Social factors and oral health in children

Children's Dental Health in the United Kingdom, 2003

Jimmy Steele
Deborah Lader

December 2004

Office for National Statistics
1 Drummond Gate
London SW1V 2QQ
Tel: 020 7533 5091
Fax: 020 7533 9292

Table of Contents

List of tables

The 2003 Children's Dental Health Survey

The 2003 Children's Dental Health Survey, commissioned by the four United Kingdom Health Departments, is the fourth in a series of national children's dental health surveys that have been carried out every 10 years since 1973 in England and Wales and in the whole of the UK since 1983.

The survey provides information on the dental health of children in the United Kingdom, measures changes in oral health since the last survey in 1993 and provides information on children's experiences of dental care and treatment and their oral hygiene.

The 2003 survey was based upon a representative sample of children aged 5, 8, 12 and 15 years of age attending government maintained and independent schools in the UK. A total of 12698 children were sampled within participating schools and asked to take part in a dental examination at school. In total 10381 children were examined, a response rate of 82%. Background data on children's oral hygiene and dental care and were requested by questionnaire from the parents of a random sub-sample of 5480 examined children. In total, 3342 questionnaires were returned, a response rate of 61%.

Details of the survey methodology can be found in the Children's Dental Health in the United Kingdom 2003 Technical Report available at

http://www.statistics.gov.uk/children/dentalhealth

Acknowledgements

Thanks are due to everyone who contributed to the 2003 Children's Dental Health Survey and the production of this report. In particular colleagues from the Dental Schools of the Universities of Birmingham, Dundee, Newcastle and Wales, the Dental Health Services Research Unit, Dundee and the Central Survey Unit of the Northern Ireland Statistics and Research Agency, the dentists and dental nurses who carried out the examinations (a list of dentists and dental nurses can be found in the Technical Report).

The examinations took place in schools. Local Education Authorities, headteachers and school staff gave their help and co-operation in the administration of the study. Most importantly, thanks go to the children who were examined, and the parents who completed questionnaires about their children's dental background.

Particular acknowledgement goes to Jan Gregory (1946–2004) for her considerable contribution to the series of adult and children's dental health surveys, as well as a wide range of other ONS surveys.

Notes on the tables and text

Proportionately larger samples were selected in Wales and Northern Ireland than in England to provide estimates for these three countries within the UK. Deprived schools were also oversampled in relation to non-deprived schools to provide estimates for school deprivation status groups. The data needed to be reweighted in order to produce representative figures for the UK as a whole. Details of the weighting procedure are provided in the CDH technical report.

All estimates presented in this report are weighted. Weighted bases are provided for UK estimates and unweighted sample sizes are provided for individual country comparisons.

There was no oversampling in Scotland relative to England as a separate analysis for Scotland was not required by the Scottish Executive.

Differences cited in the text are statistically significant ($p<0.05$) unless otherwise stated.

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.

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

Summary

The prevalence of dental decay is associated with social factors, with children from more deprived backgrounds or from lower social status groups being substantially more likely to have decay in most age groups, with the differences most clear cut amongst younger children. At an individual level and when comparing just the children with decay, there is also a suggestion that more teeth are affected amongst children from less affluent backgrounds. Evidence on the availability of treatment for the management of dental caries and the influence of social factors is mixed. There is clearer evidence that treatment choices may be influenced, with extraction of permanent teeth much more likely in deprived groups. However, the picture is complicated, particularly amongst older children who are able to make individual decisions about their health and health behaviour. It is likely that a range of factors, perhaps including cultural background and geography, combine with social factors to explain the variation observed between social factors and dental caries. Whilst there are considerable social disparities, it is worth noting that these are far from absolute and there are still many children from all social groups affected by dental decay, and many from all social groups who are free of decay.

There is no consistent suggestion that differences in hygiene or associated gingival conditions are associated with deprivation using the school meals measure of deprivation. Using individual measures there is evidence of a weak relationship, but it is worth noting that, overall, a large number of children from all social groups were affected by plaque, gingivitis and to a lesser extent, calculus build up. The relationship between social measures and Tooth Surface Loss (TSL) is also weak and inconsistent, though there is a suggestion that lingual wear of incisors is related to level of deprivation and individual measures of social class.

Orthodontic treatment need was also related to social factors among 15 year olds. A larger proportion of 15 year olds in deprived schools had unmet orthodontic treatment need (25%) compared with non-deprived schools (21%). Unmet orthodontic treatment need was twice as high (26%) among 15 year olds from routine and manual compared with those from managerial and professional backgrounds (13%).

Introduction

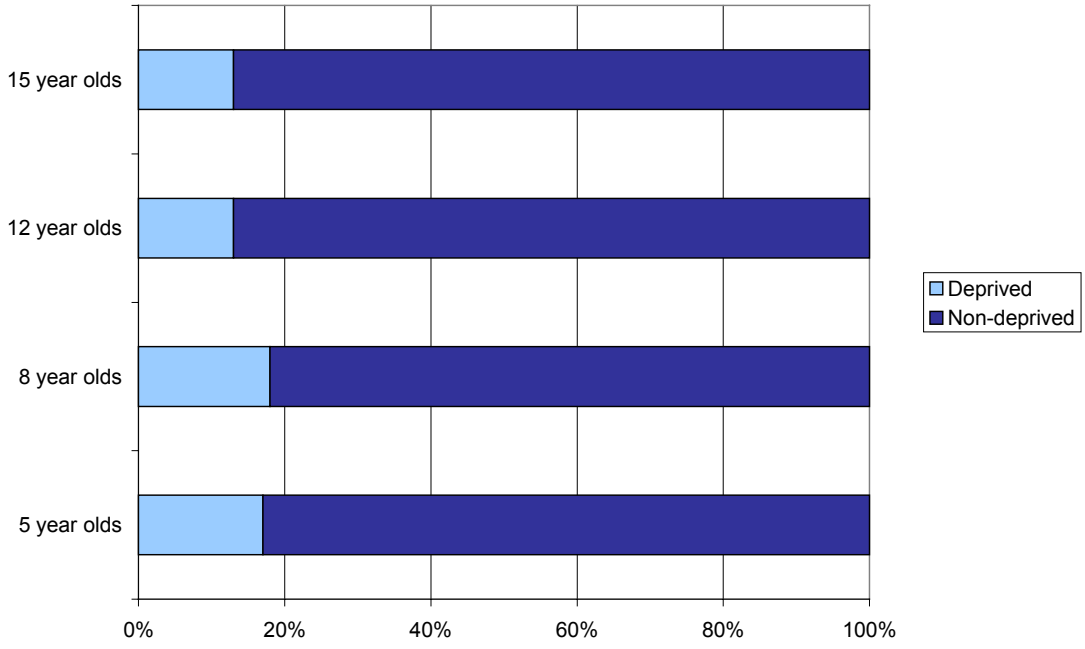
Differences in the prevalence of dental decay according to socio-economic status have been described in several populations of children and adults, including the 1993 Survey of Children's Dental Health in the United Kingdom, but the picture is likely to be complicated by cultural and geographical factors. This report investigates the impact of socio-economic factors on decay but also on other markers of dental disease in children in the United Kingdom in 2003, as well as on dental treatment and other oral health risks.

In 1993 analyses of the relationship between social factors and dental disease were restricted to dental caries, but a range of social variables were considered. These included children's and parents' dental attendance patterns, social class by parental occupation and parents' education. With the exception of social class for permanent teeth and children's dental attendance pattern up to the age of 12, the relationship between most variables and decay was not statistically significant, or only marginally significant. In view of the findings from the 1993 survey we have not specifically analysed the impact of parental education and dental attendance pattern in this report. However, we have broadened the analysis by using additional socio-economic indicators, including a school-based measure and an alternative individual measure in addition to parental social class. These different measures should give a broader picture of relationships. We have also included other measures of oral health in the analysis, such as additional indicators of decay and markers of treatment delivery, to give an indication of the impact on oral health in general.

As in previous surveys, the primary sampling unit was at the level of the school, not the individual. Socio-economic data for individual participants were only collected for a sub-sample of children whose parents completed a questionnaire. To allow some analysis to be carried out on the entire sample of examined children, a proxy marker of socio-economic status was used; the level of deprivation of the school measured by the proportion of children receiving free school meals. Schools were categorised as deprived if over 30% of children were eligible for free school meals. Figure 1 shows the distribution of children among deprived and non-deprived schools. While the majority of children who participated in the survey were attending 'non-deprived' schools, there was a sufficient proportion of children from 'deprived' schools to afford valid comparisons between the school groups. This proxy measure of socio-economic status is somewhat crude: children who are from relatively affluent backgrounds could attend schools categorised as deprived, and vice versa. Hence the measure could underestimate the impact of social factors. However, using this measure does allow a more holistic assessment of the environment in which a child is growing up. The intakes of most schools reflect the local demography so this could also be regarded as an area based measure of deprivation.

Figure 1

Figure 1 Distribution of children by school deprivation level and age



Background data on children's oral hygiene practices and dental care were collected by questionnaire from the parents of a random sub-sample of examined children. The questionnaire data allowed assignment of an individual indicator of socio-economic status for children whose parents completed a questionnaire. Use of individual socio-economic indicators is only applicable to the sub-sample so fewer children are included compared with analysis using the school level indicator. Because the indicators are individual rather than at the school level they may be expected to give a slightly different pattern of results. Two different individual level indicators have been used:

National Statistics Socio -economic Classification: 3-class version (NS-SEC). In 2001 NS-SEC replaced Social Class as the standard occupationally based classification used for all official statistics and surveys. NS-SEC is used in the current report for analysis of 2003 data alone.

Social class based on the Registrar General's Standard Occupational Classification (1991). The influence of social class on prevalence of decay experience in the permanent teeth was reported in the 1993 survey. Hence social class is used to analyse trends since the previous survey.

In the sections that follow both school and individual level social measures are presented, with oral health analysed according to school level indicators reported first, followed by analysis for individual indicators.

Tooth decay

The analysis of data on tooth decay addresses three main questions:

Is the prevalence of tooth decay associated with school deprivation and individual social status?

Among children who are affected, is the "severity" of tooth decay (based on the number of affected teeth) associated with school deprivation and individual social status?

Is the treatment that children receive for tooth decay associated with school deprivation or individual social status?

The prevalence of tooth decay

Two different measures of dental decay are used which describe prevalence. The first is the proportion of children who had untreated decay into dentine (see definitions in Topic Report 1[1]) representing the prevalence of decay into dentine (d_{3cv} for primary and D_{3cv} for permanent teeth) at the time of the examination. The second measure is of obvious decay experience, including not only the decay and cavities described above, but also the fillings placed to treat decay or teeth removed because of decay. This is an indication of disease history (lifetime prevalence) as it includes cases where there has been a history of decay that has been treated.

Table 1 and Figure 2 show the prevalence of dental decay using these two measures for primary teeth in five and eight-year-olds in the United Kingdom, analysed by the deprivation category of the school. The proportion of children with decay into dentine showed marked differences according to whether the school was deprived or not. Fifty six per cent of five-year-olds and 64% of eight –year-olds from deprived schools had decay into dentine, compared with 37% of five-year-olds and 48% of eight –year-olds in non deprived schools. The proportion with of children with obvious decay experience was also higher among children from deprived schools compared with non-deprived: 60% and 40% respectively among five-year-olds and 70% and 55% respectively among eight-year-olds. Among five-year-olds, children from deprived schools were one and a half times more likely to have decay into dentine or obvious decay experience than children from non-deprived schools (60% compared with 40% affected).

Table 1, Figure 2

1 www.statistics.gov.uk/children/dentalhealth/downloads/cdh_dentinal_decay.pdf

Table 1 Proportion of children with obvious decay experience ($d_{3cv}mft$) in primary teeth by age and school level deprivation (United Kingdom, 2003)

	5 year olds		8 year olds	
	Deprived school	Non-deprived school	Deprived school	Non-deprived school
All children:				
Percentage with decay into dentine	56	37	64	48
Percentage with obvious decay experience	60	40	70	55
Mean number of primary teeth with obvious decay experience	2.4	1.4	2.2	1.7
Mean number of filled teeth	0.2	0.2	0.4	0.4
Children with decay experience:				
Mean number of primary teeth with obvious decay experience	4.2	3.8	3.3	3.3
Mean number of filled teeth	0.3	0.4	0.5	0.6
Filled teeth as a percentage of obvious decay experience	7	11	15	19

In permanent teeth a higher proportion of 15-year-olds from deprived schools (55%) had decay into dentine compared with 15-year-olds in non-deprived schools (42%). (The difference for decay into dentine among 12-year-olds was not was not statistically significant). In both age groups the proportion of children with obvious decay experience was higher in deprived schools than non-deprived. The difference was most pronounced among 15-year-olds : 72% in deprived schools had obvious decay experience compared to 55% in non-deprived schools.

Table 2, figure 2

Figure 2 Proportion of children with obvious decay experience in primary (five and eight-year-olds) or permanent (12 and 15-year-olds) teeth by school deprivation status.

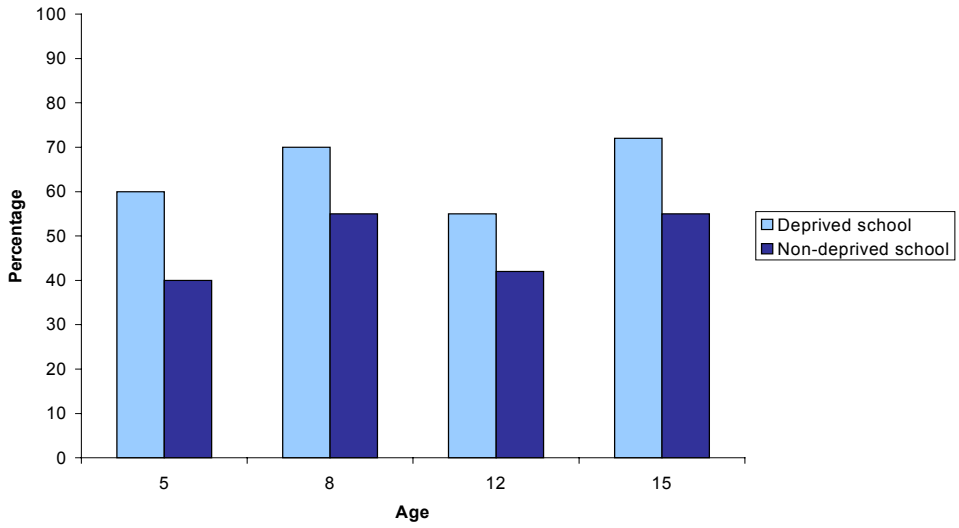


Table 2 Proportion of children with obvious decay experience (D3cvMFT) in permanent teeth by age and school level deprivation (United Kingdom, 2003)

	12 year olds		15 year olds	
	Deprived school	Non-deprived school	Deprived school	Non-deprived school
All children:				
Percentage with decay into dentine	34	28	42	30
Percentage with obvious decay experience	55	42	72	55
Percentage with extracted permanent tooth	6	3	11	5
Mean number of permanent teeth with obvious decay experience	1.6	1.0	2.8	1.9
Children with decay experience:				
Mean number of permanent teeth with obvious decay experience	2.9	2.4	3.9	3.5
Mean number of filled teeth	1.3	1.1	2.2	2.0
Filled teeth as a percentage of obvious decay experience	47	46	57	57

There was also a relationship between socio-economic status (NS-SEC) and decay experience in primary teeth. A lower proportion of both five and eight-year-olds from managerial and professional backgrounds had decay into dentine or obvious decay experience in the primary teeth than did children from routine and manual backgrounds. For instance, among five year-olds from managerial and professional backgrounds 31% had decay into dentine and 34% had obvious decay experience compared with 47% and 53% respectively for children from routine and manual backgrounds.

Table 3

Table 3 Proportion of five and eight-year-old children with obvious decay experience (d_{3cv}mft) in primary teeth by socio-economic status (NS-SEC) of household (United Kingdom, 2003)

	5 year olds			8 year olds		
	Managerial & Professional	Intermediate	Routine & Manual	Managerial & Professional	Intermediate	Routine & Manual
All children:						
Percentage with decay into dentine	31	34	47	42	51	60
Percentage with obvious decay experience	34	36	53	47	58	71
Mean number of primary teeth with obvious decay experience	1.2	1.0	1.8	1.5	1.9	2.0
Mean number of filled teeth	0.2	0.2	0.3	0.5	0.7	0.5
Children with decay experience:						
Mean number of primary teeth with obvious decay experience	3.7	2.9	3.7	3.4	3.5	3.0
Mean number of filled teeth	0.5	0.4	0.4	0.9	1.0	0.5
Filled teeth as a percentage of obvious decay experience	14	14	11	25	28	15

Among both five and eight-year-olds, the probability of having decay into dentine or obvious decay experience of the primary teeth was about 50% higher in the lowest social group than in the highest. These results are broadly similar to those found when using the school deprivation variable for analysis.

Table 4 Proportion of 12 and 15-year-old children with obvious decay experience ($D_{3cv}MFT$) in permanent teeth by socio-economic status (NS-SEC) of household (United Kingdom, 2003)

	12 year olds			15 year olds		
	Managerial & Professional	Intermediate	Routine & Manual	Managerial & Professional	Intermediate	Routine & Manual
All children:						
Percentage with decay into dentine	22	29	27	23	37	33
Percentage with obvious decay experience	40	42	39	47	66	65
Percentage with extracted permanent tooth	2	3	3	2	3	7
Mean number of primary teeth with obvious decay experience	0.8	1.1	1.1	1.4	1.9	2.5
Children with decay experience:						
Mean number of primary teeth with obvious decay experience	2.0	2.7	2.9	3.0	2.8	3.8
Mean number of filled teeth	1.0	1.3	1.5	2.0	1.7	2.5
Filled teeth as a percentage of obvious decay experience	51	49	53	65	59	65

In permanent teeth, although it appeared that 12-year-olds with the greatest probability of having decay into dentine or of having obvious decay experience were those in the intermediate socio-economic group, the majority of the differences were not statistically significant. Among 15-year-olds, children from managerial and professional backgrounds had lower prevalence of decay into dentine (23%) and obvious decay experience (47%) compared to children from intermediate (37% and 66% respectively) and routine and manual (33% and 65%) backgrounds.

Table 4

The severity of tooth decay

The prevalence of tooth decay is only an indication of the proportion of children affected, not how severely they are affected. It may be the case that social factors are important in determining whether or not a child has decay or decay experience, but not how many teeth are affected. Alternatively there may be a social risk operating at both levels.

The conventional way to report the severity of obvious decay experience is by reporting the sum of all decayed teeth, filled teeth and teeth removed for caries together as a single index score ($d_{3cv}mft$ or $D_{3cv}MFT$). This (DMFT) can be calculated for each individual child,

indicating the scale of their experience in terms of the number of affected teeth. The convention is that this is reported as the lower case (d_{3cv}mft) for deciduous teeth and upper case (D_{3cv}MFT) for permanent teeth. The "3cv" part of the index relates to the diagnostic threshold used in this survey (see Appendix A in Topic Report 1 for full details).

Among both five and eight-year-olds the average number of primary teeth with obvious decay experience was higher among children from deprived schools. However, as the prevalence is different for the two groups, the differences in mean scores may simply be a reflection of that difference in prevalence. For this reason the mean scores were recalculated only for the children in each group who had some history of decay. This provides an indication of whether the severity of the disease in those affected is associated with deprivation. Table 1 indicates that in primary teeth the severity of obvious decay experience (as indicated by the mean number of affected teeth among those with obvious decay experience) is not strongly associated with school deprivation level among either five or eight-year-olds.

Table 1

A similar pattern was evident for the primary dentition when using the individual family based measures of socio-economic status. Among affected 5 year olds the d_{3cv}mft of the children from managerial and professional backgrounds was 3.7, just as it was for the children from routine and manual backgrounds. There were small variations observed between groups but these were not statistically or clinically significant.

Table 2

In permanent teeth the average number of affected teeth among children with decay experience was higher for 12 year olds from deprived schools (2.9) compared with non-deprived schools (2.4). There were no further statistically significant differences.

Table 3

The severity of decay among children with obvious decay experience in the permanent teeth showed a relationship with socio-economic status. Among both 12 and 15-year-olds with decay experience the average number of teeth with obvious decay experience was lower among children from managerial and professional backgrounds (2.0 teeth for 12-year-olds and 3.0 teeth for 15-year-olds) compared with those from routine and manual backgrounds (2.9 teeth for 12-year-olds and 3.8 teeth for 15-year-olds).

Table 4

Treatment for tooth decay

Where decay occurs it can remain untreated, it can be treated by restoration (usually in the form of fillings) or the affected tooth can be extracted. To have teeth filled requires both access to a dentist and the propensity of the child to go, or for a parent to take them for treatment in the surgery. Extraction requires the same, but will usually occur where the disease is less easily treated either because of the extent of the disease in the tooth, or the level of co-operation of the child. Consequently the sort of treatment provided may be subject to social and socio-economic influences related to propensity to seek care, access to care and probably also economic considerations. Treatment choices can have long term impacts; the loss of a permanent tooth is an impairment which may have an impact throughout life. By looking at the constituent parts of the dmft or DMFT it is possible to see the sorts of treatment choices that have been made and how these vary with deprivation.

Table 1 shows the filled(f) component of the dmft and the proportion of the dmft accounted for by this amongst children with obvious decay experience. This indicates that the filled component is not a statistically significantly different part of the total dmft in children from deprived schools (7% of the dmft) compared with non-deprived schools (11% of dmft) in five year olds, with a similar pattern for eight- year-olds (15% and 19%).

Table 1

There were no differences between deprived and non-deprived schools in the proportion of children with filled permanent teeth as a component of overall obvious decay experience. Table 2 also shows the proportion of children in the two school-based deprivation groups who have experienced extraction of a tooth for the management of decay. The proportions that have experienced tooth loss for decay are generally very low compared to previous surveys, but there is a difference between deprived and non-deprived schools among 15-year-olds (11% and 5% respectively).

Table 2

The proportion of the d_{3cv}mft that was represented by filled primary teeth did appear to show some variation with individual measures of socio-economic status, although the difference is, in clinical terms, rather small as most of the score is made up of untreated decay or missing teeth. Among eight-year-olds, filled teeth represented a higher proportion of the index amongst professional and managerial (25%) and intermediate (27%) socio-economic groups (25-27%) than in the routine and manual or groups (15%).

Table 3

There were no statistically significant differences in filled permanent teeth as a proportion of overall obvious decay experience between socio-economic groups in either 12 or 15-year-olds. A difference between socio-economic groups was apparent among older children in

relation to tooth loss. Although few children had lost teeth due to caries, among 15-year-olds the prevalence was 7% for children from routine manual backgrounds compared to only 2% for children from managerial and professional backgrounds.

Table 4

Comparisons with 1993

The 1993 survey examined the relationship between social class and obvious decay experience in the permanent teeth among 12 and 15-year-olds. In the 2003 survey the criteria for assessing dental caries were changed from those used in the earlier surveys to reflect changes in the presentation of dentine decay. In order to compare the data on the condition of teeth in 2003 with those from 1993, the 2003 data were re-classified according to the pre-2003 criteria which do not include visual dentine caries (D_{3c}MFT, D_{3c}). Tables 5 and 6 show the proportion of children and mean number of teeth with obvious decay experience by social class in 1993 and 2003.

Table 5 and Table 6

Table 5 Proportion of 12-year-olds with obvious decay experience D3cMFT in permanent teeth and the mean number of affected teeth by household social class (United Kingdom, 1993, 2003)

	Year			
Tooth condition and household social class	1993	2003	1993	2003
	Percentage of children:		*Mean number of teeth affected:*	
Decay into dentine (D_{3c})	17	8	0.3	0.1
I, II, II non-manual	27	13	0.5	0.1
III manual	32	6	0.6	0.1
IV,V				
Filled teeth				
I, II, II non-manual	35	23	0.7	0.4
III manual	38	35	0.7	0.9
IV,V	50	24	1.1	0.5
Missing due to decay				
I, II, II non-manual	3	2	0.1	*
III manual	6	4	0.1	0.1
IV,V	15	2	0.3	*
Obvious decay experience D_{3C}MFT				
I, II, II non-manual	45	28	1.1	0.6
III manual	51	40	1.4	1.1
IV,V	68	27	2	0.7

Table 6 Proportion of 15-year-olds with obvious decay experience D3cMFT in permanent teeth and the mean number of affected teeth by household social class (United Kingdom, 1993, 2003)

	Year			
Tooth condition and household social class	1993	2003	1993	2003
	Percentage of children:		*Mean number of teeth affected:*	
Decay into dentine (D_{3c})				
I, II, II non-manual	25	10	0.5	0.2
III manual	25	13	0.6	0.2
IV,V	36	9	0.9	0.2
Filled teeth				
I, II, II non-manual	48	40	1.4	1.2
III manual	59	51	2.0	1.3
IV,V	59	54	2.2	1.9
Missing due to decay				
I, II, II non-manual	4	2	0.1	*
III manual	6	4	0.1	0.1
IV,V	19	10	0.3	0.1
Obvious decay experience D_{3C}MFT				
I, II, II non-manual	58	47	2.0	1.4
III manual	68	44	2.7	1.5
IV,V	72	46	3.4	2.2

Among both 12 and 15-year-olds the proportion of children with decay into dentine (D_{3c}), obvious decay experience (D_{3c}MFT), filled and missing teeth has fallen in each social class since 1993. The greatest improvement is observed in children from Social Class IV,V: for example, 68% of 12-year-olds and 72% of 15-year-olds in class IV,V had obvious decay experience (D_{3c}MFT) in 1993 compared with 27% and 46% respectively in 2003. Improvement was less pronounced in children from Social Class III manual. This results in a different 'social gradient' in 2003 whereby children from Social Class III manual tend to have the highest levels of decay. A similar pattern was observed for the average number of teeth.

Oral cleanliness and gum health

Plaque is a key factor in the development of both dental decay and gum disease. It may be that some of the discrepancies observed between deprived and non-deprived school groups in decay could be explained by differences in oral hygiene. Furthermore, oral hygiene may be an indicator of the likely scale of future treatment need and is a fundamental consideration in the prevention of dental disease and the promotion of oral health, so differences according to social factors would be of concern.

Table 7 shows the proportion of children with recorded plaque deposits as well as the mean number of sextants (the six segments of the mouth) in which plaque was recorded for children from deprived and non-deprived schools at all ages. There were no statistically significant differences between the two categories of school in terms of the proportions affected by plaque, and neither was plaque any more extensive (involving more sextants) when the two school categories were compared.

Table 7

Table 7 Plaque, gingivitis and calculus by age and school deprivation status (United Kingdom, 2003)

	5 year olds		8 year olds		12 year olds		15 year olds	
Tooth condition	Deprived school	Non-deprived school	Deprived school	Non-deprived school	Deprived school	Non-deprived school	Deprived school	Non-deprived school
Percentage of children with obvious plaque	51	50	70	78	76	73	59	64
Mean sextants with plaque	1.71	1.52	2.82	2.66	3.03	2.56	2.37	2.2
Percentage of children with gum inflammation	28	33	54	65	54	67	52	52
Mean sextants with gingivitis	0.8	0.86	1.58	1.86	1.93	2.1	1.55	1.5
Percentage of children with obvious calculus	5	6	17	25	33	30	36	40
Mean sextants with calculus	0.06	0.07	0.23	0.28	0.42	0.35	0.44	0.5
Percentage of children with gingivitis (index teeth)	n/a	n/a	n/a	n/a	n/a	n/a	43	43

N/a data on gingivitis was only collected for 15-year-olds

Data based on individual family measures of socio-economic status showed a similar pattern. Although children from managerial or professional families consistently had the lowest levels of plaque, the differences in prevalence were not statistically significant. The same pattern was evident for the number of sextants affected, particularly once differences in prevalence are taken into account.

Table 8

Table 8 Plaque, gingivitis and calculus by age and socio-economic status (NS-SEC) of household (United Kingdom, 2003)

Tooth condition and NS-SEC	Age 5	8	12	15
Percentage of children with obvious plaque				
Professional & managerial	43	78	72	64
Intermediate	52	79	76	68
Routine & manual	49	78	74	66
Mean sextants with plaque				
Professional & managerial	1.3	2.5	2.3	2.0
Intermediate	1.6	3.0	2.7	2.7
Routine & manual	1.7	3.0	2.6	2.2
Percentage of children with gum inflammation				
Professional & managerial	30	68	62	50
Intermediate	26	62	75	63
Routine & manual	36	72	68	54
Mean sextants with gum inflammation				
Professional & managerial	0.8	2.0	1.8	1.3
Intermediate	0.8	1.6	2.0	2.2
Routine & manual	0.9	2.2	2.3	1.8
Percentage of children with obvious calculus				
Professional & managerial	5	26	30	39
Intermediate	2	28	28	41
Routine & manual	9	25	30	40
Mean sextants with calculus				
Professional & managerial	0.1	0.3	0.4	0.5
Intermediate	*	0.3	0.3	0.5
Routine & manual	0.1	0.3	0.4	0.5
Percentage of children with gingivitis (index teeth)				
Professional & managerial	n/a	n/a	n/a	34
Intermediate	n/a	n/a	n/a	42
Routine & manual	n/a	n/a	n/a	49

N/a data on gingivitis was only collected for 15-year-olds

Inflammation of the gums (gingivitis), usually occurs in response to plaque on the teeth. Among 12-year-olds, a lower proportion of children in deprived schools (54%) had gum inflammation compared with children in non-deprived schools (67%). There were no further statistically significant differences. For 15-year-olds the gums were examined more thoroughly, being gently probed to assess the presence of gingivitis; inflamed gums tend to bleed easily and healthy ones do not. There was no difference between deprived and non-deprived schools in the proportion of 15-year-olds with gingivitis (43% in both).

Table 7

There was no clear relationship between individual socio-economic groups and the proportion of children with gum inflammation in any age group, or the proportion of 15 year olds with gingivitis.

Table 8

Calculus is the hard calcified deposit that forms on teeth. It forms from plaque over a period of time and can be removed by scaling. There are no consistent patterns to suggest the presence of calculus is linked to school deprivation status or socio-economic status.

Table 7 and Table 8

Non-carious Tooth Surface Loss

All teeth wear down with time, but excessive tooth wear is a damaging condition and can cause loss of tooth tissue that is complex to treat. In this report the terms "tooth surface loss (TSL)" and "wear" are used interchangeably. There are a range of causes of TSL including grinding of the teeth together, abrasion from tooth brushing and other external factors and erosion of the surfaces resulting from gastrointestinal problems. However, in children one of the more important causes is erosion from dietary acids. These in turn are related to dietary choices, such as the intake of carbonated drinks and other acidic foods and drinks. Dietary choice is subject to social and socio-economic influences, so in this section the pattern of tooth surface loss will be presented by the level of deprivation and social factors.

Wear is described at two levels and two or three sites. Where tooth surface loss is severe it can extend into the dentine or pulp, but this is uncommon, and so much of the wear described is as "any tooth surface loss", which is mostly wear of the enamel. Tooth surface loss at this level is common but can be quite difficult to diagnose. Records of TSL were made on buccal and lingual surfaces of anterior teeth, and on the occlusal surfaces of permanent molars.

The impact of school deprivation level on the deciduous incisors of 5 year olds was significant for lingual surfaces, with 29% of children from deprived schools showing wear into dentine or pulp compared with only 21% of those from non-deprived schools. There was a similar difference when less severe wear was examined. For buccal surfaces, advanced TSL was much less prevalent and no significant differences were noted. When individual measures of social position were used, very similar trends were evident, with children from managerial and professional families having a lower prevalence of wear than the other groups, although the differences were generally not statistically significant. Again, it was only for lingual wear that any sort of pattern was obvious.

Table 9 and Table 10

Table 9 Proportion of five year old children with tooth surface loss (TSL) on the surfaces of the primary incisors by school deprivation status (United Kingdom, 2003)

	Any TSL	TSL into dentine or pulp
	Percentage of children:	
Buccal surfaces		
Attending a 'deprived' school	22	5
Attending a 'non-deprived' school	19	2
Lingual surfaces		
Attending a 'deprived' school	58	29
Attending a 'non-deprived' school	52	21

Table 10 Proportion of five-year-olds with tooth surface loss (TSL) on the surfaces of the primary incisors by socio-economic status (NS-SEC) of (United Kingdom, 2003)

	Any TSL	TSL into dentine or pulp
	Percentage of children:	
Buccal surfaces		
Managerial & professional	16	2
Intermediate	18	3
Routine & manual	16	1
Lingual surfaces		
Managerial & professional	42	15
Intermediate	55	22
Routine & manual	58	25

By the age of eight years the permanent incisors have generally erupted, as have the permanent first molars and these teeth were scored during the examinations of older children. Permanent teeth tend to wear much less rapidly than deciduous teeth and the overall prevalence of severe wear was low, with no more than 5% of children affected in any of the three older groups. Differences associated with the school level of deprivation were small, partly reflecting the low prevalence, and were non-significant. At a less severe level of wear there was a suggestion of a higher prevalence of lingual wear in 8, 12 and 15 year olds, for example 40% of 12 year olds from deprived schools showed lingual TSL compared with 28% from non-deprived schools, and a similar 12 percentage point difference was evident for the 15 year olds, although again these differences were not statistically significant. No pattern was evident for molar or buccal wear.

Table 11

Table 11 Proportion of eight, 12 and 15-year-olds with tooth surface loss (TSL) on permanent incisors and first permanent molars by age and school deprivation status (United Kingdom, 2003)

	8 year olds		12 year olds		15 year olds	
Tooth condition	Deprived school	Non-deprived school	Deprived school	Non-deprived school	Deprived school	Non-deprived school
			Percentage of children:			
Buccal surfaces of incisors						
Any TSL	5	4	13	12	14	14
TSL into dentine or pulp	1	*	*	*	*	*
Lingual surfaces of incisors						
Any TSL	19	13	40	28	44	32
TSL into dentine or pulp	2	*	4	2	2	5
Molars						
Any TSL	6	10	23	18	22	22
TSL into dentine or pulp	*	*	1	2	2	4

Individual measures of social position showed no consistent pattern as the majority of differences were not significant. Lingual wear into dentine or pulp was slightly less prevalent amongst children from managerial and professional families and non-manual backgrounds than the rest at age 15.

Table 12

Table 12 Plaque, gingivitis and calculus by age and socio-economic status (NS-SEC) of household (United Kingdom, 2003)

	Age		
Tooth condition and NS-SEC	8	12	15
Buccal surfaces of incisors:			
Any TSL			
Professional & managerial	4	9	12
Intermediate	5	13	16
Routine & manual	5	16	14
TSL into dentine or pulp			
Professional & managerial	*	*	*
Intermediate	*	*	*
Routine & manual	*	*	*
Lingual surfaces of incisors:			
Any TSL			
Professional & managerial	12	21	30
Intermediate	14	27	33
Routine & manual	12	37	35
TSL into dentine or pulp			
Professional & managerial	*	*	2
Intermediate	1	3	9
Routine & manual	1	2	9
Molars:			
Any TSL			
Professional & managerial	9	14	26
Intermediate	7	18	22
Routine & manual	10	27	15
TSL into dentine or pulp			
Professional & managerial	*	1	4
Intermediate	*	3	4
Routine & manual	1	1	6

Orthodontic treatment need

Another measure of oral health is the proportion of children with an orthodontic treatment need. Generally orthodontic treatment will require access to the dentist and often to specialist services for advice or treatment. The need for treatment is mostly a reflection of genetic make up rather than environmental risk so it would be expected that prevalence would be similar between deprived and non-deprived groups. However, orthodontic needs can be treated, and the propensity to seek treatment or the availability of treatment may be affected by socio-economic influences. Treatment most commonly occurs in the early teenage years so completed treatment would be fairly rare at 12 years but not uncommon by age 15.

Table 13 shows the orthodontic treatment needs and appliance among 12 and 15-year-olds. Among 12-year-olds there is effectively no difference between children from deprived and non-deprived schools in terms of the unmet need (34-35% of children), while similar proportions of children were receiving orthodontic treatment at this stage. Among 15-year-olds there was a difference between deprived and non-deprived groups for unmet need: 21% in the non-deprived compared with 25% of the deprived group. Conversely, those from the non-deprived group were more likely to be undergoing orthodontic treatment at age 15 with 15% wearing an appliance compared with 10% from the deprived schools.

Table 13

Table 13 Orthodontic condition among 12 and 15-year-olds by school deprivation status (United Kingdom, 2003)

	12 year olds		15 year olds	
	Deprived school	Non-Deprived school	Deprived school	Non-Deprived school
	Percentage of children:			
Unmet treatment need	34	35	25	21
Undergoing treatment	8	8	10	15
No treatment need	59	56	67	66

Table 14 shows the same data broken down by socio-economic status. The base numbers are much smaller as this is based on a sub sample, so the margins for error of the percentages given are much wider. Nevertheless, exactly the same sort of pattern is evident, with similar levels of treatment and unmet need at age 12 but a difference opening up by age 15. At age 15 half as many children from professional and managerial families had unmet orthodontic need as those from routine and manual families and a similar trend was evident for household social class.

Table 14

Table 14 Orthodontic condition among 12 and 15-year-olds by socio-economic status (NS-SEC) of household (United Kingdom, 2003)

	12 year olds			15 year olds		
	Managerial & professional	Intermediate	Routine & manual	Managerial & professional	Intermediate	Routine & manual
	Percentage of children:					
Unmet treatment need	38	34	30	13	17	26
Undergoing treatment	8	7	13	18	17	10
No treatment need	54	59	56	68	66	64

Appendix A The accuracy of survey results

Sources of error

Like all estimates based on samples, the results of the 2003 Children's Dental Health Survey are subject to variations and errors. The total error associated with any survey estimate is the difference between the estimate derived from the data collected and the true value for the population. The total error can be divided into two main types: random error and systematic error.

Random error

Random error occurs because survey estimates are based not on the whole population but only on a sample of it. There may be chance variations between such a sample and the whole population. If a number of repeats of the same survey were carried out, this error could be expected to average to zero. The size of the sample and the sample design influence the magnitude of these variations due to sampling.

Systematic error

Systematic error is often referred to as bias. Bias can arise because the sampling frame is incomplete, because of variation in the way the dental examination was carried out, or because non-respondents to the survey have different characteristics to respondents. When designing this survey considerable effort was made to minimise systematic error; this included training dental examiners and nurses to reduce variability between them. Nonetheless, some systematic error is likely to have remained, particularly from potential non-response bias, and the data were weighted to reduce any potential non-response bias.

Standard errors and design factors

Statistical theory enables estimates to be made of how close the survey results are to the true population values for each characteristic. A statistical measure of the variation, the standard error, can be estimated from the value obtained for the sample, and provides a measure of the statistical precision of the survey estimate. This allows for a confidence interval to be calculated around the sample estimate which gives an indication of the range in which the true population value is likely to fall. The confidence interval generally used in survey research is the 95% confidence interval; it comprises of approximately two (1.96) standard errors associated with the sample design; they cannot take account of potential errors such as non-response bias or random error due to the misunderstanding of questions.

For results based on simple random samples, without clustering or stratification, the estimation of standard errors is straightforward. However, the sample design of the Children's Dental Health Survey was not a simple random sample and therefore a more complex design calculation is needed which takes account of the stratification and

clustering of the sample design is necessary. Stratification tends to reduce the standard error, while clustering tends to increase it.

In a complex sample design, the size of the standard error depends on how the characteristic of interest is spread within and between the primary sampling units, and this is reflected in the way the data are grouped in order to calculate the standard error.

Tables A1 to A12 show the standard error and 95% confidence intervals for survey estimates (calculated using STATA, a statistical analysis software package). The tables do not cover all the topics discussed in the report but show a selection of estimates based on information from both the questionnaire and the dental examination. The tables also show the design factor, or deft; the ratio of the complex standard error to the standard error that would have resulted had the survey design been a simple random sample of the same size. This is often used to give a broad indication of the degree of clustering. The size of the design factor varies between survey variables reflecting the degree to which a characteristic is clustered within PSUs, or is distributed between strata. For a single variable the size of the factor also varies according to the size of the subgroup on which the estimate is based, and on the distribution of the subgroup between PSUs and strata. Design factors below 1.0 show that the complex sample design improved on the estimate that would have been expected from a simple random sample, probably due to the benefits of stratification; design factors gained from a simple random sample, due to the effects of clustering.

Table A1 Standard errors and 95% confidence intervals for proportion of children with obvious decay experience in primary teeth by age and school deprivation status (United Kingdom 2003)

Characteristic	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (d_{3cv})					
Non-deprived					
5 year olds	37	2032	1.7	34-40	1.6
8 year olds	48	1964	1.8	44-52	1.6
Deprived					
5 year olds	56	822	2.6	51-61	1.5
8 year olds	64	826	2.8	59-69	1.7
Obvious decay experience ($D_{3cv}MFT$)					
Non-deprived					
5 year olds	40	2032	1.7	37-43	1.6
8 year olds	55	1964	1.7	52-58	1.5
Deprived					
5 year olds	60	822	2.7	55-65	1.6
8 year olds	70	826	2.4	65-75	1.5

Table A2 Standard errors and 95% confidence intervals for proportion of children with obvious decay experience in permanent teeth by age and school deprivation status (United Kingdom 2003)

Characteristic	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (D_{3cv})					
Non-deprived					
12 year olds	28	2030	1.8	25-31	1.8
15 year olds	30	1741	2.0	27-33	1.8
Deprived					
12 year olds	34	565	4.3	26-42	2.1
15 year olds	42	401	3.8	34-49	1.6
Obvious decay experience (D_{3cv}MFT)					
Non-deprived					
12 year olds	42	2030	1.8	38-46	1.6
15 year olds	55	1741	1.9	51-59	1.6
Deprived					
12 year olds	55	565	4.3	47-63	2.1
15 year olds	71	401	2.8	65-76	1.3

Table A3 Standard errors and 95% confidence intervals for mean number of teeth with obvious decay experience by age and school deprivation status (United Kingdom 2003)

	Mean (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Primary teeth					
Non-deprived					
5 year olds	1.4	2032	0.1	1.2-1.6	1.9
8 year olds	1.7	1964	0.1	1.5-1.9	1.6
Deprived					
5 year olds	2.4	822	0.2	2.0-2.8	2.0
8 year olds	2.2	826	0.1	2.0-2.4	1.6
Permanent teeth					
Non-deprived					
12 year olds	1.0	2030	0.1	0.8-1.2	1.9
15 year olds	1.9	1741	0.1	1.7-2.1	1.7
Deprived					
12 year olds	1.6	565	0.2	1.2-2.0	1.7
15 year olds	2.8	401	0.3	2.2-3.4	1.4

Table A4 Standard errors and 95% confidence intervals for proportion of children with obvious decay experience in primary teeth by age and socio-economic status (NS-SEC) of household (United Kingdom 2003)

	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (d_{3cv})					
Managerial and professional					
5 year olds	31	372	3.1	25-37	1.3
8 year olds	42	319	3.0	36-48	1.1
Intermediate					
5 year olds	34	176	4.9	24-44	1.4
8 year olds	51	177	5.0	41-61	1.3
Routine and manual					
5 year olds	47	309	4.3	39-55	1.5
8 year olds	60	344	3.5	53-67	1.3
Obvious decay experience (d_{3cv}mft)					
Managerial and professional					
5 year olds	34	372	3.6	27-41	1.4
8 year olds	47	319	3.1	41-53	1.1
Intermediate					
5 year olds	36	176	4.9	26-46	1.4
8 year olds	58	177	5.1	48-68	1.4
Routine and manual					
5 year olds	53	309	4.0	45-61	1.4
8 year olds	71	344	2.2	67-75	1.0

Table A5 Standard errors and 95% confidence intervals for mean number of primary teeth with obvious decay experience by age and socio-economic status (NS-SEC) of household (United Kingdom 2003)

	Mean (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (d_{3cv})					
Managerial and professional					
5 year olds	1.0	372	0.2	0.6-1.4	1.6
8 year olds	1.1	319	0.1	0.9-1.3	1.1
Intermediate					
5 year olds	1.0	176	0.1	0.8-1.2	1.0
8 year olds	1.3	177	0.2	0.9-1.7	1.2
Routine and manual					
5 year olds	1.6	309	0.2	1.2-2.0	1.4
8 year olds	1.5	344	0.1	1.3-1.7	1.4
Obvious decay experience (d_{3cv}mft)					
Managerial and professional					
5 year olds	1.2	372	0.2	0.8-1.6	1.8
8 year olds	1.5	319	0.1	1.3-1.7	1.2
Intermediate					
5 year olds	1.0	176	0.1	0.8-1.2	1.1
8 year olds	1.9	177	0.2	1.5-2.3	1.2
Routine and manual					
5 year olds	1.8	309	0.2	1.4-2.2	1.5
8 year olds	2.0	344	0.1	1.8-2.2	1.3

Table A6 Standard errors and 95% confidence intervals for proportion of children with obvious decay experience in permanent teeth by age and socio-economic status (NS-SEC) of household (United Kingdom 2003)

	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (D_{3cv})					
Managerial and professional					
12 year olds	22	324	3.8	15-29	1.7
15 year olds	22	253	3.2	16-28	1.2
Intermediate					
12 year olds	29	150	4.1	21-37	1.1
15 year olds	36	127	5.4	25-47	1.3
Routine and Manual					
12 year olds	27	264	3.3	21-33	1.2
15 year olds	33	203	4.3	25-41	1.3
Obvious decay experience (D_{3cv}MFT)					
Managerial and professional					
12 year olds	40	324	4.3	32-48	1.6
15 year olds	47	253	3.9	39-55	1.2
Intermediate					
12 year olds	42	150	3.7	34-49	1.0
15 year olds	66	127	6.0	54-78	1.4
Routine and Manual					
12 year olds	39	264	3.1	33-45	1.0
15 year olds	65	203	4.6	57-73	1.4

Table A7 Standard errors and 95% confidence intervals for mean number of permanent teeth with obvious decay experience by age and socio-economic status (NS-SEC) of household (United Kingdom 2003)

	Mean (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Decay into dentine (D_{3cv})					
Managerial and professional					
12 year olds	0.4	324	0.1	0.2-0.6	1.6
15 year olds	0.4	253	0.1	0.2-0.6	1.1
Intermediate					
12 year olds	0.5	150	0.1	0.3-0.7	1.2
15 year olds	1.0	127	0.1	0.8-1.2	1.3
Routine and Manual					
12 year olds	0.5	264	0.1	0.3-0.7	1.3
15 year olds	1.0	203	0.1	0.8-1.2	1.3
Obvious decay experience (D_{3cv}MFT)					
Managerial and professional					
12 year olds	1.0	324	0.1	0.8-1.2	1.4
15 year olds	1.4	253	0.2	1.0-1.8	1.2
Intermediate					
12 year olds	1.1	150	0.2	0.7-1.5	1.0
15 year olds	1.8	127	0.2	1.4-2.2	1.0
Routine and Manual					
12 year olds	1.1	264	0.1	0.9-1.3	1.0
15 year olds	2.5	203	0.3	1.9-3.1	1.3

Table A8 Standard errors and 95% confidence intervals for proportion of children with plaque, calculus and unhealthy gums by age and school deprivation status (United Kingdom 2003)

	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Plaque					
Non-deprived schools					
5 year olds	50	2032	3.8	43-57	3.5
8 year olds	78	1964	2.1	74-82	2.2
12 year olds	73	2030	2.6	68-78	2.6
15 year olds	64	1741	3.6	57-71	3.1
Deprived schools					
5 year olds	51	822	8.2	35-67	4.7
8 year olds	71	826	7.8	56-88	5.0
12 year olds	76	565	6.1	64-88	3.4
15 year olds	57	401	7.6	42-72	3.0
Calculus					
Non-deprived schools					
5 year olds	6	2032	0.8	4-8	1.6
8 year olds	25	1964	1.9	21-29	2.0
12 year olds	30	2030	2.6	25-35	2.6
15 year olds	40	1741	3.1	34-46	2.7
Deprived schools					
5 year olds	5	822	1.6	2-8	2.2
8 year olds	17	826	2.9	11-23	2.2
12 year olds	32	565	5.1	22-42	2.6
15 year olds	37	401	7.9	22-52	3.3
Unhealthy gums					
Non-deprived schools					
5 year olds	33	2032	3.9	25-41	3.8
8 year olds	66	1964	2.5	61-71	2.4
12 year olds	67	2030	3.2	61-73	3.1
15 year olds	53	1741	3.2	47-59	2.7
Deprived schools					
5 year olds	28	822	5.8	17-39	3.7
8 year olds	54	826	6.9	40-68	4.0
12 year olds	54	565	6.5	42-67	3.1
15 year olds	51	401	7.0	37-65	2.8

Table A9 Standard errors and 95% confidence intervals for proportion of children with plaque, calculus and unhealthy gums by age and socio-economic status (NS-SEC) of household (United Kingdom 2003)

Characteristic	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Plaque					
Managerial and professional					
5 year olds	43	372	5.0	33-53	1.8
8 year olds	78	319	3.0	72-84	1.3
12 year olds	72	324	3.0	66-78	1.1
15 year olds	64	253	4.0	56-72	1.4
Intermediate					
5 year olds	52	176	6.0	40-64	1.6
8 year olds	79	177	4.0	71-87	1.3
12 year olds	76	150	4.0	68-84	1.2
15 year olds	68	127	6.0	56-80	1.6
Routine and manual					
5 year olds	50	309	5.0	40-60	1.7
8 year olds	78	344	4.0	70-86	1.7
12 year olds	74	264	4.0	66-82	1.3
15 year olds	66	203	6.0	54-78	1.8
Calculus					
Managerial and professional					
5 year olds	5	372	2.0	1-9	1.5
8 year olds	26	319	4.0	18-34	1.5
12 year olds	30	324	3.0	24-36	1.3
15 year olds	39	253	4.0	31-47	1.4
Intermediate					
5 year olds	2	176	1.0	0-4	0.8
8 year olds	28	177	5.0	18-38	1.5
12 year olds	28	150	6.0	16-40	1.6
15 year olds	41	127	7.0	27-55	1.6
Routine and manual					
5 year olds	8	309	2.0	4-12	1.5
8 year olds	25	344	3.0	19-31	1.2
12 year olds	30	264	4.0	22-38	1.5
15 year olds	40	203	5.0	30-50	1.3
gingivae					
Managerial and professional					
5 year olds	29	372	5.0	19-39	2.2
8 year olds	68	319	4.0	60-76	1.4
12 year olds	62	324	3.0	56-68	1.1
15 year olds	50	253	4.0	42-58	1.4
Intermediate					
5 year olds	26	176	6.0	14-38	2.0
8 year olds	62	177	5.0	52-72	1.3
12 year olds	75	150	6.0	63-87	1.6
15 year olds	63	127	6.0	51-75	1.4
Routine and manual					
5 year olds	36	309	4.0	28-44	1.5
8 year olds	72	344	3.0	66-78	1.4
12 year olds	68	264	5.0	58-78	1.9
15 year olds	54	203	6.0	42-66	1.6

Table A10 Standard errors and 95% confidence intervals for proportion of children with tooth surface loss in primary teeth by school deprivation status (United Kingdom 2003)

Characteristic	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Buccal surfaces					
Non-deprived schools					
Any TSL					
5 year olds	19	2032	2.9	13-25	3.4
8 year olds	4	1964	1.0	2-6	1.5
TSL into dentine or pulp					
5 year olds	2	2032	1.0	0-4	1.7
8 year olds	1	1964	0.4	0-2	1.8
Deprived schools					
Any TSL					
5 year olds	22	822	3.8	15-29	2.7
8 year olds	3	826	1.0	1-5	1.2
TSL into dentine or pulp					
5 year olds	5	822	1.0	3-7	1.2
8 year olds	1	826	0.5	0-2	1.4
Lingual surfaces					
Non-deprived schools					
Any TSL					
5 year olds	52	2032	4.2	44-60	3.8
8 year olds	10	1964	1.0	8-12	1.6
TSL into dentine or pulp					
5 year olds	21	2032	2.3	16-26	2.6
8 year olds	4	1964	1.0	2-6	1.5
Deprived schools					
Any TSL					
5 year olds	58	822	6.6	45-71	3.8
8 year olds	9	826	1.4	6-12	1.4
TSL into dentine or pulp					
5 year olds	29	822	3.2	23-35	2.6
8 year olds	4	826	1.0	2-6	1.1

Table A11 Standard errors and 95% confidence intervals for proportion of children with tooth surface loss in permanent teeth by school deprivation status (United Kingdom 2003)

	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Buccal surfaces of incisors					
Non-deprived school					
Any TSL					
8 year olds	4	*1964*	*2.0*	0-8	3.6
12 year olds	12	*2030*	*3.2*	6-18	4.0
15 year olds	14	*1741*	*2.8*	8-20	3.8
TSL into dentine or pulp					
8 year olds	-	*1964*	-	-	1.1
12 year olds	-	*2030*	-	-	1.3
15 year olds	-	*1741*	-	-	2.3
Deprived schools					
Any TSL					
8 year olds	5	*826*	*1.9*	1-9	2.3
12 year olds	13	*565*	*7.1*	1-27	5.0
15 year olds	14	*401*	*7.8*	2-30	4.7
TSL into dentine or pulp					
8 year olds	1	*826*	*0.5*	0.2	1.1
12 year olds	-	*565*	-	-	1.3
15 year olds	-	*401*	-	-	1.0
Lingual surfaces of incisors					
Non-deprived schools					
Any TSL					
8 year olds	13	*1964*	*3.1*	7-19	3.6
12 year olds	28	*2030*	*4.9*	18-38	5.1
15 year olds	32	*1741*	*5.0*	22-42	4.3
TSL into dentine or pulp					
8 year olds	-	*1964*	-	-	1.5
12 year olds	2	*2030*	*1.0*	0-4	2.5
15 year olds	5	*1741*	*2.1*	1-9	3.4
Deprived schools					
Any TSL					
8 year olds	19	*826*	*4.0*	11-27	3.1
12 year olds	40	*565*	*9.8*	20-60	4.6
15 year olds	44	*401*	*7.9*	28-60	3.2
TSL into dentine or pulp					
8 year olds	2	*826*	*0.0*	2-2	0.9
12 year olds	4	*565*	*1.1*	2-6	1.7
15 year olds	2	*401*	*1.1*	0-4	1.6

Molars					
Non-deprived schools					
Any TSL					
8 year olds	10	*1964*	2.9	4-16	4.2
12 year olds	18	*2030*	4.9	8-28	5.6
15 year olds	22	*1741*	5.0	12-32	4.8
TSL Into dentine or pulp					
8 year olds	-	*1964*	-	-	1.3
12 year olds	2	*2030*	1.1	0-4	2.2
15 year olds	4	*1741*	1.2	2-6	2.4
Deprived schools					
Any TSL					
8 year olds	6	*826*	2.0	2-10	2.2
12 year olds	23	*565*	9.9	3-43	5.8
15 year olds	22	*401*	9.1	4-40	4.4
TSL Into dentine or pulp					
8 year olds	-	*826*	-	0-0	0.5
12 year olds	1	*565*	0.5	0-2	1.1
15 year olds	2	*401*	1.0	0-4	1.7

Table A12 Standard errors and 95% confidence intervals for proportion of children with orthodontic treatment need by school deprivation status (United Kingdom 2003)

	Percentage (p)	Unweighted sample size	Standard error of p	95% confidence intervals	Deft
Non-deprived school					
12 year olds	8	*2030*	*1.1*	6-10	1.9
15 year olds	15	*1741*	*1.5*	12-18	1.9
Deprived school					
12 year olds	8	*565*	*1.2*	6-10	1.1
15 year olds	10	*401*	*1.6*	7-13	1.2