



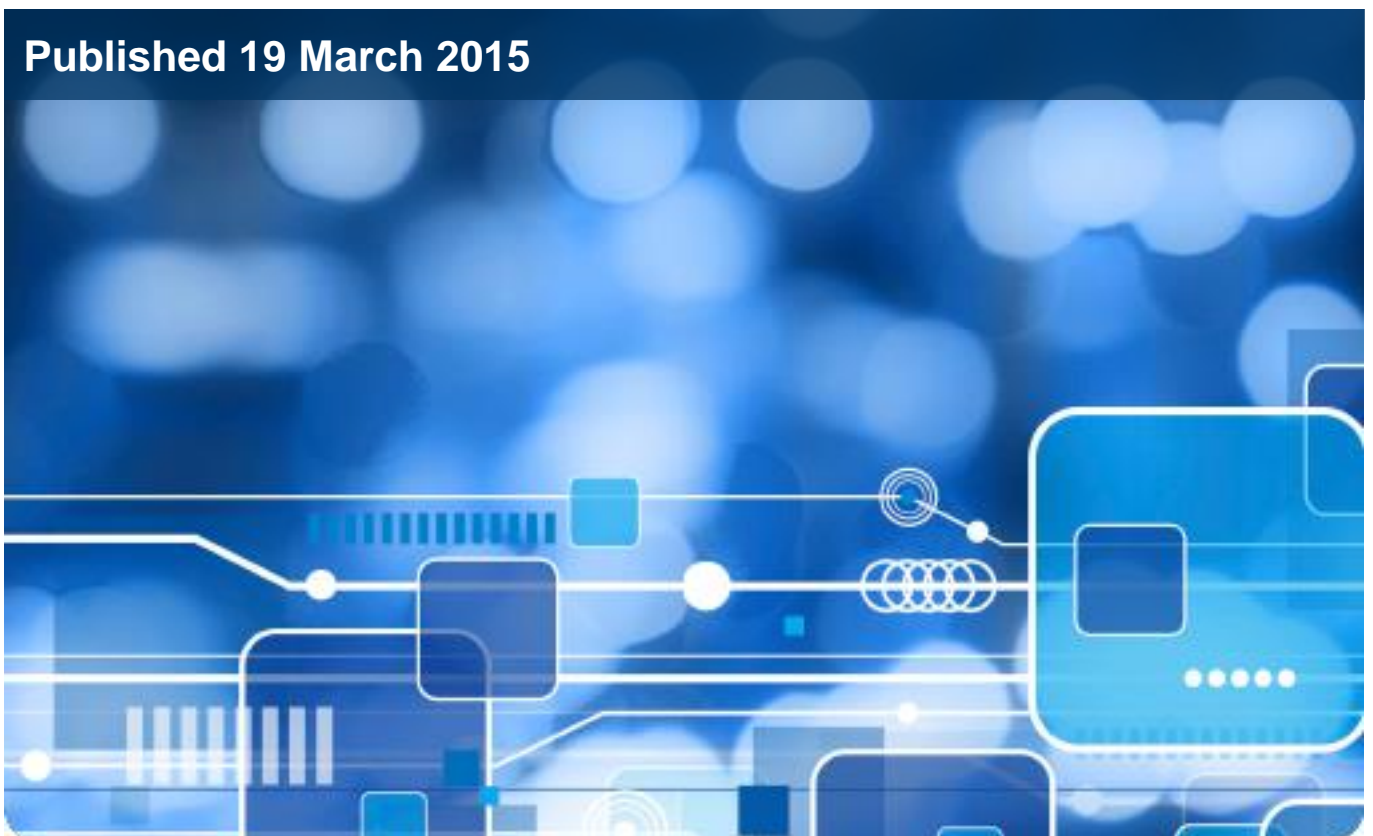
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Children's Dental Health Survey 2013

Country specific report: Northern Ireland

Published 19 March 2015



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This report may be of interest to members of the public, health policy officials, Consultants in Dental Public Health and other members of the dental profession, epidemiologists and other academics interested in children's health.

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Executive Summary

This country specific report focuses on children in Northern Ireland who participated in the 2013 Children's Dental Health (CDH) Survey. The report encompasses:

- Clinical oral health, including tooth and gum condition
- Perceptions and experiences of dental health, including self-rated dental and general health
- Oral health related behaviours, including tooth brushing, diet, alcohol and tobacco consumption, and
- Patterns of dental service usage, including access and satisfaction with NHS dental treatment services

The dental examination covered different aspects of tooth and gum (periodontal) condition. A composite measure shows that 44% of 5 year olds could be said to have good oral health¹. The proportion with good oral health declined with age. Just under a fifth (19%) of 15 year olds had good oral health by the same measure.

Obvious dental decay experience in primary teeth was present in 40% of 5 year olds. In permanent teeth, obvious decay experience was found in 57% of 12 year olds and 72% of 15 year olds. The respective figures for 12 and 15 year olds in 2003 were 73% and 78%. The proportion of 12 year old children with obvious decay experience in permanent teeth in Northern Ireland reduced between 2003 and 2013.

In relation to periodontal health, 50% of 15 year olds had visible plaque deposits and 41% had gingivitis (bleeding). Evidence of trauma to permanent incisors was found in 11% of 12 year olds, while 4% of 15 year olds had tooth surface loss into dentine or pulp on the lingual surfaces of their permanent incisors. Just over a fifth (21%) of 12 year olds had enamel defects, and the proportion of 12 year olds with any defects reduced between 2003 and 2013.

The survey questionnaires provided information on perceptions and behaviours relevant to the oral health of children. A majority of children held positive views of their dental health. Two thirds of 12 year olds and three quarters of 15 year olds (68% and 75%) reported that their dental health was good or very good. Girls were more likely than boys to report good or very good dental health.

Despite many children reporting positive overall views of their dental health, substantial proportions of children were concerned about the appearance of their teeth and dental problems were commonly reported.

Overall, 42% of 12 year olds and 27% of 15 years olds reported that they were not happy with the appearance of their teeth and would like to have them straightened. A majority of 12 year olds (74%) and 15 year olds (69%) reported a problem with their dental health in the last three months. The most commonly reported problem was sensitive teeth (34% in both age groups). Oral conditions can have an impact on children's quality of life in different ways, not just functionally, but also psychologically and socially. Three fifths (58%) of 12 year olds and nearly half (46%) of those aged 15 reported that their daily life had been affected by

¹ The good oral health indicator combines the absence of obvious decay experience, tooth surface loss into dentine and calculus.

problems with their teeth and mouth in the last three months. This was most commonly experienced as embarrassment when smiling, laughing or showing teeth, followed by difficulty eating and difficulty cleaning teeth. Parents also reported that the oral health of their children affected their family life, most frequently by the need to take time off work or the parents feeling stressed or anxious.

The survey also provides a range of information on behaviours relevant to oral health, such as frequency of tooth brushing, diet, smoking and alcohol consumption.

Overall, 83% of 5 and 8 year olds, and 84% of 12 and 15 year olds brushed their teeth at least twice a day according to their parents. The percentage of 5 and 12 year old children brushing their teeth twice or more a day increased between 2003 and 2013. Girls were more likely to report brushing their teeth twice or more a day than boys.

A minority of 15 year olds (14%) reported drinking sugary drinks four or more times a day. More than a quarter of 12 (27%) and 15 year olds (30%) drank water four or more times a day. Smoking amongst 12 year olds was not very common; however more than a quarter (28%) of 15 year olds reported having tried smoking. Similarly, amongst 12 year olds, more than one in ten (12%) children reported having tried drinking alcohol, increasing to more than half (56%) of 15 year olds.

The information generated on patients' utilisation and experience of dental care services has implications for the oral health of children and the resources required by the NHS to treat and prevent oral health problems. In Northern Ireland, there has been little change in children's reported dental attendance patterns since 2003. Nearly 90% of 12 and 15 year olds reported attending the dentist for a check-up, but this also means that more than one in ten older children do not attend. In relation to access to NHS dental services more than nine out of ten parents reported they had never experienced difficulty finding an NHS dentist for their children. The proportion of parents reporting that they had experienced a problem accessing NHS dentistry in Northern Ireland, however, increased from 1% in 2003 to 5% in 2013. High levels of satisfaction with dental treatment services were reported.

1 Introduction and methodology

1.1 Introduction

The 2013 Children's Dental Health (CDH) survey, commissioned by the Health and Social Care Information Centre (www.hscic.gov.uk), is the fifth in a series of national children's dental health surveys that have been carried out every ten years since 1973.

The 2013 survey provides information on the dental health of children in England, Wales and Northern Ireland. The survey measures changes in oral health since the last survey in 2003, and provides information on children's experiences, behaviours and attitudes relevant to their oral health.

Detailed analysis across all three nations is covered in Reports 1-5. This report presents dental health experiences for children living in Northern Ireland. The report covers clinical indicators of oral health, as measured in the survey dental examination, and reported perceptions of oral health, behaviours and dental service usage patterns captured from parental and pupil questionnaires (the latter for 12 and 15 year olds only).

Where sample size allows, the data collected in this latest survey will be compared to data from previous CDH surveys to show children's dental health experiences within Northern Ireland over time. A major theme arising from the reports is the level of inequality in the oral health of children and results are presented comparing children from relatively deprived families, indicated by their eligibility for free school meals in 2013, to other children of the same age. In addition, some comparisons are made by sex.

1.2 Dental terminology

This report makes reference to a number of technical terms associated with teeth and gums. For non-expert readers, a glossary can also be found in Annex A of the technical report. Further information is also available in sections 2.1.3 and 2.1.4 of Report 2. The following sections summarise that information.

1.3 Dental caries

Dental caries (also known as tooth decay) and decay experience of children's teeth are major focuses of the clinical oral health sections. Decay experience is typically assessed in surveys by the dmft (in primary teeth) and DMFT (in permanent teeth) index. The index contains three components related to whether teeth have untreated caries (including where teeth already have fillings) (dt/DT), have already had fillings for caries (ft/FT), or have been removed because of caries (mt/MT).

In primary teeth, an assessment of teeth missing due to decay is complicated by the natural exfoliation of the teeth, making it difficult to determine whether a tooth was lost due to dental decay or whether it exfoliated naturally. Therefore, as in previous surveys, dental examiners were not asked to assess the reason for the absence of primary teeth.

The report presents estimates for the *prevalence*, or extent, of decay amongst children in the population represented by the proportion of children affected by decay at the time of the survey. Results on the mean number of teeth affected by decay at the time of the survey²

² Using the dmft/DMFT index

are also presented. Results for the primary and permanent dentition are provided at both the 'obvious' and 'clinical' dental decay thresholds of severity.

Obvious decay represents established disease which has spread through the outer tooth enamel to significantly involve the inner dentine layer beneath. The survey reports on both "obvious decay experience *excluding* visual dentine caries" where only decay at the frank cavity level is included and "obvious decay experience" where in addition to frank cavities, decay that can be visualised through the enamel is included. Obvious decay relates to untreated decay, whereas obvious decay *experience* relates to both teeth with untreated decay and teeth that had been previously filled or extracted because of decay.

Clinical decay experience incorporates obvious decay experience, as defined above, but also includes initial stage lesions that are judged to be confined to the tooth enamel. Enamel decay does not usually require a filling, but may indicate the need for interventions to prevent decay progressing into dentine. This is a new development for the 2013 survey and is closer to the criteria now used by clinicians examining and providing care for children. Both visual enamel changes, seen as characteristic white or brown changes in the optical properties of the tooth surface, and cavitation in the tooth enamel are recorded. In the report, "clinical decay experience" includes "obvious decay experience" as well as visual and cavitated enamel lesions whereas "clinical decay experience *excluding* visual enamel caries" only includes "obvious decay experience" and "enamel caries with cavitation".

1.4 Non-carious conditions

Tooth Surface Loss (TSL) is pathological non-carious loss of tooth tissues resulting from chemical action not involving bacteria (erosion), wear due to tooth-to-tooth contact (attrition) or physical wear not caused by tooth-to-tooth contact, for example tooth brushing (abrasion). As in 2003, buccal and lingual surfaces of primary and permanent upper incisors and occlusal surfaces of first permanent molars are reported. Evaluation of the data collected during the training weeks and calibration, showed that dental examiners had low levels of agreement in the case of enamel TSL but TSL into dentine and dental pulp are easier to identify. This variation should be taken into account when the results of this report are considered.

Developmental defects of enamel occur as the result of alterations to the structure of enamel during its formation. The aetiology, or cause, of these changes is variable as are the changes in appearance of the tooth. Where the opacities are considered unsightly, treatment may be required to improve the appearance of teeth. As in 2003, developmental defects in enamel were only reported on the upper incisors, canines and first premolars of 12 year olds.

Traumatic damage to permanent incisors and treatment undertaken to repair the damage was recorded. All permanent incisor teeth in all age groups were examined.

Indicators of oral health include the condition of children's gingivae (gums) as well as their teeth. The oral examination included four measures of *periodontal health*. Three of these, relating to the visual examination of the gingivae, recorded the presence of gum inflammation, plaque and calculus for each of the six segments of the mouth, for all age groups. The fourth measure of periodontal health was used for 15 year olds only, and required the use of a periodontal probe to detect changes in periodontal health around six

index teeth using the modified Basic Periodontal Index (BPE)³. The presence of gingival bleeding was recorded.

1.5 Perceptions of oral health, behaviours and dental service usage

One of the strengths of the CDH Survey is the range of behavioural and attitudinal information collected about the children taking part in the dental examinations.

A major innovation of the 2013 survey was the introduction of the pupil questionnaire for 12 and 15 year olds, to complement the questionnaire sent out to parents and carers for all age groups.

The pupil questionnaire collected a range of information on perceptions and behaviours relevant to oral health and health more generally. Information on subjective outcomes from experience of oral health and dental care was also collected; including assessments of overall dental health, recent problems with oral health and the impact of oral health on the quality of life of the child.

The parent questionnaire collected, for all age groups, information on dental hygiene, parental perceptions of the child's oral health, the impact of the child's oral health on the family and more detailed information on the dental care experienced by children, including satisfaction with and access to services.

1.6 Survey methodology

A representative sample of children aged 5, 8, 12 and 15 years attending state and independent schools, but excluding special schools, were selected to take part in this survey.

A total of 13,628 children were sampled in participating schools across England, Wales and Northern Ireland; 9,866 dental examinations were completed. Dental examination participation rates varied across the age cohorts as follows:

- 5 year olds 70%
- 8 year olds 65%
- 12 year olds 83%
- 15 year olds 74%

The requirement for positive written parental consent for the dental examination with 5 and 8 year olds is likely to have reduced participation from those cohorts. Older children (12 and 15 year olds) that were examined were asked to complete a questionnaire at the same appointment as their examination; 99.6% of them completed it.

Parents and carers, (referred to hereafter as parents), of children who were examined were invited to complete a questionnaire; the overall response rate was 43%. Response was higher amongst the parents of 5 and 8 year olds, all of whom had already provided written consent for the dental examination.

Levels of missing data within productive cases were generally low. Item non-response on the dental examination was typically below 1% of eligible cases, with the highest non-response

³ See 'Guidelines for periodontal screening and management of children and adolescents under 18 years of age.' Clerehugh V, Kindelan S. British Society of Periodontology and The British Society of Paediatric Dentistry, 2012

recorded in relation to trauma to permanent teeth (up to 2.1% of cases). For straightforward question formats, item non-response in the pupil and parent questionnaires was generally below 2%. Questions using a yes/no grid format for items on a list had the highest item non-response from both children and parents. As the majority of this non-response represented failure to tick the 'no' codes relevant to the individual, it was assumed that this was the case in the production of the derived variables associated with these questions.

Further information on the survey design and implementation can be found in the quality statement and technical report published alongside this report⁴.

1.7 Consent methodology and trends

For the 2013 survey, the survey consent methodology was changed from negative (opt-out) parental consent for the dental examination to:

- For 5 and 8 year old examinations: positive (opt-in) parental consent was collected (with the children being allowed to opt-out on the examining day)
- For 12 and 15 year old examinations: positive (opt-in) consent was collected from the older children on the examining day (with parents being allowed to opt-out their children in advance)

When comparing the 2013 results with the previous surveys, these substantial changes must be taken into account, as they can lead to systematic changes (bias) in the data collected. For example, parents of younger children with tooth decay could have been less likely to opt their children into the survey. It is impossible to adjust for this non-response bias.

Further evidence relating to the likely impact of such changes is discussed in Report 1. Based on this evidence, trends in oral health in the primary dentition for 5 and 8 year olds are not presented. Although the change in methodology could also have impacted on the data for 12 and 15 year olds, this is regarded as less likely and so trends for permanent teeth in 12 and 15 year olds are presented.

1.8 Note on text and tables

Differences cited in the text are statistically significant ($p < 0.05$) unless otherwise stated. This means that there is approximately a 1 in 20 risk that the difference does not exist in reality in the population when sampling error is taken into account.

A dash in a table indicates a zero value, while an asterisk indicates a proportion of less than 0.5% or a mean of less than 0.05.

The statistics in the tables are produced using weights that adjust for selection probabilities, non-response bias and population totals. The unweighted bases shown in each table indicate the number of valid responses on which the estimates are based. Weighted bases are presented for some estimates alongside standard errors and confidence intervals in Annex A of chapters 1 to 4 of the Child Dental Health (CDH) publication. The weighted and unweighted bases may vary slightly across tables due to item non-response.

Figures presented in parentheses [] indicate a low base number of respondents and results are indicative only.

⁴ <http://www.hscic.gov.uk/pubs/ChildDentalHealth>

2 Clinical Oral Health

This section summarises headline findings for Northern Ireland from the 2013 CDH Survey. These findings relate to the Dental Examination component of the survey and cover good oral health, dental decay, periodontal (gum) status, tooth surface loss, enamel defects and accidental damage to teeth.

2.1 Good oral health

This section focuses on children who were deemed to have good oral health. This group was identified by constructing an indicator of good overall oral health, combining the absence of obvious decay experience, no tooth surface loss into dentine, and the absence of calculus, a periodontal risk factor that would imply a need for treatment.

In 2013, a third (31%) of children could be said to have good overall oral health (Table NI.1). Five year olds were more likely to have good oral health (44%) than other age groups. A fifth (19%) of 15 year olds had good oral health.

Table NI.1 Percentage of children with good overall oral health, by age

| Northern Ireland, 2013 | Percentages | | | | |
|------------------------------------|-------------|-----------|-----------|-----------|-----------|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | Total |
| No obvious decay experience | 60 | 38 | 41 | 27 | 41 |
| No calculus | 94 | 81 | 71 | 65 | 78 |
| No tooth surface loss into dentine | 75 | 98 | 97 | 95 | 91 |
| Good overall oral health | 44 | 31 | 30 | 19 | 31 |
| <i>Unweighted bases</i> | 527 | 506 | 484 | 551 | 2,068 |

2.1.1 Good periodontal health

Absence of gum disease is an important element in identifying children with healthy mouths. The gum disease related measures that were used in determining good periodontal health were the presence or absence of risk factors for gum disease, plaque and calculus, and whether the gingivae, the soft gum tissue, appeared healthy or not. The assessment was made for each sextant⁵ in the child's mouth.

⁵ Both the upper arch and lower arch of the mouth can be split into three sextants – so in the case of the upper arch of the mouth, this would be the upper right, upper central and upper left sextants.

In Northern Ireland, 45% of children had good periodontal health in 2013 (Table NI.2). This was more likely in 5 year olds than in other ages.

Plaque in no more than one sextant of the mouth was recorded in over half (56%) of children overall (Table NI.2). The prevalence of having no gum inflammation was also highest in the youngest age group (82%) declining to just over half of 12 and 15 year olds. The proportion of children without calculus reduced with age. Almost two thirds (65%) of 15 year olds had no calculus.

Table NI.2 Percentage of children with no periodontal conditions, by age

| Northern Ireland, 2013 | Percentages | | | | |
|---|-------------|-----------|-----------|-----------|-----------|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | Total |
| Plaque in no more than one sextant | 67 | 46 | 49 | 60 | 56 |
| No gum inflammation | 82 | 58 | 51 | 55 | 62 |
| No calculus | 94 | 81 | 71 | 65 | 78 |
| Good periodontal health (all of these) | 63 | 38 | 35 | 43 | 45 |
| <i>Unweighted bases</i> | 530 | 508 | 484 | 551 | 2,073 |

2.1.2 Absence of obvious decay experience in primary teeth

Table NI.3 shows the proportion of children with no obvious decay experience in primary teeth. In 2013, three fifths (60%) of 5 year olds and less than half (44%) of 8 year olds had no indication of obvious decay experience in primary teeth.

Table NI.3 Percentage of children with no obvious decay experience in primary teeth, by age

| Northern Ireland, 2013 | Percentages | | |
|-----------------------------|-------------|---------|-------|
| <i>Children aged 5, 8</i> | 5 years | 8 years | Total |
| No obvious decay experience | 60 | 44 | 52 |
| <i>Unweighted bases</i> | 530 | 508 | 1,038 |

2.1.3 Absence of obvious decay experience in permanent teeth

As decayed primary teeth are replaced by healthy permanent teeth, the overall condition of children's mouths improves, at least initially. Table NI.4 shows that 80% of 8 year olds had no obvious decay experience in any permanent teeth, but with increasing age the irreversible impact of decay becomes apparent in more children. The proportion of 15 year olds with no obvious decay experience in permanent teeth was 28%.

Table NI.4 Percentage of children with no obvious decay experience in permanent teeth, by age

| Northern Ireland, 2013 | | Percentages | | | |
|--------------------------------|---------|-------------|----------|-------|--|
| <i>Children aged 8, 12, 15</i> | 8 years | 12 years | 15 years | Total | |
| No obvious decay experience | 80 | 43 | 28 | 50 | |
| <i>Unweighted bases</i> | 508 | 484 | 551 | 1,543 | |

2.1.4 2003 and 2013 compared

Although for methodological reasons, it is inappropriate to compare 2003 and 2013 data on primary caries, there is confidence in the comparability of data for 12 year old and 15 year olds for obvious decay experience.

There has been some improvement in the prevalence of good oral health over the past ten years. For example, the proportion of 12 year olds with no obvious decay experience in permanent teeth has increased from 27% in 2003 to 43% in 2013. The apparent difference amongst 15 year olds was not statistically significant (Table NI.5).

Table NI.5 Percentage of children with no obvious decay experience in permanent teeth, by age

| Northern Ireland, 2003-2013 | | Percentages | | | |
|-----------------------------|----------|-------------|----------|------|--|
| <i>Children aged 12, 15</i> | 12 years | | 15 years | | |
| | 2003 | 2013 | 2003 | 2013 | |
| No obvious decay experience | 27 | 43 | 22 | 28 | |
| <i>Unweighted bases</i> | 462 | 484 | 380 | 551 | |

Further evidence of this improvement in 12 year olds is provided in Table NI.6. Between 2003 and 2013, the proportion of 12 year olds classified as being in good oral health (according to the composite measure used in Table NI.1) has doubled in Northern Ireland (from 15% to 30%) (Table NI.6). This change was not evident in 15 year olds. The challenge for public health is to target the factors that have been shown to have an impact on good overall oral health in order to increase the proportion of children with healthy mouths, whilst maintaining the oral health of those children with good oral health.

Table NI.6 Percentage of 12 and 15 year olds with good overall oral health, by age

| Northern Ireland, 2003-2013 <i>Children aged 12, 15</i> | Percentages | | |
|--|-------------|----------|-------|
| | 12 years | 15 years | Total |
| 2003 | 15 | 15 | 15 |
| 2013 | 30 | 19 | 24 |
| <i>Unweighted bases</i> | | | |
| 2003 | 462 | 380 | 842 |
| 2013 | 484 | 551 | 1,035 |

2.2 Prevalence of clinical decay experience

The criteria for assessing dental caries was developed further for the 2013 survey to allow estimates of clinical decay experience to also be produced. This evolution is in order to reflect changes in the presentation of decay and an increasing focus on the prevention and control of initial stage decay⁶. The survey therefore assessed decay in enamel only, both cavitated and visible. Typically, the approach to such lesions is increasingly not to fill or restore them but to adopt preventive strategies that minimise the risk of these developing into dentine decay lesions which typically are thought to require intervention.

Each table in this section reports both clinical decay (untreated) and clinical decay experience (untreated and treated teeth) both with and without visual enamel decay (but always including cavitated enamel caries). Although the treated teeth element includes filled teeth throughout, the treatment of missing teeth was different for primary and permanent teeth. For permanent teeth, loss of a tooth through decay could be determined. Among younger children, attribution of missing teeth to decay cannot be made and so missing teeth are excluded from clinical decay experience for primary teeth. This is explained further in Section 1.3 in the introduction to this report.

2.2.1 Clinical decay in primary teeth

Table NI.7 shows the percentages of 5 and 8 year old children that had clinical decay experience in their primary teeth. The prevalence of clinical decay and clinical decay experience in primary teeth for 8 year olds was 56% and 64% and for 5 year olds this was 48% and 51% respectively.

⁶ The international evolution and evidence for this approach has been collated by the ICDAS Foundation. See Pitts NB, Ismail AI, Martignon S, Ekstrand K, Douglas GVA, Longbottom C & ICCMS contributing authors. ICCMS™ Guide for Practitioners and Educators. 2014, ICDAS Foundation, <http://www.kcl.ac.uk/dentistry/innovation/innovation-and-translation-centre/ICCMS-Document.pdf>

Table NI.7 Percentage of children with clinical decay experience in primary teeth, by age

| Northern Ireland, 2013 | | Percentages | | | |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| <i>Children aged 5, 8</i> | 5 years | | 8 years | | |
| | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | |
| Clinical decay | 48 | 39 | 56 | 47 | |
| Clinical decay experience | 51 | 42 | 64 | 57 | |
| <i>Unweighted bases</i> | 530 | 530 | 508 | 508 | |

An alternative way of expressing the extent of clinical decay is to measure it in terms of the number of affected teeth. At the age of 5, children had on average 1.8 teeth affected by clinical decay (including visual enamel caries). At age 8, children had on average 1.6 teeth affected by clinical decay (Table NI.8). Using the definition of clinical decay experience *including* visual enamel caries, the average number of teeth affected at age 5 was 2.0. At age 8, the average number affected was 2.1.

Table NI.8 Mean number of primary teeth with clinical decay experience, by age

| Northern Ireland, 2013 | | Means | | | |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| <i>Children aged 5, 8</i> | 5 years | | 8 years | | |
| | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | |
| Clinical decay | 1.8 | 1.3 | 1.6 | 1.2 | |
| Clinical decay experience | 2.0 | 1.5 | 2.1 | 1.6 | |
| <i>Unweighted bases</i> | 530 | 530 | 508 | 508 | |

2.2.2 Clinical decay in permanent teeth

With respect to permanent teeth, almost a quarter (24%) of 8 year olds, three fifths (60%) of 12 year olds and three quarters (75%) of 15 year olds had clinical decay experience *excluding* visual enamel caries (Table NI.9).

The inclusion of visual enamel caries as decay increased the prevalence of clinical decay experience to 38% for 8 year olds, 68% for 12 year olds and 79% for 15 year olds.

Table NI.9 Percentage of children with clinical decay experience, in permanent teeth by age

| Northern Ireland, 2013 | | Percentages | | | | | |
|--------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|
| <i>Children aged 8, 12, 15</i> | 8 years | | 12 years | | 15 years | | |
| | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | |
| Clinical decay | 31 | 14 | 48 | 33 | 49 | 37 | |
| Clinical decay experience | 38 | 24 | 68 | 60 | 79 | 75 | |
| <i>Unweighted bases</i> | 508 | 508 | 484 | 484 | 551 | 551 | |

Table NI.10 presents the mean number of permanent teeth with clinical decay experience at each threshold of decay. At the age of 8, on average, 0.3 teeth had clinical decay *excluding* visual enamel caries. The number of teeth affected increased with age, with 15 year olds having 1.0 teeth affected on average.

Clinical decay experience *including* visual enamel caries was present on more teeth, with an average of 0.8, 2.8 and 4.6 teeth affected at ages 8, 12 and 15 respectively. These figures illustrate the irreversible and cumulative nature of dental decay with increasing age.

Table NI.10 Mean number of permanent teeth with clinical decay experience, by age

| Northern Ireland, 2013 | | | | | | | Means |
|---------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|-------|
| Children aged 8, 12, 15 | 8 years | | 12 years | | 15 years | | |
| | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | Visual enamel caries <i>included</i> | Visual enamel caries <i>excluded</i> | |
| Clinical decay | 0.6 | 0.3 | 1.7 | 0.8 | 2.1 | 1.0 | |
| Clinical decay experience | 0.8 | 0.5 | 2.8 | 1.9 | 4.6 | 3.5 | |
| <i>Unweighted bases</i> | <i>508</i> | <i>508</i> | <i>484</i> | <i>484</i> | <i>551</i> | <i>551</i> | |

2.3 Prevalence of obvious decay experience

Obvious decay and obvious decay experience are the traditional measures used in decay epidemiology and it is reported here to ensure compatibility. It also relates to treatment need in that, typically, obvious decay is thought to require active intervention, such as a filling. Obvious decay relates to decay into the dentine layer of a tooth and is reported here at two levels, with visual caries (i.e. before a tooth has cavitated) or without visual caries (once a tooth has cavitated).

As well as obvious (untreated) decay and obvious decay experience (untreated decay, filled teeth and missing teeth extracted due to decay), the individual components of filled teeth and teeth missing (extracted) due to decay are reported in this section. The coding of missing teeth was different for primary and permanent teeth, as explained in section 2.2, and so missing teeth are excluded from obvious decay experience for primary teeth.

2.3.1 Obvious decay experience in primary teeth

In 2013, two fifths (40%) of 5 year olds and over half (56%) of 8 year olds were classified as having obvious decay experience *including* visual dentine caries in their primary teeth (Table NI.11). Further to this, almost two thirds (37%) of 5 year olds had decay into dentine and 10% had fillings. For 8 year olds, 46% had decay into dentine and 25% had fillings.

Table NI.11 Percentage of children with obvious decay experience in primary teeth, by age

| Northern Ireland, 2013 | | Percentages | | | |
|---------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <i>Children aged 5, 8</i> | 5 years | | 8 years | | |
| | Visual dentine caries <i>included</i> | Visual dentine caries <i>excluded</i> | Visual dentine caries <i>included</i> | Visual dentine caries <i>excluded</i> | |
| Decay into dentine | 37 | 29 | 46 | 34 | |
| Filled (otherwise sound) | 10 | | 25 | | |
| Obvious decay experience | 40 | 34 | 56 | 49 | |
| <i>Unweighted bases</i> | 530 | 530 | 508 | 508 | |

Table NI.12 shows that the mean number of primary teeth with decay into dentine was 1.2 in 5 year olds this was 1.1 in 8 year olds.

Table NI.12 Mean number of primary teeth with obvious decay experience, by age

| Northern Ireland, 2013 | | Means | | | |
|---------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <i>Children aged 5, 8</i> | 5 years | | 8 years | | |
| | Visual dentine caries <i>included</i> | Visual dentine caries <i>excluded</i> | Visual dentine caries <i>included</i> | Visual dentine caries <i>excluded</i> | |
| Decay into dentine | 1.2 | 0.9 | 1.1 | 0.7 | |
| Filled (otherwise sound) | 0.2 | | 0.5 | | |
| Obvious decay experience | 1.4 | 1.1 | 1.6 | 1.2 | |
| <i>Unweighted bases</i> | 530 | 530 | 508 | 508 | |

2.3.2 Obvious decay experience in permanent teeth

As the age of children increases, the percentage affected by obvious decay experience in permanent teeth, as well as the components of obvious decay experience, also increases. By the age of 12, over half (57%) of children in Northern Ireland had obvious decay experience in their permanent teeth (Table NI.13). Less than a third of 12 year olds (27%) had decay into dentine requiring treatment and just over two fifths (42%) had fillings.

Among 15 year olds, nearly three quarters (72%) children had obvious decay experience in permanent teeth and three fifths (61%) had fillings. The proportion of 15 year olds with decay into dentine and teeth missing due to decay was 30% and 13% respectively.

Table NI.13 Percentage of children with obvious decay experience in permanent teeth, by age

| Northern Ireland, 2013 <i>Children aged 8, 12, 15</i> | Percentages | | | | | |
|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | 8 years | | 12 years | | 15 years | |
| | Visual dentine caries included | Visual dentine caries excluded | Visual dentine caries included | Visual dentine caries excluded | Visual dentine caries included | Visual dentine caries excluded |
| Decay into dentine | 8 | 6 | 27 | 16 | 30 | 15 |
| Missing due to decay | 3 | | 6 | | 13 | |
| Filled (otherwise sound) | 11 | | 42 | | 61 | |
| Obvious decay experience | 20 | 19 | 57 | 52 | 72 | 68 |
| <i>Unweighted bases</i> | <i>508</i> | <i>508</i> | <i>484</i> | <i>484</i> | <i>551</i> | <i>551</i> |

Initial stage tooth decay in otherwise sound permanent teeth was identified in just over a quarter of 8 year olds (Table NI.14). The proportion of 12 and 15 year olds was higher, with 35% and 33% respectively having this condition.

Table NI.14 Percentage of children with any initial stage tooth decay in otherwise sound permanent teeth, by age

| Northern Ireland, 2013 <i>Children aged 8, 12, 15</i> | Percentages | | |
|--|-------------|------------|------------|
| | 8 years | 12 years | 15 years |
| Initial stage decay on otherwise sound teeth | 26 | 35 | 33 |
| <i>Unweighted bases</i> | <i>508</i> | <i>484</i> | <i>551</i> |

2.4 Severe or extensive dental decay

This section focused on children who had particularly severe or extensive oral health conditions, where the lifetime burdens to the individual or health care system are likely to be substantial.

A subgroup of children have been identified who are more likely to have significant problems related to dental caries in the short or long term, based on the distribution of several caries-related states that reflect untreated disease or likely treatment need. These include multiple teeth affected by caries, teeth which have been or are likely to be lost, and pain or sepsis related to dental caries.

For 5 year olds, four specific conditions have been identified:

- the presence of five or more teeth with experience of decay into dentine (dmft of 5+, also categorised as high dmft, an indicator of extensive decay)⁷
- the presence of three or more teeth with obvious dental decay lesions (new or recurrent, an indicator of extensive decay)
- the presence of any very severely decayed teeth that are deemed ‘unrestorable’ (severe decay)

⁷ The total number of Decayed, Missing (due to decay) or Filled Teeth is widely used as an index of a child’s decay experience. This is abbreviated to the acronyms “dmft” for primary teeth and “DMFT” for permanent teeth

- the presence of any evidence of sepsis as part of the PUFA examination⁸ (severe decay)

For 15 year olds the same conditions apply, these refer to permanent teeth (indicated by ‘DMFT’ rather than ‘dmft’). Also, an additional severe decay condition has been added, the loss of any permanent tooth due to decay. The reason for tooth loss is usually relatively straightforward for the examiner to ascertain on the basis of tooth position and disease history. Where tooth loss occurs due to decay, this represents a substantial impact by age 15. Among younger children, missing primary teeth were coded as unerupted permanent teeth, regardless of why they were missing, so this measure is not reported among 5 year olds.

2.4.1 Severe or extensive decay in primary teeth

Table NI.15 shows the prevalence of the various severe or extensive decay conditions for 5 year olds across Northern Ireland.

Overall, 19% of 5 year olds were affected by severe or extensive dental decay. Having three or more primary teeth with untreated decay into dentine was the most common of the specific conditions, with 18% of 5 year olds affected.

Table NI.15 Percentage of 5 year olds with severe or extensive dental decay

| Northern Ireland, 2013 | Percentages |
|--|-------------|
| <i>Children aged 5</i> | |
| 5+ teeth with obvious decay experience (high dmft) | 13 |
| 3+ teeth with decay into dentine | 18 |
| Any unrestorable teeth | 5 |
| Any PUFA signs | 5 |
| Any of these | 19 |
| <i>Unweighted bases</i> | <i>530</i> |

⁸ PUFA is an acronym for referring to four signs of sepsis: open Pulp, obvious Ulceration, Fistula, and Abscess. The PUFA examination looked for signs of serious infection (sepsis) that usually occur where a tooth has been affected by very advanced decay or extensive treatment.

2.4.2 Severe or extensive decay in permanent teeth

Table NI.16 shows the prevalence of the various severe or extensive decay conditions for 15 year olds across Northern Ireland.

Overall, 36% of 15 year olds were affected by severe or extensive dental decay. The most common specific condition was having 5 or more permanent teeth with obvious decay experience, with more than a quarter (28%) of 15 year olds affected.

Table NI.16 Percentage of 15 year olds with severe or extensive dental decay

| Northern Ireland, 2013 | Percentages |
|--|-------------|
| <i>Children aged 15</i> | |
| 5+ teeth with obvious decay experience (high dmft) | 28 |
| 3+ teeth with decay into dentine | 10 |
| Any unrestorable teeth | 3 |
| Any PUFA signs | 3 |
| Loss of any permanent teeth due to decay | 13 |
| Any of these | 36 |
| <i>Unweighted bases</i> | <i>551</i> |

2.4.3 The distribution of severe or extensive dental decay

The burden of decay is not evenly distributed. Whilst severe or extensive decay is clearly not restricted to the most deprived in society, the risks appear to be much higher where there is deprivation. Although results are only indicative due to base sizes, it is clear that severe or extensive dental decay was more commonly experienced by both 5 and 15 year olds living in the more deprived areas compared to the more affluent areas (Table NI.17)⁹, particularly in 15 year olds.

Table NI.17 Percentage of 5 and 15 year olds with any severe or extensive dental decay, by 2010 Northern Irish Multiple Deprivation Measure quintiles

| Northern Ireland, 2013 | Percentages | | | | |
|----------------------------|----------------------------|-----|-----|-----|---------------------------|
| | 1 (highest deprivation) | 2 | 3 | 4 | 5 (lowest deprivation) |
| <i>Children aged 5, 15</i> | | | | | |
| 5 year olds | [38] | 25 | 14 | 14 | 10 |
| 15 year olds | 53 | 35 | 34 | 23 | [26] |
| <i>Unweighted bases</i> | | | | | |
| 5 year olds | 48 | 121 | 168 | 121 | 62 |
| 15 year olds | 141 | 148 | 117 | 85 | 46 |

[] indicate a low base number of respondents and results are indicative only

⁹ The difference across all quintiles for 15 year olds in Northern Ireland is not statistically significant.

2.5 Periodontal conditions

Indicators of oral health include the condition of children's gums as well as their teeth. This section examines the periodontal health of children. The examination included five measures of periodontal health. Each of the six segments of the mouth were examined visually for the presence of gum (gingival) inflammation, plaque and calculus. Then, in 15 year olds only, periodontal pocketing and the presence of bleeding were assessed.

Trend analysis is presented in this section although users should be aware of the substantial variation in these data. Further details about the quality indicators can be found in Annex A of Report 2 of the CDH publication¹⁰.

2.5.1 Plaque

Table NI.18 shows that plaque was commonly observed in 8 year olds, with two thirds (65%) of that age group affected. Among 15 year olds a half (50%) of children were affected.

Table NI.18 Percentage of children with plaque, by age

| Northern Ireland, 2013 | | Percentages | | | |
|-------------------------|---------|-------------|----------|----------|--|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | |
| Presence of plaque | 41 | 65 | 62 | 50 | |
| <i>Unweighted bases</i> | 530 | 508 | 484 | 549 | |

2.5.2 Calculus

Calculus among 5 year olds was relatively rare, with more than one in twenty (6%) children of that age having that condition (Table NI.19). The proportion of children with calculus increased with age, and just over a third (35%) of 15 year olds had calculus.

Table NI.19 Percentage of children with calculus, by age

| Northern Ireland, 2013 | | Percentages | | | |
|-------------------------|---------|-------------|----------|----------|--|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | |
| Presence of calculus | 6 | 19 | 29 | 35 | |
| <i>Unweighted bases</i> | 526 | 505 | 484 | 548 | |

¹⁰ <http://www.hscic.gov.uk/pubs/ChildDentalHealth>

2.5.3 Gingivitis

In 15 year olds, an assessment of gingival bleeding was made by applying a periodontal probe around six index teeth. Gingival bleeding is a marker of active periodontal disease (gingivitis).

Table NI.20 shows that in both 2003 and 2013, just over four tenths of 15 year olds had gingivitis.

Table NI.20 Percentage of 15 year old children with gingivitis

| Northern Ireland, 2003-2013 <i>Children aged 15</i> | Percentages | |
|--|-------------|------|
| | 2003 | 2013 |
| Presence of gingivitis | 44 | 41 |
| <i>Unweighted bases</i> | 380 | 551 |

2.6 Other dental conditions

This section of the report covers non-carious conditions, starting with tooth surface loss (TSL), a pathological non-carious loss of tooth tissues. This section then moves on to report developmental defects in tooth enamel, also known as enamel opacities.

Although decay has traditionally been the focus of dental health services, the three conditions reported here all carry a significant burden both for affected individuals and for health services.

2.6.1 Tooth surface loss

Tooth surface loss (TSL) is a multifactorial condition, that is, it is caused by a number of factors including erosion, attrition and abrasion. In primary teeth, particularly incisors, increasing levels of TSL are not usually deemed to be a serious problem unless causing symptoms, as they will be replaced naturally by the permanent teeth. However, in children who have permanent teeth, TSL, particularly into dentine, is a concern because of potential sensitivity and appearance. It is unknown how much very early TSL into enamel will translate into more serious wear. As with decay experience, TSL affects both primary and permanent teeth, and is similarly cumulative with age.

In primary teeth, the dental examination examined upper primary incisors for TSL. Overall, almost a third (32%) of 5 year olds had no TSL, with over three quarters having no TSL into dentine. Children aged 8 were less likely to have any TSL in primary incisors, but this was largely because 8 year olds were much less likely to have primary incisors, which normally exfoliate (shed) between ages 6 and 7 years (Table NI.21).

Table NI.21 Percentage of children with no tooth surface loss in primary teeth, by age

| Northern Ireland, 2013 | Percentages | | |
|--|-------------|------------|--------------|
| <i>Children aged 5, 8</i> | 5 years | 8 years | Total |
| No tooth surface loss into enamel or dentine | 32 | 96 | 63 |
| No tooth surface loss into dentine | 76 | 98 | 87 |
| <i>Unweighted bases</i> | <i>530</i> | <i>508</i> | <i>1,038</i> |

Around a quarter (24%) of 5 year olds had evidence of TSL on one or more of the buccal surfaces of the primary upper incisors. Only 7% had TSL involving dentine or pulp on those surfaces (Table NI.22).

TSL progressing into dentine or pulp was present on 24% of lingual surfaces.

Table NI.22 Percentage of 5 year old children with tooth surface loss on the surfaces of the primary incisors

| Northern Ireland, 2013 | Percentages | |
|-------------------------|------------------------|----------------------|
| <i>Children aged 5</i> | Any Tooth Surface Loss | Into dentine or pulp |
| Buccal surfaces | 24 | 7 |
| Lingual surfaces | 67 | 24 |
| <i>Unweighted bases</i> | <i>530</i> | <i>530</i> |

In permanent teeth, as well as upper incisors, upper and lower first permanent molars were also examined on their occlusal surfaces. Nearly three fifths (59%) of children had no tooth surface loss into enamel, and most children (97%) had no tooth surface loss into dentine (Table NI.23).

Table NI.23 Percentage of children with no tooth surface loss in permanent teeth, by age

| Northern Ireland, 2013 | Percentages | | | |
|--|-------------|------------|------------|--------------|
| <i>Children aged 8, 12, 15</i> | 8 years | 12 years | 15 years | Total |
| No tooth surface loss into enamel or dentine | 87 | 52 | 39 | 59 |
| No tooth surface loss into dentine | 100 | 97 | 95 | 97 |
| <i>Unweighted bases</i> | <i>508</i> | <i>484</i> | <i>551</i> | <i>1,543</i> |

The proportion of tooth surface loss affecting dentine and pulp was low for older children, with 4% of 15 year olds having tooth surface loss on lingual surfaces of the incisors and 1% having tooth surface loss in dentine or pulp on the occlusal surfaces of molars (Table NI.24).

Compared to 2003, there have not been significant changes in the proportion of children with TSL into dentine and pulp on permanent teeth in either 12 or 15 year olds.

Table NI.24 Percentage of children aged 12 and 15 with tooth surface loss into dentine or pulp on the surfaces of permanent incisors and first permanent molars

| Northern Ireland, 2003-2013 | Percentages | |
|-----------------------------|-------------|------|
| <i>Children aged 12, 15</i> | 2003 | 2013 |
| Incisors | | |
| <i>Buccal surfaces</i> | | |
| 12 year olds | * | 1 |
| 15 year olds | * | 2 |
| <i>Lingual surfaces</i> | | |
| 12 year olds | 1 | 2 |
| 15 year olds | 2 | 4 |
| Molars | | |
| 12 year olds | 2 | 1 |
| 15 year olds | 2 | 1 |
| <i>Unweighted bases</i> | | |
| <i>12 year olds</i> | <i>484</i> | |
| <i>15 year olds</i> | <i>551</i> | |

2.6.2 Prevalence of enamel defects

This section reports on developmental defects in tooth enamel, also known as enamel opacities. These defects¹¹ occur as the result of alterations to the structure of enamel during formation.

Overall, just over one fifth (21%) of the examined 12 year olds had one or more enamel defects (Table NI.25). This was a decrease, from a third (33%) of 12 year olds affected in 2003.

As in 2003, the most common defects were demarcated or diffuse: 15% and 8% of 12 year olds respectively had these on one or more teeth. The proportion of 12 year olds with demarcated defects reduced from 2003, when 23% of children were affected. All other defects were rare, with only 1% presenting with hypoplasia, and 1% presenting with demarcated and diffuse defects.

Table NI.25 Percentage of 12 year olds with enamel opacities and other defects of tooth enamel

| Northern Ireland, 2003-2013 <i>Children aged 12</i> | Percentages | |
|--|-------------|------|
| | 2003 | 2013 |
| Demarcated opacity | 23 | 15 |
| Diffuse opacity | 11 | 8 |
| Demarcated and diffuse opacity | 2 | 1 |
| Hypoplasia | 2 | 1 |
| Demarcated opacity and hypoplasia | 1 | - |
| Diffuse opacity and hypoplasia | * | - |
| Demarcated and diffuse opacities and hypoplasia | - | - |
| Other defects | - | - |
| Any of the above defects | 33 | 21 |
| <i>Unweighted bases</i> | 462 | 484 |

¹¹ Section 1.4 in the introduction contains more information on enamel defects.

2.6.3 Traumatic damage

Traumatic damage to teeth can have a significant impact on a child both through the appearance of them and the associated symptoms. Treatment of traumatised teeth can also be extensive, carrying a burden for the individual and their carers as well as health services. In the dental examination, the four upper permanent incisors were examined for untreated or treated trauma. In 5 year olds and some 8 year olds permanent incisors had not erupted, and so data for these age groups are not reported.

In the total population, it can be reasonably expected that dental trauma in 15 year olds would be higher than in 12 year olds, because any child with traumatic damage at the age of 12 must also have it at age 15. The nature of a sample survey selecting different children at ages 12 and 15 at a single point in time allows for the possibility of there being a higher proportion of 12 year olds observed with dental trauma than 15 year olds. This may explain some of the unexpected reduction in trauma in 15 year old boys in Table NI.26. It is also possible that 15 year olds had a low likelihood of experiencing trauma than 12 year olds, or that 15 year olds had received more treatment for traumatic damage. If the treatments were difficult to detect during the survey dental examination, this would make it appear that traumatic damage is less common in 15 year olds than 12 year olds.

Table NI.26 Percentage of children with any traumatic damage to permanent incisors by age and sex

| Northern Ireland, 2003-2013 | | Percentages | | |
|-----------------------------|----------|-------------|----------|------|
| <i>Children aged 12, 15</i> | 12 years | | 15 years | |
| | 2003 | 2013 | 2003 | 2013 |
| Male | 19 | 14 | 23 | 11 |
| Female | 10 | 8 | 11 | 8 |
| Total | 16 | 11 | 17 | 9 |
| <i>Unweighted bases</i> | | | | |
| Male | 281 | 212 | 196 | 233 |
| Female | 181 | 272 | 184 | 318 |
| Total | 462 | 484 | 380 | 551 |

3 Perceptions and experience of dental health

Perceptions of dental health and appearance of teeth amongst children are important considerations because these factors may be associated with health and wellbeing, with demand for treatment and with unmet dental treatment need. In addition, they highlight an aspect of dental health that is different but complimentary to that described by the clinical oral health indicators from the survey dental examination.

As part of the pupil questionnaire, 12 and 15 year olds were asked to rate how good their general and dental health was. They were also asked about their satisfaction with the appearance of their teeth and whether they thought they needed to have them straightened, i.e. perceived need for orthodontic treatment. Parents of all age groups were asked similar, although not identical, questions about their child's teeth.

3.1 Self-rated dental and general health

Table NI.27 shows that, overall, both 12 and 15 year old children were more likely to rate their general health as very good or good compared to their dental health. This is not surprising, as most children are in good overall health but many will have experienced issues with their dental health (for example one or more fillings or tooth extractions). Despite the overall positive perceptions, almost a third of 12 year olds and a quarter of 15 year olds reported that their oral health was fair, poor or very poor.

Table NI.27 Percentage of children who rated their dental or general health as good or very good, by age

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | |
|---|-------------|------------|
| | 12 years | 15 years |
| Dental Health | 68 | 75 |
| General Health | 86 | 88 |
| <i>Unweighted bases</i> | <i>476</i> | <i>546</i> |

Unweighted bases may vary by item due to non-response

Within the 12 year olds, girls were more likely than boys to report good or very good dental health (Table NI.28).

Table NI.28 Percentage of children that rated their dental health as good or very good, by sex

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | |
|---|-------------|----------|
| | 12 years | 15 years |
| Male | 59 | 71 |
| Female | 78 | 78 |
| <i>Unweighted bases</i> | | |
| Male | 209 | 231 |
| Female | 267 | 315 |

Unweighted bases may vary by item due to non-response

3.2 Satisfaction with the appearance of teeth in 12 and 15 year olds

In the pupil questionnaire for 12 and 15 year olds, children were asked to rate how satisfied they were with the appearance of their teeth on a five point scale between 'very satisfied' and 'very dissatisfied'. The question did not provide examples of the concept of "appearance", so children may have prioritised aspects of appearance (e.g. the 'whiteness' of their tooth enamel, how straight they consider their teeth to be) differently when making the assessment. The two 'satisfied' answer categories and two 'dissatisfied' answer categories are grouped in the tables below.

Overall, 60% of 12 year olds and 61% of 15 year olds were satisfied. For 12 year olds, 11% were dissatisfied with the appearance of their teeth, and for 15 year olds this was 15% (Table NI.29).

Table NI.29 Percentage of children satisfied or dissatisfied¹ with the appearance of their teeth, by age

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | |
|---|-------------|----------|
| | 12 years | 15 years |
| Satisfied | 60 | 61 |
| Dissatisfied | 11 | 15 |
| <i>Unweighted bases</i> | 472 | 546 |

¹Remaining responses were included in a 'neither satisfied nor dissatisfied' category that is not reported here

3.3 Perceived need for teeth straightened

Parents were asked whether their child was currently receiving orthodontic treatment and to rate their child's orthodontic treatment need in terms of whether they would like their child's teeth to be straightened.

As would be expected, these issues are not really relevant for the parents of the youngest children (Table NI.30). At the age of 12, around three in ten (29%) children were in treatment, and the parents of over a quarter (26%) wanted their children's teeth to be straightened. Among 15 year olds, both the percentage of children in treatment (20%) and the percentage of parents preferring their children's teeth to be straightened (13%) decreases, as a greater proportion have received orthodontic treatment by that age.

Table NI.30 Parent reported need for the child's teeth to be straightened, by age

| Northern Ireland, 2013 | Percentages | | | |
|--------------------------|-------------|------------|------------|------------|
| | 5 years | 8 years | 12 years | 15 years |
| <i>All children</i> | | | | |
| Prefer them straightened | 6 | 19 | 26 | 13 |
| In orthodontic treatment | * | 3 | 29 | 20 |
| <i>Unweighted bases</i> | <i>317</i> | <i>296</i> | <i>219</i> | <i>228</i> |

In addition, the 12 and 15 year old children were asked whether they felt their teeth were 'all right' as they are, or whether they would prefer to have them straightened. Answer categories for already being in orthodontic treatment and being unable to make an assessment were also provided.

Overall, more than four in ten (42%) 12 year olds wanted their teeth straightened, while almost another one in five (19%) were already receiving orthodontic treatment. More than a quarter (27%) of 15 year olds preferred to have their teeth straightened (Table NI.31).

Girls were more likely than boys to report receiving orthodontic treatment at the age of 12. The apparent differences relating to relative deprivation were not statistically significant.

Table NI.31 Self-rated need for teeth to be straightened, by sex and eligibility for free school meals

| Northern Ireland, 2013 | | Percentages | |
|---------------------------------------|---------------------------------------|-------------|------------|
| <i>Children aged 12, 15</i> | | 12 years | 15 years |
| Total | | | |
| | Prefer teeth straightened | 42 | 27 |
| | Already in treatment | 19 | 22 |
| Male | | | |
| | Prefer teeth straightened | 41 | 28 |
| | Already in treatment | 13 | 15 |
| Female | | | |
| | Prefer teeth straightened | 44 | 27 |
| | Already in treatment | 25 | 28 |
| Eligible for free school meals | | | |
| | Prefer teeth straightened | 50 | 25 |
| | Already in treatment | 18 | 25 |
| Not eligible | | | |
| | Prefer teeth straightened | 40 | 28 |
| | Already in treatment | 19 | 21 |
| <hr/> | | | |
| <i>Unweighted bases</i> | | | |
| | <i>Total</i> | <i>478</i> | <i>548</i> |
| | <i>Male</i> | <i>208</i> | <i>233</i> |
| | <i>Female</i> | <i>270</i> | <i>315</i> |
| | <i>Eligible for free school meals</i> | <i>135</i> | <i>140</i> |
| | <i>Not eligible</i> | <i>329</i> | <i>386</i> |

3.4 Experience of problems with dental health

3.4.1 Parents reports for younger children

Parents were asked whether their children had experienced any dental health problems in the past 6 months. A third of 5 year olds (33%) and under half of 8 year olds (46%) were reported to have had a problem over this period (Table NI.32).

One in ten or more 5 year olds were reported to have experienced 'toothache', 'other pain in the mouth' or 'bad breath' in that period, while other problems were less frequently experienced. The same three problems were also more likely to be reported among 8 year olds.

Table NI.32 Parent reported problems with their child's dental health in the last 6 months, by age

| Northern Ireland, 2013 | Percentages |
|-------------------------------------|-------------|
| <i>Children aged 5, 8</i> | |
| 5 year olds | |
| Any condition | 33 |
| Toothache | 13 |
| Other pain in mouth | 10 |
| Bad breath | 10 |
| Problems with appearance | 3 |
| Broken tooth | 2 |
| Other problems with teeth or mouth | 2 |
| Bleeding or swollen gums | 1 |
| Problems caused by dental treatment | 1 |
| 8 year olds | |
| Any condition | 46 |
| Other pain in mouth | 19 |
| Toothache | 16 |
| Bad breath | 14 |
| Bleeding or swollen gums | 9 |
| Broken tooth | 7 |
| Problems with appearance | 7 |
| Other problems with teeth or mouth | 2 |
| Problems caused by dental treatment | 1 |
| <i>Unweighted bases</i> | |
| 5 year olds | 321 |
| 8 year olds | 303 |

Item bases may vary due to non-response

3.4.2 Self-reports from older children

For the two older age cohorts, details of their dental health problems were collected directly from the children themselves. Also of note, the reference period for measuring whether or not a problem had been experienced was three months, which was different from the six month reference period used with parents. It is therefore not appropriate to compare the results from the two younger age cohorts with the older children.

For both 12 and 15 year olds, around two thirds to three quarters reported experiencing at least one problem with their dental health in the past 3 months (Table NI.33).

The most commonly experienced specific condition at both ages was a sensitive tooth, with around a third of children having experienced this. Mouth ulcers, bad breath and bleeding or swollen gums were experienced by around a fifth of children at both ages. The more serious problems of toothache were reported somewhat less commonly, but still by 14% of children.

Table NI.33 Self-reported problems with dental health in the last 3 months, by age

| Northern Ireland, 2013 | Percentages |
|-----------------------------|-------------|
| <i>Children aged 12, 15</i> | |
| 12 year olds | |
| Any condition | 74 |
| Sensitive tooth | 34 |
| Bad breath | 20 |
| Mouth ulcers | 19 |
| Bleeding or swollen gums | 18 |
| Toothache | 14 |
| Broken tooth | 7 |
| 15 year olds | |
| Any condition | 69 |
| Sensitive tooth | 34 |
| Mouth ulcers | 20 |
| Bleeding or swollen gums | 20 |
| Bad breath | 16 |
| Toothache | 14 |
| Broken tooth | 8 |
| <i>Unweighted bases</i> | |
| 12 year olds | 482 |
| 15 year olds | 550 |

The base reported is for the 'any condition' item. Other item bases may vary due to non-response. Items are placed in descending order of prevalence for 12 year olds then in the same order for 15 year olds

The likelihood of children having experienced at least one condition over the last three months did not differ significantly by sex or income deprivation, but there were also some significant variations in individual problems by sex and income deprivation status (Table NI.34).

Prevalence of bad breath was higher for 15 year old boys compared to girls of the same age; 21% and 11% respectively. Bad breath can be linked to oral hygiene practices.

Table NI.34 Self-reported problems with dental health in the last 3 months, by sex and eligibility for free school meals

| Northern Ireland, 2013 | | Percentages | | | |
|-----------------------------|--------------------------|-------------|------------|--------------------------------|--------------|
| <i>Children aged 12, 15</i> | | Male | Female | Eligible for free school meals | Not eligible |
| 12 year olds | | | | | |
| | Any condition | 71 | 73 | 76 | 71 |
| | Sensitive tooth | 36 | 32 | 41 | 32 |
| | Bad breath | 21 | 18 | 15 | 21 |
| | Mouth ulcers | 17 | 21 | 17 | 19 |
| | Bleeding or swollen gums | 19 | 18 | 21 | 17 |
| | Toothache | 12 | 17 | 18 | 13 |
| | Broken tooth | 8 | 7 | 6 | 8 |
| 15 year olds | | | | | |
| | Any condition | 69 | 66 | 66 | 68 |
| | Sensitive tooth | 35 | 32 | 30 | 35 |
| | Mouth ulcers | 21 | 19 | 17 | 21 |
| | Bad breath | 21 | 11 | 10 | 18 |
| | Bleeding or swollen gums | 21 | 18 | 24 | 18 |
| | Toothache | 8 | 20 | 14 | 14 |
| | Broken tooth | 9 | 7 | 11 | 8 |
| <i>Unweighted bases</i> | | | | | |
| | <i>12 year olds</i> | <i>210</i> | <i>272</i> | <i>135</i> | <i>334</i> |
| | <i>15 year olds</i> | <i>233</i> | <i>317</i> | <i>141</i> | <i>387</i> |

The base reported is for the 'any condition' item. Other item bases may vary due to non-response. Items are placed in descending order of prevalence for 12 year olds then in the same order for 15 year olds

3.5 Impact of dental health on the child

Data on oral health related quality of life was collected through a global item (single question) and by using the Child Oral Impacts on Daily Performances (Child-OIDP) measure¹². This was done for the first time in the 2013 survey. The single question on overall impact asked children how much the condition of their teeth and mouth affected their everyday life in the 3 months prior to the survey, with answer options of 'not at all', 'a little', 'somewhat', 'a fair amount' and 'a great deal'. The Child-OIDP measure focuses on eight key aspects of daily life and assesses the extent to which oral conditions may have negatively affected daily life over the same three month period. Answer options for each question were 'not at all', 'a little', 'a fair amount' and 'a lot'. Children who provided responses of 'a little', 'a fair amount' or 'a lot' were grouped to provide an estimate of the percentage of children suffering from each difficulty in the last 3 months.

Overall, around half (58% among 12 year olds and 46% among 15 year olds) of the older children said that they had experienced at least one oral health related impact in the past 3 months (Table NI.35).

Table NI.35 Percentage of children with difficulties in the last 3 months, by age

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | |
|---|-------------|------------|
| | 12 years | 15 years |
| Embarrassed smiling or laughing | 34 | 27 |
| Difficulty eating | 21 | 17 |
| Difficulty cleaning teeth | 19 | 10 |
| Difficulty relaxing | 11 | 9 |
| Felt different | 14 | 9 |
| Difficulty speaking | 10 | 6 |
| Difficulty enjoying being with people | 6 | 6 |
| Difficulty doing schoolwork | 4 | 3 |
| Any difficulty in last 3 months | 58 | 46 |
| Number of difficulties in last 3 months | | |
| 0 | 43 | 55 |
| 1 | 26 | 21 |
| 2+ | 30 | 24 |
| <i>Unweighted bases</i> | <i>480</i> | <i>547</i> |

The bases reported here are based on 'any difficulty in the last 3 months'. Item bases may vary due to non-response

¹² Gherunpong S, Tsakos G, Sheiham A. Developing and evaluating an oral health-related quality of life index for children; the CHILD-OIDP. Community Dental Health 2004; 21: 161-169.

In terms of differences by sex, 15 year old girls were affected in greater proportions than boys, 51% compared to 41%, and this difference was reflected in the children with the higher burden of oral impacts, defined as those that reported 2 or more impacts in the last 3 months (Table NI.36).

The apparent differences by relative deprivation were not statistically significant.

Table NI.36 Number of difficulties in the last 3 months, by sex and free school meal eligibility

| Northern Ireland, 2013 | | Percentages | | | | | |
|--------------------------------|----------------|----------------|------------------------|----------------|----------------|------------------------|--|
| <i>Children aged 12, 15</i> | 12 years | | | 15 years | | | |
| | Any difficulty | One difficulty | 2 or more difficulties | Any difficulty | One difficulty | 2 or more difficulties | |
| Male | 56 | 26 | 30 | 41 | 20 | 20 | |
| Female | 59 | 27 | 31 | 51 | 22 | 28 | |
| Eligible for free school meals | 67 | 33 | 33 | 49 | 21 | 28 | |
| Not eligible | 55 | 24 | 30 | 45 | 21 | 23 | |
| <i>Unweighted bases</i> | | | | | | | |
| Male | 211 | | | 233 | | | |
| Female | 269 | | | 314 | | | |
| Eligible for free school meals | 135 | | | 139 | | | |
| Not eligible | 331 | | | 386 | | | |

The bases reported here are based on 'any difficulty in the last 3 months'. Item bases may vary due to non-response

3.6 Impact of dental health on the family

A series of questions, mostly extracted from the Family Impact Scale¹³, asked parents to rate how that child's oral health had affected various aspects of family life in the last six months. The following five answer options were provided: 'never', 'once or twice', 'sometimes', 'often' or 'every day or almost every day'. Any answer other than 'never' was taken as demonstrating an impact.

Overall, between 16% and 37% of parents reported that the dental health problems of their child had a negative impact on family life over that period (Table NI.37). The most commonly reported impact on family was about the parents taking time off work.

Table NI.37 Impact of the child's oral health on the life of the family in the last 6 months, by age

| Northern Ireland, 2013 | | Percentages | | | |
|---------------------------------|------------|-------------|------------|------------|--|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | |
| Any family impact | 16 | 24 | 33 | 37 | |
| Time off work | 3 | 9 | 23 | 22 | |
| Parent felt stressed or anxious | 8 | 14 | 11 | 14 | |
| Parent felt guilty | 7 | 12 | 9 | 13 | |
| Child needed more attention | 5 | 10 | 16 | 12 | |
| Parent's sleep disrupted | 5 | 7 | 8 | 7 | |
| Family activities interrupted | 1 | 3 | 6 | 7 | |
| Financial difficulties | 1 | 1 | 3 | 3 | |
| <i>Unweighted bases</i> | <i>316</i> | <i>300</i> | <i>218</i> | <i>234</i> | |

The bases reported here are based on 'any family impact'. Item bases may vary due to non-response

¹³ Locker D, Jokovic A, Stephens M, Kenny D, Tompson B, Guyatt G. Family impact of child oral and oro-facial conditions. *Community Dent Oral Epidemiol.* 2002;30 (6):438-48.

4 Dental health related behaviours

Another methodological innovation of this survey is the wealth of information collected on a range of oral health behaviours and attitudes, consisting of tooth brushing, diet and, from the 12 and 15 year olds questionnaire, tobacco use and alcohol consumption. Of particular value are the 12 and 15 year olds' self-reports of their behaviours, complementing the parental accounts of dental hygiene regimes. Diet, tobacco and alcohol consumption are known risk factors for oral and general health.

4.1 Tooth brushing

Tooth brushing is a good marker of oral hygiene. Guidance has traditionally been that brushing teeth twice daily would suffice for a good level of oral hygiene which in turn would not act as a risk factor for oral diseases, particularly the ones related to the gums¹⁴.

Parental reports of tooth brushing behaviour were generally similar to pupil self-reports for the 12 and 15 year olds. The added advantage of parental reports was that they provided information for 5 and 8 year olds. Overall, 83% of 5 and 8 year olds, and 84% of 12 and 15 year olds brushed their teeth at least twice a day according to their parents.

The percentage of 5 and 12 year old children brushing their teeth twice or more a day increased significantly between 2003 and 2013 (Table NI.38).

Table NI.38 Parental report of percentage of children brushing their teeth twice or more a day, by age

| Northern Ireland, 2003-2013 | | | | | | | | Percentages | |
|---------------------------------|---------|------|---------|------|----------|------|----------|-------------|--|
| <i>All children</i> | 5 years | | 8 years | | 12 years | | 15 years | | |
| | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | |
| Brush teeth twice or more a day | 74 | 83 | 76 | 83 | 59 | 84 | 83 | 84 | |
| <i>Unweighted bases</i> | 111 | 317 | 128 | 296 | 101 | 219 | 88 | 229 | |

¹⁴ Delivering Better Oral Health: An evidence-based toolkit for prevention' 3rd edition. (2014) Public Health England (PHE). URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/367563/DBOHv32014OCTMainDocument_3.pdf

Overall, 75% of 12 year olds and 82% of 15 year olds self-reported that they brushed their teeth twice daily or more often (Table NI.39).

Table NI.39 Percentage of children reporting brushing their teeth twice or more a day, by age

| Northern Ireland, 2013 | Percentages | |
|-----------------------------|-------------|----------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Brushes twice or more a day | 75 | 82 |
| <i>Unweighted bases</i> | 477 | 541 |

Girls were more likely to self-report brushing their teeth twice or more a day than boys at both ages (Table NI.40). Among 12 year olds, 83% of girls and 68% of boys reported this, whilst among 15 year olds the respective figures were 91% and 72%.

Among 12 year olds there was no relationship between relative deprivation and tooth brushing frequency. The difference at age 15, however, was large with 91% of those from more deprived families reporting brushing their teeth twice or more a day, compared to 79% of children from more affluent families.

Table NI.40 Percentage of children reporting brushing their teeth twice or more a day, by sex and free school meal eligibility

| Northern Ireland, 2013 | Percentages | |
|---------------------------------------|-------------|----------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Male | 68 | 72 |
| Female | 83 | 91 |
| Eligible for free school meals | 74 | 91 |
| Not eligible | 76 | 79 |
| <i>Unweighted bases</i> | | |
| <i>Male</i> | 209 | 230 |
| <i>Female</i> | 268 | 311 |
| <i>Eligible for free school meals</i> | 135 | 138 |
| <i>Not eligible</i> | 327 | 382 |

4.1.1 Age started tooth brushing

An informative indicator of dental health behaviours is the age at which a child starts tooth brushing. Due to possible issues with the ability of a parent to accurately recall when this first occurred, this was only reported for 5 and 8 year old children.

Between 16% and 28% of children started having their teeth brushed when they were less than six months old, and 58% of 5 year olds and 52% of 8 year olds started between six

months to a year (Table NI.41). This leaves between 20% and 26% children who started tooth brushing at over one year of age.

Table NI.41 Age started tooth brushing, by age

| Northern Ireland, 2013 <i>Children aged 5, 8</i> | Percentages | |
|---|-------------|---------|
| | 5 years | 8 years |
| Under 6 months | 16 | 28 |
| Between 6 months and 1 year of age | 58 | 52 |
| Over 1 year of age | 26 | 20 |
| <i>Unweighted bases</i> | 316 | 296 |

There were no significant relationships between the age at which children started tooth brushing and sex or relative deprivation status (Table NI.42).

Table NI.42 Age started tooth brushing by sex and free school meal eligibility

| Northern Ireland, 2013 <i>Children aged 5, 8</i> | Percentages | |
|---|-------------|---------|
| | 5 years | 8 years |
| Male | | |
| Under 6 months | 17 | 31 |
| Between 6 months and 1 year of age | 59 | 48 |
| Over 1 year of age | 24 | 21 |
| Female | | |
| Under 6 months | 15 | 25 |
| Between 6 months and 1 year of age | 58 | 56 |
| Over 1 year of age | 28 | 19 |
| Eligible for free school meals | | |
| Under 6 months | 12 | 24 |
| Between 6 months and 1 year of age | 59 | 59 |
| Over 1 year of age | 29 | 17 |
| Not eligible | | |
| Under 6 months | 17 | 29 |
| Between 6 months and 1 year of age | 58 | 50 |
| Over 1 year of age | 25 | 21 |
| <i>Unweighted bases</i> | | |
| <i>Male</i> | 154 | 138 |
| <i>Female</i> | 162 | 158 |
| <i>Eligible for free school meals</i> | 70 | 55 |
| <i>Not eligible</i> | 245 | 241 |

4.2 Dental hygiene aids

The use of dental hygiene products can be a very useful marker of oral hygiene, particularly as the vast majority of children brush their teeth twice daily or more. Tooth brushing frequency may not be sufficient to differentiate between those that have optimal oral hygiene and those that need further improvement.

Parents were asked to indicate all oral hygiene aids that their children used, and Table NI.43 shows the use of various dental hygiene aids in the last 12 months.

Mouthwash was the most common aide other than a manual or electric toothbrush and toothpaste, used by 32% of children aged 5 years, 55% of those aged 8, 65% of those aged 12 years and 72% of those aged 15 years.

As expected, the use of mouthwashes, dental floss and sugar free gum was generally higher in older children.

Table NI.43 Use of dental hygiene aids in the last 12 months, by age

| Northern Ireland, 2013 <i>All children</i> | Percentages | | | |
|---|-------------|------------|------------|------------|
| | 5 years | 8 years | 12 years | 15 years |
| Toothbrush and toothpaste but no other products | 54 | 29 | 15 | 13 |
| Electric toothbrush | 36 | 41 | 36 | 33 |
| Mouthwash | 32 | 55 | 65 | 72 |
| Dental floss | 2 | 11 | 21 | 31 |
| Sugar-free or dental chewing gum | 11 | 27 | 45 | 36 |
| <i>Unweighted bases</i> | <i>321</i> | <i>303</i> | <i>223</i> | <i>235</i> |

The base in this table is based on use of toothbrush and paste but no other product. Item bases may vary due to non-response

Categories will not sum to 100% as this was a multiple response question

4.3 Diet, alcohol and tobacco consumption

Frequent consumption of sugary drinks and foods is an important cause of dental caries as well as obesity¹⁵. As part of the pupil questionnaire, the 12 and 15 year olds were asked to report on their usual daily frequency of consumption for a small range of food and drink indicators, some of which tend to be relatively high in sugar content. They were also asked questions about whether they currently (or have ever) smoked or consumed alcohol. Although this data does not represent a comprehensive measurement of such behaviours, it can be used to create indicators of daily consumption of different types of drink (including sugary drinks and alcohol) as well as tobacco consumption.

¹⁵ Moynihan PJ, Kelly SA. Effect on caries of restricting sugars intake: systematic review to inform WHO guidelines. J Dent Res. 2014 ;93(1):8-18.

Self-reports indicate that 13% of 12 and 14% of 15 year olds consume sugary drinks 4 or more times a day (Table NI.44). Regular consumption of water is more commonplace, with around three tenths of 12 and 15 year olds drinking water four or more times a day.

Table NI.44 Percentage of children consuming water, sugary drinks or fruit juice four or more times a day, by age

| Northern Ireland, 2013 | | Percentages | | | | | |
|-----------------------------------|----------|---------------|-------------|----------|---------------|-------------|--|
| <i>Children aged 12, 15</i> | 12 years | | | 15 years | | | |
| | Water | Sugary drinks | Fruit juice | Water | Sugary drinks | Fruit juice | |
| Drinking four or more times a day | 27 | 13 | 8 | 30 | 14 | 5 | |
| <i>Unweighted bases</i> | 468 | 472 | 468 | 542 | 546 | 544 | |

There were some differences in the consumption of these drinks by free school meal eligibility status. The proportion of 12 and 15 year olds that were eligible for free school meals drinking sugary drinks four or more times a day was 24% and 23% respectively. For those who were not eligible for free school meals, these figures were 10% and 12% (Table NI.45).

Table NI.45 Percentage of children consuming water, sugary drinks or fruit juice four or more times a day, by sex and free school meal eligibility

| Northern Ireland, 2013 | | Percentages | | | | | |
|---------------------------------------|----------|---------------|-------------|----------|---------------|-------------|--|
| <i>Children aged 12, 15</i> | 12 years | | | 15 years | | | |
| | Water | Sugary drinks | Fruit juice | Water | Sugary drinks | Fruit juice | |
| Male | 24 | 10 | 6 | 32 | 11 | 4 | |
| Female | 30 | 17 | 9 | 28 | 17 | 5 | |
| Eligible for free school meals | 25 | 24 | 11 | 30 | 23 | 6 | |
| Not eligible | 28 | 10 | 6 | 30 | 12 | 4 | |
| <i>Unweighted bases</i> | | | | | | | |
| <i>Male</i> | 205 | 207 | 206 | 230 | 232 | 230 | |
| <i>Female</i> | 263 | 265 | 262 | 312 | 314 | 314 | |
| <i>Eligible for free school meals</i> | 130 | 132 | 132 | 137 | 139 | 138 | |
| <i>Not eligible</i> | 323 | 325 | 321 | 383 | 385 | 385 | |

Among 15 year olds, 10% reported being a current smoker and 28% reported having ever smoked (Table NI.46).

Table NI.46 Smoking status, by age

| Northern Ireland, 2013 | Percentages | |
|-----------------------------|-------------|----------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Ever smoked cigarettes | 5 | 28 |
| Current smoker | * | 10 |
| <i>Unweighted bases</i> | 472 | 546 |

Alcohol consumption is increasingly seen as a public health issue. Amongst 12 year olds 12% reported ever drinking alcohol and 56% of 15 year olds also reported this (Table NI.47). Just below 30% of 15 year olds reported being a current alcohol drinker.

Table NI.47 Alcohol consumption, by age

| Northern Ireland, 2013 | Percentages | |
|-----------------------------|-------------|----------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Ever drunk alcohol | 12 | 56 |
| Current drinker | * | 28 |
| <i>Unweighted bases</i> | 472 | 547 |

5 Patterns of dental service usage

Questions on utilisation and experience of dental care services have appeared in previous CDH Surveys. These are very important as they provide a good account of the pattern of dental services utilisation and also of how children and parents feel about using the services available. It is important context that most NHS treatment for children, including check-ups, is free of cost at the point of use; although the costs of getting to the dentist will vary. As such, information on service use has considerable implications both for the dental health of the children but also on the resources the NHS puts towards addressing and preventing oral health problems.

5.1 Pattern of dental attendance

Overall, 97% of 5 year olds and 8 year olds were reported by their parents to be visiting the dentist for a check-up (Table NI.48). There has been little change in dental attendance patterns for these age groups since 2003.

Table NI.48 Parent reported pattern of child dental attendance¹, by age

| Northern Ireland, 2003-2013 <i>Children aged 5, 8</i> | Percentages | | | |
|--|-------------|------|---------|------|
| | 5 years | | 8 years | |
| | 2003 | 2013 | 2003 | 2013 |
| For a check-up | 92 | 97 | 96 | 97 |
| Only when have trouble with teeth | 4 | 1 | 3 | 3 |
| Never been to the dentist | 4 | 3 | 1 | - |
| <i>Unweighted bases</i> | 112 | 319 | 128 | 302 |

¹For the 2003 data, the question categories 'regular check-up' and 'occasional check-up' were combined for comparison to the 2013 category 'for a check-up'

Older children self-reported their pattern of dental attendance. Overall, 89% of 12 and 86% of 15 year olds reported that they attended the dentist for a check-up (Table NI.49). Around one in ten older children are only attending when they have trouble, with 1% of 15 year olds reporting that they have never visited the dentist.

Table NI.49 Self-reported dental attendance pattern, by age

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | |
|---|-------------|------------|
| | 12 years | 15 years |
| For a check-up | 89 | 86 |
| Only when have trouble | 10 | 13 |
| Never been | * | 1 |
| <i>Unweighted bases</i> | <i>478</i> | <i>544</i> |

For each of the four ages included in this survey, around 95% children visited the dentist in the last 12 months as reported by their parents (Table NI.50). The percentage of 12 year olds that were reported to have visited the dentist in the last 12 months increased from 92% to 97% between 2003 and 2013.

Table NI.50 Percentage of children who visited the dentist in the last 12 months, by age

| Northern Ireland, 2003-2013 <i>All children</i> | Percentages | | | | | | | |
|--|-------------|------------|------------|------------|------------|------------|-----------|------------|
| | 5 years | | 8 years | | 12 years | | 15 years | |
| | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 | 2003 | 2013 |
| Visited dentist in last 12 months | 94 | 94 | 94 | 97 | 92 | 97 | 93 | 95 |
| <i>Unweighted bases</i> | <i>112</i> | <i>320</i> | <i>128</i> | <i>302</i> | <i>101</i> | <i>221</i> | <i>88</i> | <i>235</i> |

5.2 Parent or guardian's dental attendance

Table NI.51 compares the dental attendance pattern of the parent and the attendance of the child (as reported by the same parent). The data show that the dental attendance pattern of the parent and that of their child were strongly related when the pattern was favourable, but were quite different in cases where the parent was not attending for a check-up.

Almost all parents who reported that they attended a regular check-up themselves also reported that their child attended for a check-up. Results for parents that attended less frequently are only indicative due to small sample sizes.

Table NI.51 Dental attendance of responding parent by parent report of child dental attendance, by age

| Northern Ireland, 2013 | | Percentages | | | |
|---|-----------------------------------|-------------|---------|----------|----------|
| <i>All children</i> | | 5 years | 8 years | 12 years | 15 years |
| <i>Adult attendance (responder)</i> | <i>Child attendance</i> | | | | |
| <i>A regular check up</i> | For a check-up | 99 | 100 | 100 | 99 |
| | Only when have trouble/never been | 1 | * | * | 1 |
| <i>An occasional check up</i> | For a check-up | [87] | [92] | [94] | [94] |
| | Only when have trouble/never been | [13] | [8] | [6] | [6] |
| <i>Only when I have trouble / I don't go to the dentist</i> | For a check-up | [84] | [58] | [77] | [53] |
| | Only when have trouble/never been | [16] | [42] | [23] | [47] |
| <i>Unweighted bases</i> | | | | | |
| <i>A regular check up</i> | | 263 | 262 | 185 | 191 |
| <i>An occasional check up</i> | | 32 | 24 | 21 | 17 |
| <i>Only when I have trouble / I don't go to the dentist</i> | | 21 | 13 | 13 | 26 |

5.3 Access to NHS dental treatment services

More than 9 out of 10 parents in Northern Ireland in 2013 reported that they had never experienced any difficulty finding an NHS dentist for their children (Table NI.52). Despite this finding, it is important to highlight that there were still considerable numbers of parents (around one in twenty cases) that did report experiencing difficulty in finding an NHS dentist to examine and treat their children. This proportion increased from 1% in 2013.

Table NI.52 Ever had difficulty finding an NHS dentist

| Northern Ireland, 2003-2013 | Percentages | |
|--------------------------------|-------------|-------|
| | 2003 | 2013 |
| <i>All children</i> | | |
| Yes | 1 | 5 |
| No | 96 | 92 |
| <i>Never tried to find one</i> | 3 | 3 |
| <i>Unweighted bases</i> | 423 | 1,072 |

There was no relationship between free school meal eligibility and likelihood of reporting having difficulty accessing an NHS dentist (Table NI.53).

Table NI.53 Ever had difficulty finding an NHS dentist, by free school meal eligibility status

| Northern Ireland, 2013 | Percentages | |
|--------------------------------|--------------------------------|--------------|
| | Eligible for free school meals | Not eligible |
| <i>All children</i> | | |
| Yes | 6 | 4 |
| No | 92 | 92 |
| <i>Never tried to find one</i> | 2 | 3 |
| <i>Unweighted bases</i> | 206 | 845 |

5.4 Satisfaction with dental treatment services

Table NI.54 presents the findings in relation to satisfaction of users with different aspects of dental treatment services. Parents were asked to rate several facets of the last dental practice that they took their child to, on a scale from 'very good' to 'very poor'. A 'not applicable' option was provided, and these responses are excluded from the base in the tables below. Responses of 'very good' and 'good' were treated as 'satisfied', whilst 'poor' and 'very poor' were treated as 'dissatisfied'.

More than nine in ten parents (96%) reported overall satisfaction with the last dental practice visited with their child (Table NI.54).

Table NI.54 Percentage of parents satisfied with the last dental practice visited with their children, by age

| Northern Ireland, 2013 | | Percentages | | | | |
|------------------------------------|---------|-------------|----------|----------|-------|--|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | Total | |
| Wait for routine appointment | 86 | 83 | 76 | 79 | 81 | |
| Wait for urgent appointment | 88 | 90 | 81 | 81 | 84 | |
| Overall satisfaction | 96 | 96 | 96 | 95 | 96 | |
| <i>Unweighted bases</i> | | | | | | |
| <i>Wait for urgent appointment</i> | 185 | 182 | 155 | 172 | 694 | |
| <i>Overall satisfaction</i> | 313 | 300 | 217 | 231 | 1,061 | |

There was little variation in levels of overall satisfaction with last dental practice by the sex of the child (irrespective of their age) and the same was largely the case for relative deprivation status (Table NI.55).

Table NI.55 Parent overall satisfaction with last dental practice visited with their children, by sex and eligibility for free school meals

| Northern Ireland, 2013 | | Percentages | | | |
|---------------------------------------|---------|-------------|----------|----------|--|
| <i>All children</i> | 5 years | 8 years | 12 years | 15 years | |
| Male | 96 | 96 | 94 | 94 | |
| Female | 97 | 96 | 98 | 95 | |
| Eligible for free school meals | 93 | 100 | [91] | [91] | |
| Not eligible | 98 | 95 | 97 | 96 | |
| <i>Unweighted bases</i> | | | | | |
| <i>Male</i> | 151 | 142 | 113 | 104 | |
| <i>Female</i> | 162 | 158 | 104 | 127 | |
| <i>Eligible for free school meals</i> | 72 | 55 | 36 | 41 | |
| <i>Not eligible</i> | 240 | 245 | 176 | 175 | |

5.5 Dental care received

As expected, the lifetime experience of dental treatment in permanent teeth (fillings and extractions) was higher for successive ages. While there was an increase in the lifetime provision of fillings as well as extractions in permanent teeth by age, the age of 12 years seemed to be of particular importance; almost one in five children had experienced extractions at that age while that experience in previous ages was very rare. At age 15, 63% of children had received a filling in a permanent tooth and 20% had a permanent tooth extracted (Table NI.56).

Table NI.56 Dental care ever received, by age

| Northern Ireland, 2013 | Percentages | | | |
|---|-------------|------------|------------|------------|
| | 5 years | 8 years | 12 years | 15 years |
| <i>All children</i> | | | | |
| Permanent tooth filled | 2 | 15 | 36 | 63 |
| Permanent tooth extracted | 1 | 5 | 17 | 20 |
| Primary tooth filled | 13 | 31 | 36 | 23 |
| Primary tooth extracted | 10 | 25 | 38 | 24 |
| General anaesthetic before dental treatment | 8 | 13 | 19 | 11 |
| Sedation before dental treatment | 1 | 8 | 14 | 19 |
| A brace fitted or adjusted | 1 | 1 | 20 | 42 |
| Scale and polish | 8 | 15 | 33 | 52 |
| Preventative treatment to teeth | 11 | 37 | 45 | 39 |
| Advice on oral care | 50 | 55 | 70 | 70 |
| <i>Unweighted bases</i> | <i>314</i> | <i>303</i> | <i>223</i> | <i>231</i> |

5.6 Dental anxiety and its relationship to treatment experience

Dental anxiety has not been assessed in any of the previous Child Dental Health Surveys beyond the inclusion of a single question (in the 2003 survey parent questionnaire) regarding emotions about attending the dentist.

The pupil questionnaire for 12 and 15 year olds included the Modified Dental Anxiety Scale (MDAS)¹⁶, which is a modified version of Corah's Dental Anxiety Scale¹⁷ and includes a question assessing fears associated with local anaesthesia as well as four other scenarios and asks the respondent to report the extent of their anxiety, ranging from not anxious to extremely anxious. These four scenarios include anticipated anxiety in relation to going to the dentist tomorrow, sitting in a dentist's waiting room, having a tooth drilled and having a scale and polish. A five point response format was used for each of the five items: 'not anxious' (1), 'slightly anxious' (2), 'fairly anxious' (3), 'very anxious' (4) and 'extremely anxious' (5). The MDAS score is calculated by summing the scores of the individual items (ranging between 5 and 25), with the lowest possible score (5) indicating no anxiety at all and scores of 19 and above indicating extreme dental anxiety, which may be indicative of dental phobia. For the purpose of analysis the data was grouped as follows: 5-9 indicating low or no anxiety, 10-18 showing moderate levels of anxiety and 19+ being extreme anxiety. These groups have been used in other national surveys.

In 2013, parents in Northern Ireland were asked to rate their child's anxiety about visiting the dentist in general terms (on a scale of 1-10 with a value of 1 being not at all anxious and 10 being extremely anxious). An option for 'my child never goes to the dentist' was provided. This scale was divided into groups as follows: A score of 1 indicating no anxiety; 2-4 low levels of anxiety and 5-10 moderate to extreme levels of anxiety.

Table NI.57 shows the results for the parental assessment of their child's dental anxiety. For around half to two thirds of children, parents reported no dental anxiety. Moderate to extreme dental anxiety was reported for between 14% and 24% of children.

Table NI.57 Parental report on child anxiety when visiting the dentist, by age

| Northern Ireland, 2013 | Percentages | | | |
|--------------------------------|-------------|---------|----------|----------|
| | 5 years | 8 years | 12 years | 15 years |
| <i>All children</i> | | | | |
| Not anxious | 63 | 52 | 45 | 50 |
| Low anxiety | 22 | 28 | 30 | 30 |
| Moderate to extreme anxiety | 14 | 19 | 24 | 21 |
| My child never goes to dentist | * | * | 1 | 0 |
| <i>Unweighted bases</i> | 313 | 298 | 220 | 230 |

¹⁶ Humphris, Morrison, and Lindsay (1995) The Modified Dental Anxiety Scale: validation and United Kingdom norms. *Community Dent Health* Sep 12 (3) 143-50

¹⁷ Corah (1969) Development of a dental anxiety scale *J Dent Res* 48 (4) 596

Table NI.58 shows the self-reported dental anxiety measure for the older children. Overall, 9% of 12 year olds and 12% of 15 year olds in Northern Ireland were classified as having extreme dental anxiety.

Table NI.58 Self-rated anxiety about visiting the dentist, by age

| Northern Ireland, 2013 | Percentages | |
|-----------------------------|-------------|------------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Low/no anxiety | 31 | 38 |
| Moderate anxiety | 59 | 50 |
| Extreme anxiety | 9 | 12 |
| <i>Unweighted bases</i> | <i>466</i> | <i>534</i> |

Higher dental anxiety was more commonly reported by girls compared to boys, but there was no association between dental anxiety and relative deprivation status (Table NI.59).

Table NI.59 Self-rated anxiety about visiting the dentist, by sex and free school meal eligibility

| Northern Ireland, 2013 | Percentages | |
|---------------------------------------|-------------|------------|
| <i>Children aged 12, 15</i> | 12 years | 15 years |
| Male | | |
| Low/no anxiety | 37 | 47 |
| Moderate anxiety | 56 | 48 |
| Extreme anxiety | 7 | 5 |
| Female | | |
| Low/no anxiety | 26 | 29 |
| Moderate anxiety | 62 | 52 |
| Extreme anxiety | 12 | 20 |
| Eligible for free school meals | | |
| Low/no anxiety | 35 | 37 |
| Moderate anxiety | 55 | 49 |
| Extreme anxiety | 10 | 14 |
| Not eligible | | |
| Low/no anxiety | 31 | 38 |
| Moderate anxiety | 60 | 50 |
| Extreme anxiety | 9 | 12 |
| <i>Unweighted bases</i> | | |
| <i>Male</i> | <i>207</i> | <i>226</i> |
| <i>Female</i> | <i>259</i> | <i>308</i> |
| <i>Eligible for free school meals</i> | <i>129</i> | <i>135</i> |
| <i>Not eligible</i> | <i>322</i> | <i>377</i> |

Extremely anxious children were less likely than other children to visit a dentist for check-ups, and were more likely to visit a dentist only when they had trouble or never. However the majority of children with extreme dental anxiety still reported attending check-ups (Table NI.60).

Table NI.60 Dental attendance pattern for children with low and extreme self-rated dental anxiety, by age

| Northern Ireland, 2013 <i>Children aged 12, 15</i> | Percentages | | | |
|---|-------------|-----------------|-------------|-----------------|
| | 12 years | | 15 years | |
| | Low anxiety | Extreme anxiety | Low anxiety | Extreme anxiety |
| For a check up | 91 | 71 | 87 | 85 |
| Only when I have trouble with my teeth/never been | 9 | 29 | 13 | 15 |
| <i>Unweighted bases</i> | 144 | 50 | 194 | 75 |

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