cited 2023 Apr 11]. Available from: <https://www.nhs.uk/nhs-services/dentists/dental-costs/understanding-nhs-dental-charges/>
62. Gov.uk. Children looked after in England including adoptions, Reporting year 2022 – Explore education statistics – GOV.UK [Internet]. 2022 [cited 2023 May 16]. Available from: <https://explore-education-statistics.service.gov.uk/find-statistics/children-looked-after-in-england-including-adoptions/2022>
63. NHS. Dental prescribing dashboard | NHSBSA [Internet]. [cited 2023 Sep 7]. Available from: <https://www.nhsbsa.nhs.uk/prescription-data/dispensing-data/dental-prescribing-dashboard>
64. New antimicrobial prescribing guidelines for dentists. *Br Dent J*. 2021 Jan;230(1):7–7.
65. Dental antimicrobial stewardship: toolkit - GOV.UK [Internet]. [cited 2023 Sep 7]. Available from: <https://www.gov.uk/guidance/dental-antimicrobial-stewardship-toolkit>
66. Local Government Association. Number of children looked after who had their teeth checked by a dentist in Knowsley | LG Inform [Internet]. 2023 [cited 2023 Apr 12]. Available from: [https://lginform.local.gov.uk/reports/lgastandard?metric=2139&mod-period=12&mod-area=E08000011&mod-group=AllMetropolitanBoroughLainCountry\\_England&mod-type=namedComparisonGroup](https://lginform.local.gov.uk/reports/lgastandard?metric=2139&mod-period=12&mod-area=E08000011&mod-group=AllMetropolitanBoroughLainCountry_England&mod-type=namedComparisonGroup)
67. Office of National Statistics. Population projections for local authorities: Table 2 - Office for National Statistics [Internet]. 2020 [cited 2023 Mar 28]. Available from: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2>
68. Keat R, Pretty I. The impact of restricted access on the need and demand for specialist dental services - A consideration for future needs assessments. *Community Dent Health* [Internet]. 2023 Aug 31 [cited 2023 Sep 19];40(3):139–45. Available from: <https://europepmc.org/article/med/37490397>
69. Public Health England. Improving oral health: A toolkit to support commissioning of supervised toothbrushing programmes in early years and school settings. 2016 [cited 2022 Dec 13]; Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/321503/CBOHMaindocumentJUNE2014.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321503/CBOHMaindocumentJUNE2014.pdf)
70. Royal College of Surgeons. Hospital admissions for 5-9 year olds with tooth decay more than double those for tonsillitis [Internet]. 2019 [cited 2022 Dec 13]. Available from: <https://www.rcseng.ac.uk/news-and-events/media-centre/press-releases/dental-decay-hosp-admissions/>

