

NHS Dental Epidemiology Programme Survey of 12-year-old children, 2008/09.
Supplementary Report

Reporting measures of plaque, self-perception of enamel opacities, self-reporting of symptoms and impact on quality of life.

1. Introduction

As part of the 2008/09 NHS Dental Epidemiology Programme (NHS DEP) survey of 12-year-olds measures were taken in addition to caries presence and orthodontic need and demand. This report describes the results of these additional measures and so gives a wider picture of oral health, including self reported symptoms and impacts.

Surveys were commissioned by Primary Care Trusts (PCTs) in virtually all Local Authorities, usually using Community Dental Service fieldwork teams. A National Protocol described the required process and standardisation was provided by the British Association of Community Dentistry by means of cascaded training and calibration. All teams drew random samples of 12 year old children attending mainstream schools. Each PCT team aimed to examine and interview a minimum of 250 volunteers, resulting in a total of 89,442 volunteers being involved in England.

Data were collated, checked and analysed by The Dental Observatory and North West Public Health Observatory. A series of reports and tables showing the results for caries prevalence and severity, orthodontic need and demand are available on the NWPHO website www.nwpho.net/dentalhealth

2. Plaque

Presence or absence

The presence or absence of plaque was measured by visual means alone and only involved the upper anterior teeth, canine to canine. This measurement was made before any other examination was undertaken. Examiners could record whether all six upper anterior teeth appeared clean, that is free of plaque, or whether they had a little plaque present or substantial amounts present.

Although there was training in this aspect of the examination, calibration of examiners was not undertaken.

In England, over half (51%) of the 12-year-olds examined had clean teeth, 38% had little plaque present and 11% had substantial plaque present (Table 1). Across the Strategic Health Authorities (SHAs), the proportion of children assessed as having clean teeth ranged from 63% of the sample in South East Coast to 35% in North East. Those with substantial amounts of plaque ranged from 7% in South East Coast to 18% in London.

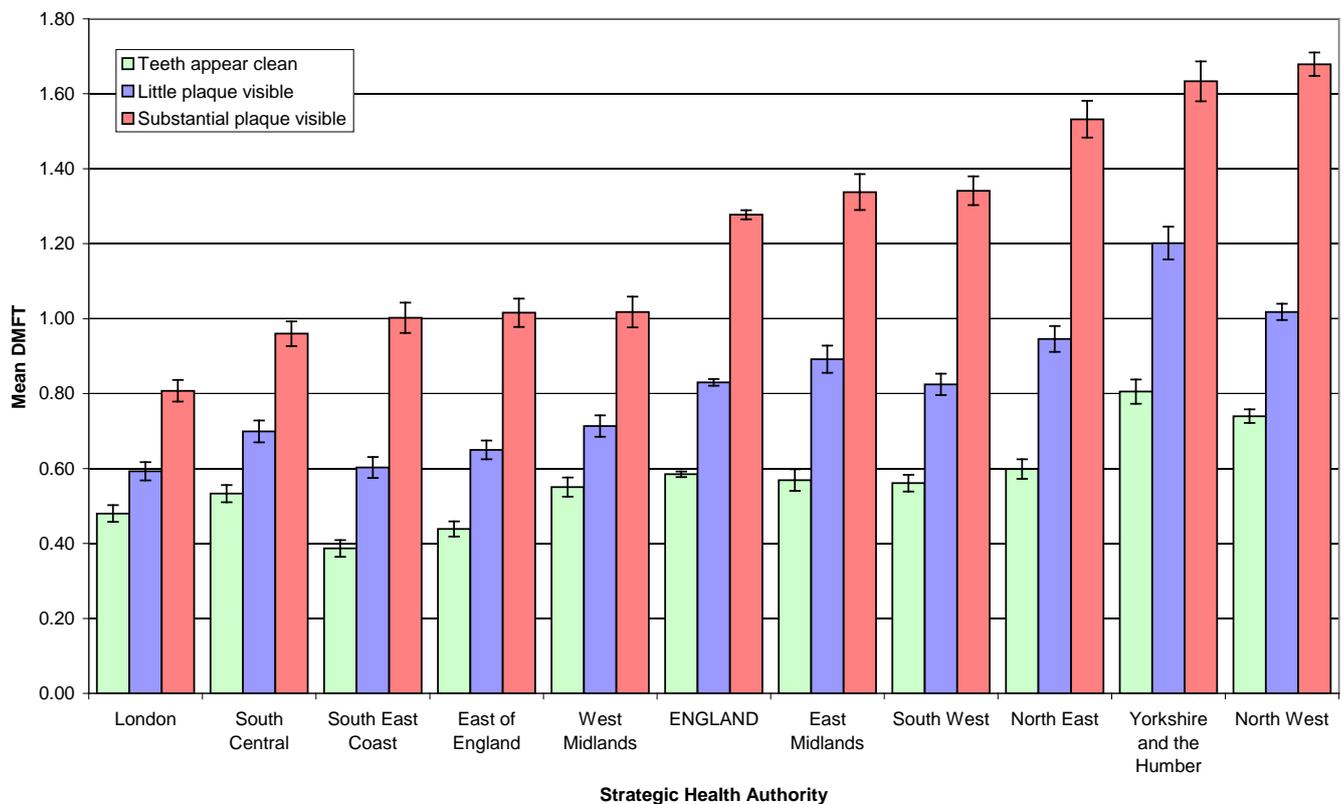
Volunteers with substantial levels of plaque present had the highest levels of decay severity (1.3 D₃MFT), while those with clean teeth the lowest (0.6 D₃MFT) (Figure 1). This relationship held true for all SHAs indicating a clear association between tooth cleanliness and caries.



Table 1: Plaque measurements among 12-year-old volunteers by Strategic Health Authority. England, 2008/09.

SHA	Teeth appear clean	Little plaque present	Substantial plaque present
	%	%	%
East Midlands	50.9	39.0	9.0
East of England	55.0	36.2	8.6
London	44.4	36.7	17.6
North East	34.6	50.7	14.1
North West	48.0	41.3	10.0
South Central	57.9	32.8	8.3
South East Coast	62.9	29.1	6.5
South West	52.1	38.4	8.8
West Midlands	56.2	33.8	9.8
Yorkshire and the Humber	54.1	32.5	11.9
ENGLAND	51.0	37.7	10.5

Figure 1: Mean DMFT of 12-year-old volunteers with differing plaque levels by Strategic Health Authority. England, 2008/09.*



* Throughout the report, 95 per cent confidence intervals have been included wherever possible and are shown as 'whiskers' on charts.

3. Reported tooth brushing frequency

Volunteers were asked how often they brushed their teeth. Just 0.2% reported that they never brushed, with little variation between the SHAs (Table 2). While 77% reported brushing twice daily or more frequently this leaves a quarter brushing less frequently than recommended to gain the maximum benefit in caries control from fluoride toothpaste.

Those who brushed 'once a day or less' or 'never' had the highest levels of caries (1.1 and 1.0 D₃MFT) and those who reportedly brushed 'twice daily' or 'more than twice daily' had the lowest levels of caries (0.7 and 0.8 D₃MFT) (Figure 2).

Table 2: Frequency of tooth brushing among 12-year-old volunteers by Strategic Health Authority. England, 2008/09.

SHA	Proportion reporting brushing frequency of			
	Never	Once a day or less	Twice daily	More than twice daily
East Midlands	0.4	25.5	70.8	3.1
East of England	0.2	20.1	76.7	2.9
London	0.2	21.2	72.7	5.6
North East	0.3	25.4	70.6	3.5
North West	0.1	22.2	73.1	4.2
South Central	0.2	23.9	71.3	4.0
South East Coast	0.2	20.6	76.1	2.9
South West	0.3	22.3	74.0	3.1
West Midlands	0.1	27.1	69.4	3.0
Yorkshire and the Humber	0.2	22.3	73.1	3.8
ENGLAND	0.2	22.8	72.9	3.7

Figure 2: Mean caries severity among 12 year olds by reported brushing frequency by Strategic Health Authority. England, 2008/09.

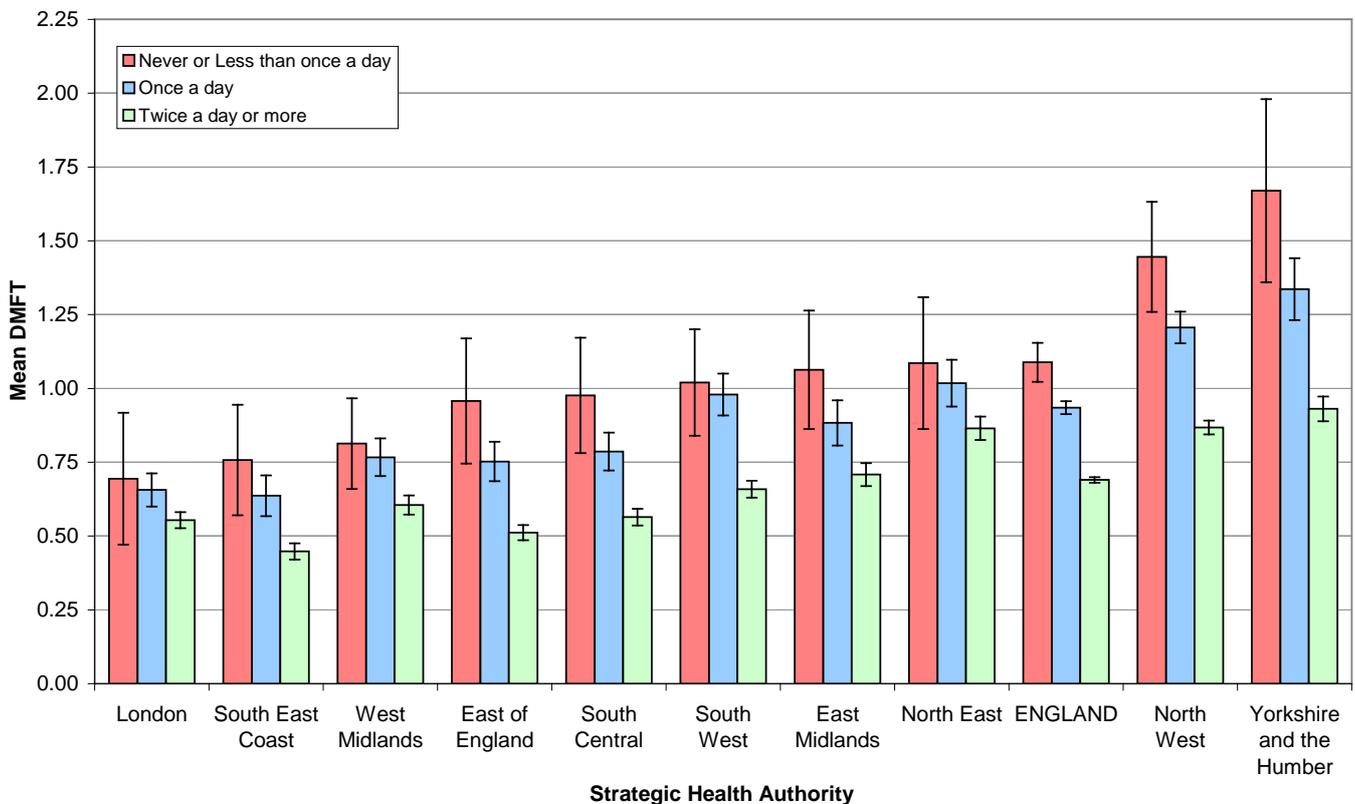


Table 3 shows the measured amounts of plaque among each of the groups by reported brushing frequency. Those who reported that they brushed ‘never or less than once daily’ were the most likely to have substantial amounts of plaque present (26%) and least likely to have teeth that appeared clean (27%).

Substantial levels of plaque were least often found among those who reported brushing ‘twice daily or more’ (9%). This group had higher levels of clean teeth (55%) than those who reported brushing less frequently. These findings show some relationship between brushing frequency and cleanliness.

Figures 3 and 4 show that overall mean caries levels are lowest among those who report brushing twice a day or more and those with no plaque present. Caries levels are highest among those with substantial levels of plaque and those reporting brushing once daily or less often.

Table 3: Visual plaque measurement by reported brushing frequency among 12-year-olds. England, 2008/09.

Brushing frequency	Teeth appear clean		Little plaque		Substantial plaque		Totals	
	N	%	N	%	N	%	N	%
Never or less than once daily	666	27	1,130	46	641	26	2,437	2.7
Once daily	7,344	41	8,012	44	2,703	15	18,059	20.2
Twice daily or more	37,516	55	24,471	36	5,992	9	67,979	77
Totals	45,526	51	33,613	38	9,336	10	88,475	

Figure 3: Mean caries severity among groups of 12-year-olds reporting different brushing frequencies. England, 2008/09.

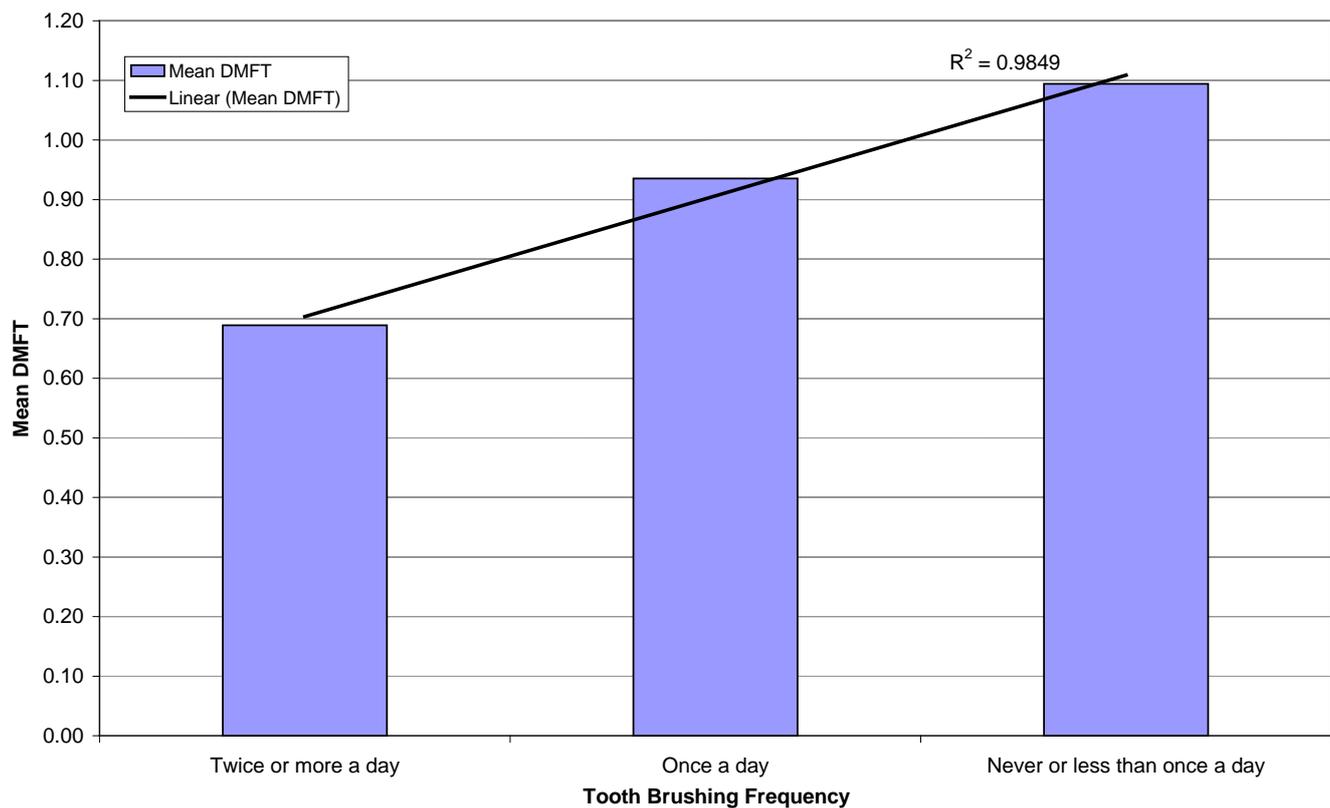
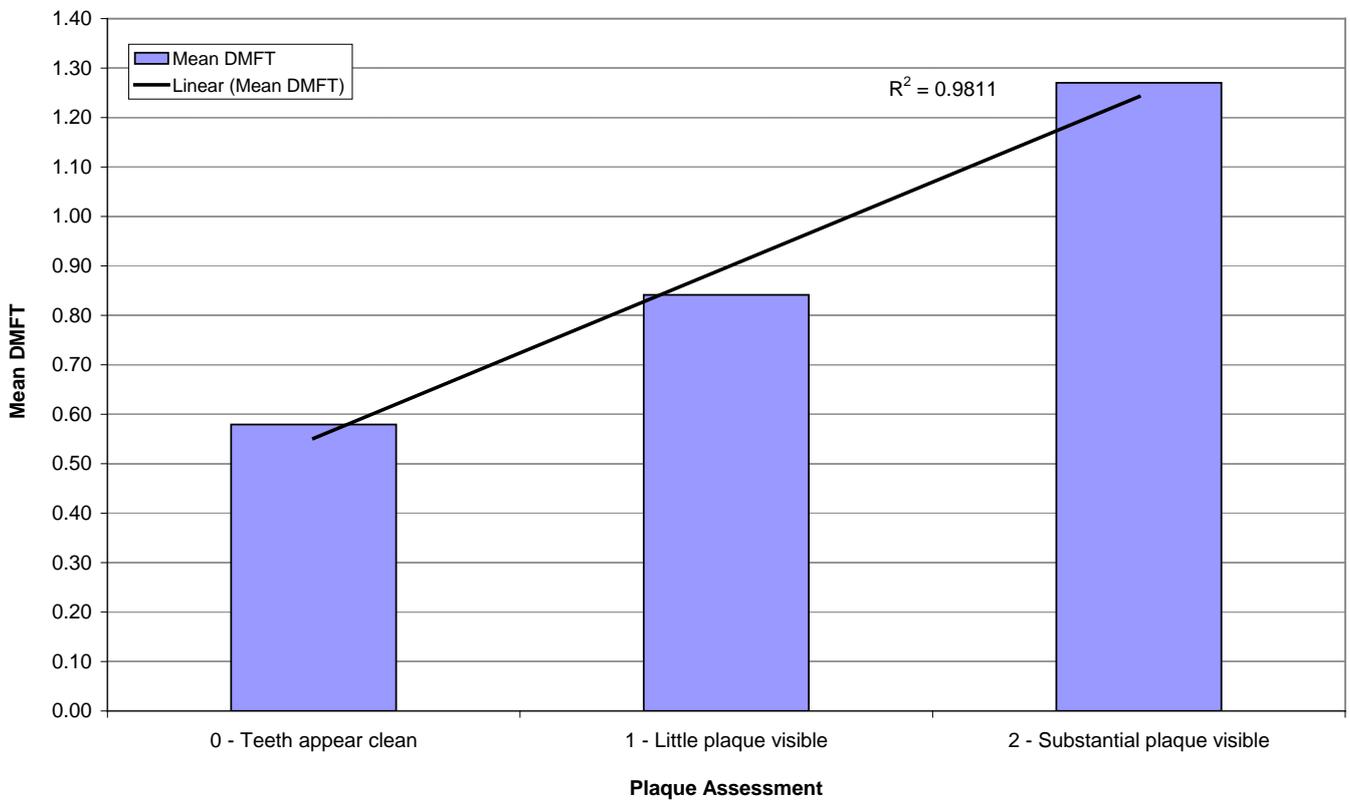


Figure 4: Mean caries severity and plaque levels among groups of 12-year-olds with varying plaque levels. England, 2008/09.



4. Self-perception of enamel opacities

Volunteers were asked if they had any white marks (known as enamel opacities) on their front teeth which would not brush off. Response categories were “Yes”, “No” or “Don’t know”.

In England, 16% of volunteers reported that they had white marks, 60% said they did not and 24% did not know (0.1% did not answer this question). In Table 4, those who said that they did not have white marks are grouped together with those who did not know if they had them (equating to 84% of the sample).

Of those who reported having white marks, 26% reported that the marks bothered them (4% of the whole sample). Self reported white marks were of no concern to 69% of this sub-sample (Figure 5).

All volunteers were then shown a set of three photographs demonstrating different levels of white marks (enamel opacities) as follows:

1. Set N: no opacities = TF=0
2. Set S: mild opacities = TF=1 - 2
3. Set A: aesthetically significant opacities = TF=2 - 3

Each volunteer was asked to pick a set of photographs which most closely matched with the appearance of their teeth with respect to white marks.

The images that showed no opacities were selected by 45% of the whole sample¹ and 31% of those reporting white marks. These images were selected by 26% of those who said that their white marks bothered them (Figure 5).

The images that showed mild levels of enamel opacities were selected as the best match to their own teeth by 19% of the whole sample², 29% of those reporting white marks and 30% of those who reported being bothered by their white marks.

The third set of images depicted teeth with enamel opacities at or beyond an aesthetically significant level. They were selected by 9% of all volunteers³, 18% of those reporting having white marks and 23% of those who were bothered by their white marks.

The reporting between self perception of enamel opacities and selection of images showing increasing severity of opacities suggests some consistency in the ability of volunteers to be aware of the appearance of their own teeth in this regard. However 31% of those reporting white marks and 26% of those being bothered by them selected images that showed teeth with no opacities. Conversely 7% of volunteers who said that they did not have any white marks matched their own teeth with images that showed aesthetically significant opacities.

There was very little variation between SHAs with regard to self reported white marks and to the proportions who said that their white marks bothered them. However there were variations between Primary Care Trusts (PCTs) with regard to the responses. The highest proportion of volunteers who self reported white marks was 28% in Birmingham East and North PCT and the lowest was 7% for Blackpool PCT. Nearly 50% of volunteers in Sheffield said that they didn’t know if they had white marks, compared to 10% of those in Brent PCT. Nearly 75% of volunteers in East Lancashire PCT did not know which set of images to select, while only 2% of volunteers did not know which to select in East Sussex Downs & Weald PCT. In Leeds PCT 44% chose not to answer the question about making a selection from the images shown to them, compared with 1.3% in the country as a whole. With these anomalies in mind it is

¹ Weighted mean of 31%, 50%, 39%

² Weighted mean of 29%, 16%, 19%

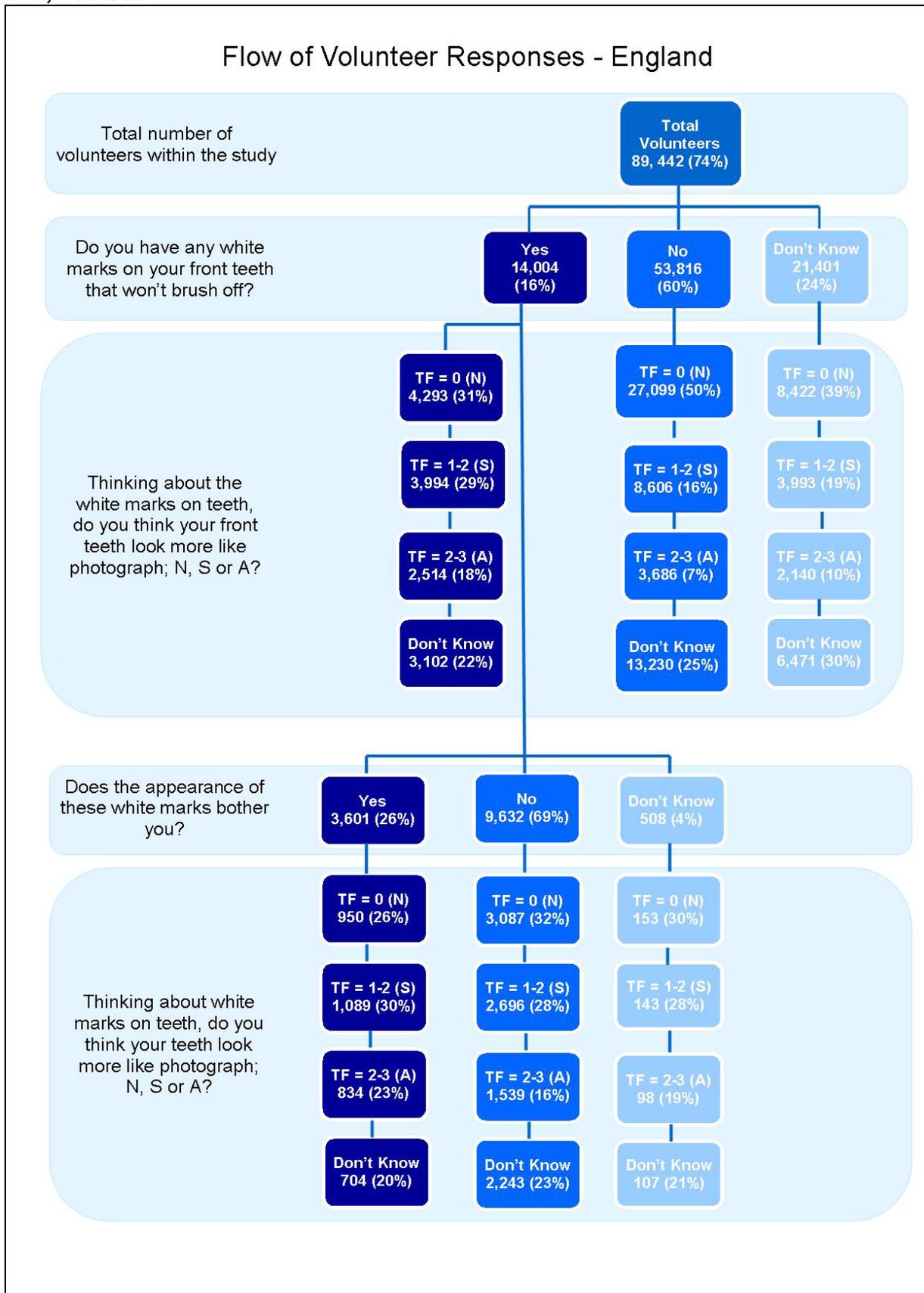
³ Weighted mean of 18%, 7%, 10%

advised that the data at PCT level are used with caution. The full data tables indicate where widely variant results have been reported.

Table 4: Self reporting of white marks among 12-year-old volunteers by SHA. England, 2008/09.

SHA	YES I have white marks						NO I don't have white marks and I DON'T KNOW if I have white marks	
	Total		Yes it bothers me		No it doesn't bother me		N	%
	N	%	N	%	N	%		
East Midlands	942	15.8	230	24.4	652	69.2	5,004	84.1
East of England	1,350	15.2	333	24.7	946	70.1	7,526	84.7
London	1,556	17.4	454	29.2	960	61.7	7,395	82.6
North East	1,336	18.4	332	24.9	974	72.9	5,935	81.5
North West	2,970	14.9	719	24.2	2,129	71.7	16,841	84.7
South Central	1,265	14.6	345	27.3	822	65.0	7,342	84.6
South East Coast	977	15.0	252	25.8	666	68.2	5,501	84.7
South West	1,395	14.6	340	24.4	963	69.0	8,177	85.3
West Midlands	1,259	16.8	350	27.8	851	67.6	6,240	83.1
Yorkshire and the Humber	954	15.3	246	25.8	669	70.1	5,256	84.3
England	14,004	15.7	3,601	25.7	9,632	68.8	75,217	84.1

Figure 5: Volunteer responses to questions about self-perception of enamel opacities and selection of sets of images that they perceived as matching their own in this regard. England, 2008/09.



5. Self-reporting of symptoms and impact

All volunteers were asked “In the past three months have you had toothache or sensitive teeth, bleeding or swollen gums or been aware of decay in your teeth or a broken adult tooth or ulcers or a loose baby tooth, or a problem because of tooth colour, shape, size or position”. Response options were ‘Yes’, ‘No’, or ‘Don’t know’.

Table 5 and Figure 6 show the results at SHA and country wide levels. The most common symptoms were ulcers or loose baby teeth, which 41% of volunteers reported. This varied between SHAs with the lowest prevalence being 29% in London and 49% in East of England.

Only 11% of volunteers reported awareness of problems because of decay or a broken adult tooth, but 29% reported having had toothache or sensitive teeth.

If the volunteers reported problems with toothache or sensitive teeth, bleeding or swollen gums or decay in their teeth or a broken adult tooth they were then asked “Have any of these problems with your teeth and mouth led to difficulties with: eating, speaking, cleaning teeth, relaxing (including sleeping), feelings (for example being more impatient, irritable, or easily upset), smiling or laughing, doing school work, or mixing with friends and other people”. They could answer ‘None’, ‘a little’, ‘moderate’ or ‘a lot’.

Overall, 43% of volunteers reported one or more of these symptoms (Table 5, Figure 6) and the commonest impact was reported to be on eating, with 34% reporting ‘a little’, a ‘moderate’ or ‘a lot’ of impact (Table 6). Only 4% reported any impact of these symptoms on their ability to do their school work.

Figure 7 illustrates the level of impact on quality of life reported by the volunteers who had symptoms of pain or sensitivity, bleeding or swollen gums or awareness of decayed or broken teeth. Moderate or more severe impacts were reported by small proportions of volunteers.

Table 5: Percentage of 12-year-old children who said "Yes" to symptoms in the past three months. England, 2008/09.

SHA	Toothache / sensitive teeth (a)	Bleeding / swollen gums (b)	Aware of decay / broken adult tooth (c)	Reported symptoms a, b or c	Ulcers / loose baby tooth (d)	Tooth colour / shape / size / position (e)
East Midlands	30.0	19.3	11.2	44.1	40.3	22.3
East of England	31.0	20.5	10.6	45.7	48.9	28.2
London	26.7	23.8	10.7	44.4	28.5	23.9
North East	28.1	18.8	11.3	43.2	38.5	21.2
North West	28.8	18.7	11.8	42.9	41.9	27.1
South Central	28.5	18.0	10.2	42.3	41.7	23.0
South East Coast	26.7	15.8	9.1	38.3	42.5	26.5
South West	29.9	18.1	11.3	44.1	44.1	25.4
West Midlands	28.2	19.3	11.3	42.8	44.9	22.4
Yorkshire and the Humber	30.1	19.8	12.0	44.7	37.8	22.5
England	28.8	19.2	11.1	43.3	41.1	24.7

Figure 6: Percentage of 12 year old children who said “Yes” to symptoms in the past three months. England, 2008/09.

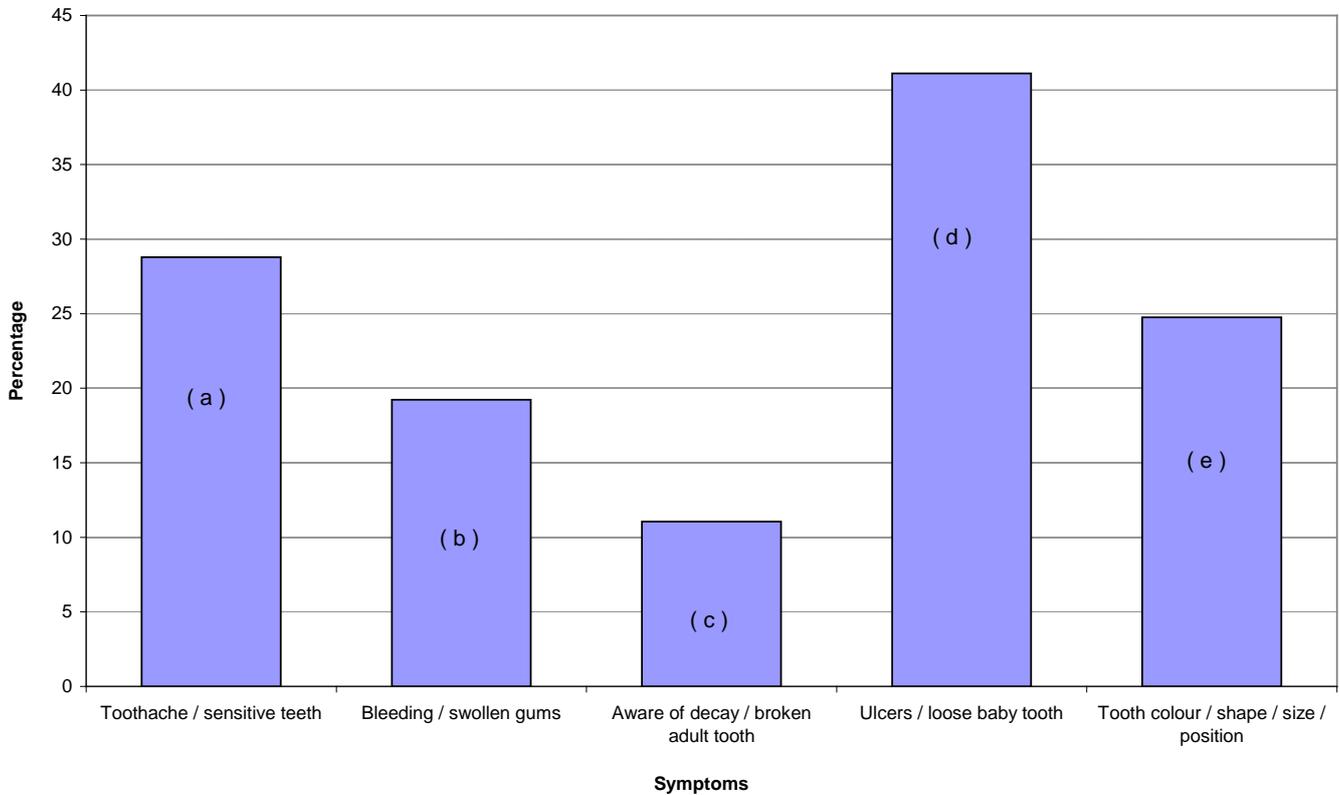


Table 6: Percentage of 12-year-old children who reported having a problem (a, b or c) with their teeth and reported an impact on their quality of life. England, 2008/09.

SHA N= number reporting problem	Eating	Speaking	Cleaning teeth	Relaxing including sleeping	Feelings	Smiling / laughing	School work	Mixing with friends / other people
East Midlands N=2,624	31.7	4.5	23.8	7.2	12.8	12.3	3.4	4.2
East of England N=4,062	37.0	5.0	28.3	8.2	14.8	15.0	3.5	4.5
London N=3,977	33.7	6.0	32.6	8.0	13.1	11.8	4.4	5.0
North East N=3,147	31.8	3.2	25.2	6.5	11.9	8.8	2.1	2.4
North West N=8,529	36.0	4.0	30.8	8.4	13.1	9.8	3.8	3.1
South Central N=3,669	33.6	5.8	27.0	7.6	14.2	12.8	3.6	5.3
South East Coast N=2,490	34.5	4.7	27.0	7.5	12.9	9.4	3.8	3.7
South West N=4,227	33.1	5.2	26.7	8.9	14.6	14.4	4.1	4.8
West Midlands N=3,212	32.7	3.8	27.3	7.5	13.0	10.4	2.5	2.6
Yorkshire and the Humber N=2,786	34.5	5.7	26.5	7.8	13.2	13.1	3.3	4.9
England N=38,723	34.2	4.7	28.1	7.9	13.4	11.7	3.5	4.0

Figure 7: Percentage of 12-year-old children who reported a problem with their teeth (a, b, or c) and reported an impact on their quality of life. England 2008/09.

