

Children's Dental Health in the United Kingdom 2003

Obvious decay experience in children's teeth

Preliminary findings

The 2003 Children's Dental Health Survey, commissioned by the four UK 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.

This report presents some preliminary findings from the 2003 Children's Dental Health Survey on experience of dental decay. The full results are due to be published in October and December 2004 in a series of topic based reports.

Key findings include:

- There were no statistically significant changes between the 1993 and 2003 surveys in the proportion of five and eight-year-olds with obvious decay experience, or in the proportion having teeth with cavities, in the primary ("milk") teeth. (Table 1)
- The proportion of five and eight-year-olds with filled primary teeth has declined since 1983. In both five and eight-year-olds filled primary teeth represented a smaller proportion of the total obvious decay experience than in the previous surveys. (Table 1)
- There has been a decrease in the average number of filled primary teeth in both five and eight-year-olds. The average number of filled primary teeth in five-year-olds decreased from 0.5 teeth in 1983, to 0.3 teeth in 1993 and 0.2 teeth in 2003 and in eight-year-olds decreased from 1.2 teeth in 1983, to 0.7 teeth in 1993 and 0.5 teeth in 2003. (Table 2)
- In 2003, 62% of 12-year-olds and 50% of 15-year-olds were free from any obvious decay experience. Among both 12 and 15-year-olds 87% were free from cavities into dentine.
- The proportion of eight, 12 and 15-year-olds with permanent teeth with cavities into dentine and permanent teeth with obvious decay experience has decreased. The percentage point fall was particularly pronounced in the proportion of 15-year-olds with cavities into dentine; 42 per cent in 1983, 30 per cent in 1993 and 13 per cent in 2003. (Table 4)
- There was a decrease in the proportion of 12 and 15-year-olds with filled permanent teeth. The proportion of the total obvious decay experience represented by filled permanent teeth among eight, 12 and 15-year-olds has increased since 1993. This indicates an increase in restorative care. (Table 4)

- The average number of permanent teeth with cavities into dentine or obvious decay experience among eight, 12 and 15-year-olds decreased between the 1993 and 2003 surveys. In 12 and 15-year-olds the average number of filled permanent teeth also decreased. (Table 5)
- The published Oral Health Targets set for 2003 relating to the condition of children's permanent teeth in England and Northern Ireland were exceeded. However, the targets for primary teeth were not met. (Table 7)

Importance of criteria used to measure tooth condition over time

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 1983 and 1993, the 2003 data were re-classified according to the pre-2003 criteria. The findings presented in this release assess the condition of children's teeth according to the pre-2003 criteria shown in Box 1 (see note 4 for further information on the change in criteria and information that will be available in the topic report).

Box 1 Criteria used to measure tooth condition

Teeth with cavities into dentine

All teeth with cavities into dentine and teeth that had restorations with cavitated dentine caries. **Excludes teeth with visual dentine caries or enamel caries present.** Permanent teeth with cavities into dentine are assumed to be those currently in need of operative treatment. (In primary teeth the decision as to whether to fill, review or extract such teeth would be taken in the knowledge that they will exfoliate naturally at some point in the future.) The term teeth with cavities into dentine relates to decayed teeth with dentinal cavities in the DMFT (decayed, missing and filled teeth) dental decay index.

Filled decay, otherwise sound

Teeth with amalgam, or other, fillings that had no cavitated dentine caries present.

Missing due to decay

Teeth that had been extracted due to caries.

Obvious decay experience

All teeth with cavitated dentine caries, restorations with cavitated dentine caries, teeth with filled decay (otherwise sound) and teeth extracted due to caries. **Excludes teeth with visual dentine caries or enamel caries present.** The term obvious decay experience relates to teeth with dentinal cavities, missing teeth and filled teeth in the DMFT dental decay index.

The condition of the primary (“milk”) teeth

In 2003, less than half of five-year-olds (43 per cent) had obvious decay experience in the primary teeth. Forty per cent of five-year-olds had at least one primary tooth with a cavity into dentine and 12 per cent had at least one filled primary tooth. In eight-year-olds, 57 per cent had obvious decay experience in the primary teeth. Half of eight-year-olds (50 per cent) had at least one primary tooth with a cavity into dentine and just over a quarter (26 per cent) had at least one filled primary tooth. (Table 1).

Table 1. Proportion of children with obvious decay experience in primary teeth by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year		
	1983	1993	2003
	<i>Percentage of children:</i>		
Teeth with cavities into dentine			
5 year olds	41	40	40
8 year olds	49	50	50
Filled decay (otherwise sound)			
5 year olds	23	15	12
8 year olds	47	33	26
Obvious decay experience			
5 year olds	50	45	43
8 year olds	70	61	57
Filled teeth as a proportion of total obvious decay experience			
5 year olds	28	17	15
8 year olds	50	35	28

Trends in the condition of primary teeth

There were no statistically significant changes between the 1993 and 2003 surveys in the proportion of five and eight-year-olds with obvious decay experience or teeth with cavities into dentine in the primary teeth. (Table 1). Nor were there any statistically significant differences between the surveys in the average number of primary teeth with cavities into dentine or obvious decay experience. (Table 2).

There were decreases in the proportion of children with filled primary teeth and in the average number of filled primary teeth. The proportion of five-year-olds with filled primary teeth decreased from 23 per cent in 1983, to 15 per cent in 1993 and 12 per cent in 2003. Among eight-year-olds the proportion with filled primary teeth fell from 47 per cent in 1983, to 33 per cent in 1993 and to 26 per cent in 2003. In both age groups filled teeth represented a smaller proportion of the total obvious decay experience in primary teeth than in previous surveys. This indicates a decline in restorative care. (Table 1)

The average number of filled primary teeth in five-year-olds decreased from 0.5 teeth in 1983, to 0.3 teeth in 1993 and 0.2 teeth in 2003 and in eight-year-olds decreased from 1.2 teeth in 1983 to 0.7 teeth in 1993 and 0.5 teeth in 2003. (Table 2).

Table 2. Mean number of primary teeth with obvious decay experience by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year		
	1983	1993	2003
<i>Mean number of teeth:</i>			
Teeth with cavities into dentine			
5 year olds	1.3	1.4	1.4
8 year olds	1.2	1.3	1.3
Filled decay (otherwise sound)			
5 year olds	0.5	0.3	0.2
8 year olds	1.2	0.7	0.5
Obvious decay experience			
5 year olds	1.8	1.7	1.6
8 year olds	2.3	2.0	1.8

Estimated averages of the number of obviously decayed and filled primary teeth for the whole sample could mask important information regarding the nature of decay among those children with decay experience. Table 3 displays trends between 1993 and 2003 in the mean number of primary teeth with obvious decay experience among children who had obvious decay. The number of filled primary teeth declined in 2003 among eight-year-old children with obvious decay. There were no further differences. (Table 3)

Table 3. Mean number of primary teeth with obvious decay experience in children with obvious decay experience by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year	
	1993	2003
<i>Mean number of teeth:</i>		
Teeth with cavities into dentine		
5 year olds	3.1	3.2
8 year olds	2.1	2.3
Filled decay (otherwise sound)		
5 year olds	0.6	0.6
8 year olds	1.1	0.9
Obvious decay experience		
5 year olds	3.8	3.7
8 year olds	3.2	3.2

The condition of the permanent teeth

In 2003, 62% of 12-year-olds and 50% of 15-year-olds were free from any obvious decay experience. Among both 12 and 15-year-olds 87% were free from cavities into dentine. Thirteen per cent of eight-year-olds, 38 per cent of 12-year-olds and 50 per cent of 15-year-olds had permanent teeth with obvious decay experience. In eight-year-olds, seven per cent had permanent teeth with cavities into dentine and seven per cent had filled permanent teeth. In 12 and 15-year-olds, 13 per cent had permanent teeth with cavities into dentine while 29 per cent of 12-year-olds and 43 per cent of 15-year-olds had filled permanent teeth. Less than six per cent of children had permanent teeth missing due to decay. (Table 4)

Table 4. Proportion of children with obvious decay experience in permanent teeth by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year		
	1983	1993	2003
<i>Percentage of children:</i>			
Teeth with cavities into dentine			
8 year olds	19	12	7
12 year olds	32	24	13
15 year olds	42	30	13
Filled decay (otherwise sound)			
8 year olds	25	8	7
12 year olds	69	39	29
15 year olds	85	52	43
Missing due to decay			
8 year olds	2	1	1
12 year olds	14	7	3
15 year olds	24	7	6
Obvious decay experience			
8 year olds	38	19	13
12 year olds	81	52	38
15 year olds	93	63	50
Filled teeth as a proportion of total obvious decay experience			
8 year olds	58	37	52
12 year olds	70	58	70
15 year olds	74	68	77

Trends in the condition of the permanent teeth

Improvements in the condition of the permanent teeth were found, although the improvements were smaller than those seen between the 1983 and 1993 survey. (Table 4, Figures 1-3)

The proportion of children with obvious decay experience in the permanent teeth and the proportion with at least one permanent tooth with a cavity into dentine decreased in all age groups since the previous surveys. The decrease was particularly pronounced in the proportion of 15-year-olds with cavities into dentine in the permanent teeth; 42 per cent in 1983, 30 per cent in 1993 and 13 per cent in 2003. (Table 4, Figure 2)

Among 12 and 15-year-olds a decrease was observed in the proportion with filled permanent teeth. Since the last survey the proportion with filled permanent teeth fell by 10 percentage points in 12-year-olds, from 39 per cent in 1993 to 29 per cent in 2003 and by nine percentage points in 15-year-olds, from just over half (52 per cent) in 1993 to 43 per cent in 2003. (Table 4, Figure 3)

There was a decrease in the proportion of 12-year-olds with permanent teeth missing due to decay, from seven per cent in 1993 to three per cent in 2003. (Table 4)

As well as an overall improvement in levels of decay since the last survey, filled permanent teeth among eight, 12 and 15-year-olds represented a higher proportion of the total obvious decay experience for permanent teeth than in 1993. This indicates an increase in restorative care. (Table 4)

The average number of permanent teeth with obvious decay experience and the average number of permanent teeth with cavities into dentine decreased since the 1983 survey in all age groups. Between the 1993 and 2003 survey the average number of permanent teeth with cavities into dentine halved in eight-year-olds (to 0.1) and 12-year-olds (to 0.2) and more than halved in 15-year-olds (to 0.2). The average number of permanent teeth with obvious decay experience fell from 0.4 teeth in 1993 to 0.2 teeth in 2003 in eight-year-olds, from 1.4 teeth in 1993 to 0.8 teeth in 2003 in 12-year-olds and from 2.5 to 1.6 teeth in 15-year-olds. (Table 5)

Table 5. Mean number of permanent teeth with obvious decay experience in by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year		
	1983	1993	2003
<i>Percentage of children:</i>			
Teeth with cavities into dentine			
8 year olds	0.3	0.2	0.1
12 year olds	0.6	0.4	0.2
15 year olds	1.0	0.7	0.2
Filled decay (otherwise sound)			
8 year olds	0.5	0.1	0.1
12 year olds	2.1	0.8	0.6
15 year olds	4.4	1.7	1.2
Missing due to decay			
8 year olds	*	*	*
12 year olds	0.3	0.1	*
15 year olds	0.6	0.1	0.1
Obvious decay experience			
8 year olds	0.8	0.4	0.2
12 year olds	3.1	1.4	0.8
15 year olds	5.9	2.5	1.6

* indicates a mean of less than 0.05

The average number of filled permanent teeth has decreased since 1993 in 12 and 15-year-olds: from 0.8 teeth in 1993 to 0.6 teeth in 2003 in 12-year-olds and from 1.7 teeth in 1993 to 1.2 teeth in 2003 in 15-year-olds. (Table 5)

Estimated averages of the number of decayed, missing and filled permanent teeth for the whole sample could mask important information regarding the nature of decay among those children with decay experience. Table 6 shows trends between 1993 and 2003 in the mean number of teeth with obvious decay experience among children who had obvious decay. For these children the average number of permanent teeth with obvious decay experience and with cavities into dentine decreased in all age groups. The reduction was most pronounced for 15-year-olds: for example, the mean number of permanent teeth with cavities into dentine in 15-year-olds halved, from 1.0 teeth in 1993 to 0.5 teeth in 2003. There was also a reduction in the number of missing teeth among 12-year-olds. (Table 6)

Table 6. Mean number of permanent teeth with obvious decay experience in children with obvious decay experience by age (United Kingdom, 1983, 1993, 2003)

Tooth condition	Year	
	1993	2003
<i>Mean number of teeth:</i>		
Teeth with cavities into dentine		
8 year olds	1.0	0.7
12 year olds	0.8	0.5
15 year olds	1.0	0.5
Filled decay (otherwise sound)		
8 year olds	0.7	0.8
12 year olds	1.6	1.5
15 year olds	2.7	2.4
Missing due to decay		
8 year olds	0.2	0.1
12 year olds	0.3	0.1
15 year olds	0.2	0.2
Obvious decay experience		
8 year olds	1.9	1.5
12 year olds	2.7	2.1
15 year olds	3.9	3.1

This finding indicates that the decrease in the average number of permanent teeth affected by decay for the overall sample (as shown in Table 5) reflects a genuine reduction in the number of teeth being affected by the cavity grade of decay.

Oral health targets

The Department of Health and the Department for Health and Social Services have published oral health targets for 2003 for England and Northern Ireland respectively. Oral health targets for 2003 were not set in Scotland and Wales.

The targets for the permanent dentition were exceeded. In England the target for 12-year-olds was that they should have no more than an average of 1.0 teeth with decay experience. The 2003 survey found that 12-year-olds in England had an average of 0.7 teeth with obvious decay experience. In Northern Ireland the target was for 20 per cent of 15-year-olds to have no decay experience and for the average number of teeth with decay experience in 15-year-olds to be no more than 4.0. The 2003 survey found that 26 per cent of 15-year-olds in Northern Ireland had no teeth with any obvious decay experience and the average number of teeth with obvious decay experience in 15-year-olds was 3.8. (Table 7)

Table 7 Oral Health Targets

	Children's Dental Health Survey 2003 estimate		
	England	Northern Ireland	United Kingdom
English targets for 2003			
70% of 5 year olds should have no decay experience	59%		57%
5 year olds should have no more than an average of 1.0 teeth with decay experience	1.5		1.6
12 year olds should have no more than an average of 1.0 teeth with decay experience	0.7		0.8
Northern Ireland Targets for 2003			
45% of 5 year olds should have no decay experience		39%	57%
5 year olds should have no more than an average of 2.2 teeth with decay experience		2.6	1.6
20% of 15 year olds should have no decay experience		26%	50%
15 year olds should have no more than an average of 4.0 teeth with decay experience		3.8	1.6

Table 7 shows that the targets for decay in five-year-olds in England and Northern Ireland were not met. The target for England was that 70 per cent of five-year-olds should have no decay experience and that five-year-olds should have no more than an average of 1.0 teeth with decay experience. The 2003 survey found that 59 per cent of five-year-olds in England had no primary teeth with obvious decay experience and the average number of primary teeth with obvious decay in five-year-olds was 1.5. In Northern Ireland, the target was for 45 per cent of five year-olds to have no decay experience and for five-year-olds to have no more than an average of 2.2 teeth with decay experience. The 2003 survey found that 39 per cent of five-year-olds had no primary teeth with obvious decay experience and the average number of primary teeth with obvious decay experience in five-year-olds was 2.6.

Although targets for the proportion of five-year-olds without decay experience were not met, an improvement is evident since 1983 in the percentage of children free from obvious decay in England. In Northern Ireland the proportion of five-year-olds without obvious decay increased between the 1983 and 1993 surveys and then remained at a similar level in 2003. (Figure 4)

Figure 1 Proportion of children with obvious decay experience in permanent teeth by age (United Kingdom, 1983, 1993, 2003)

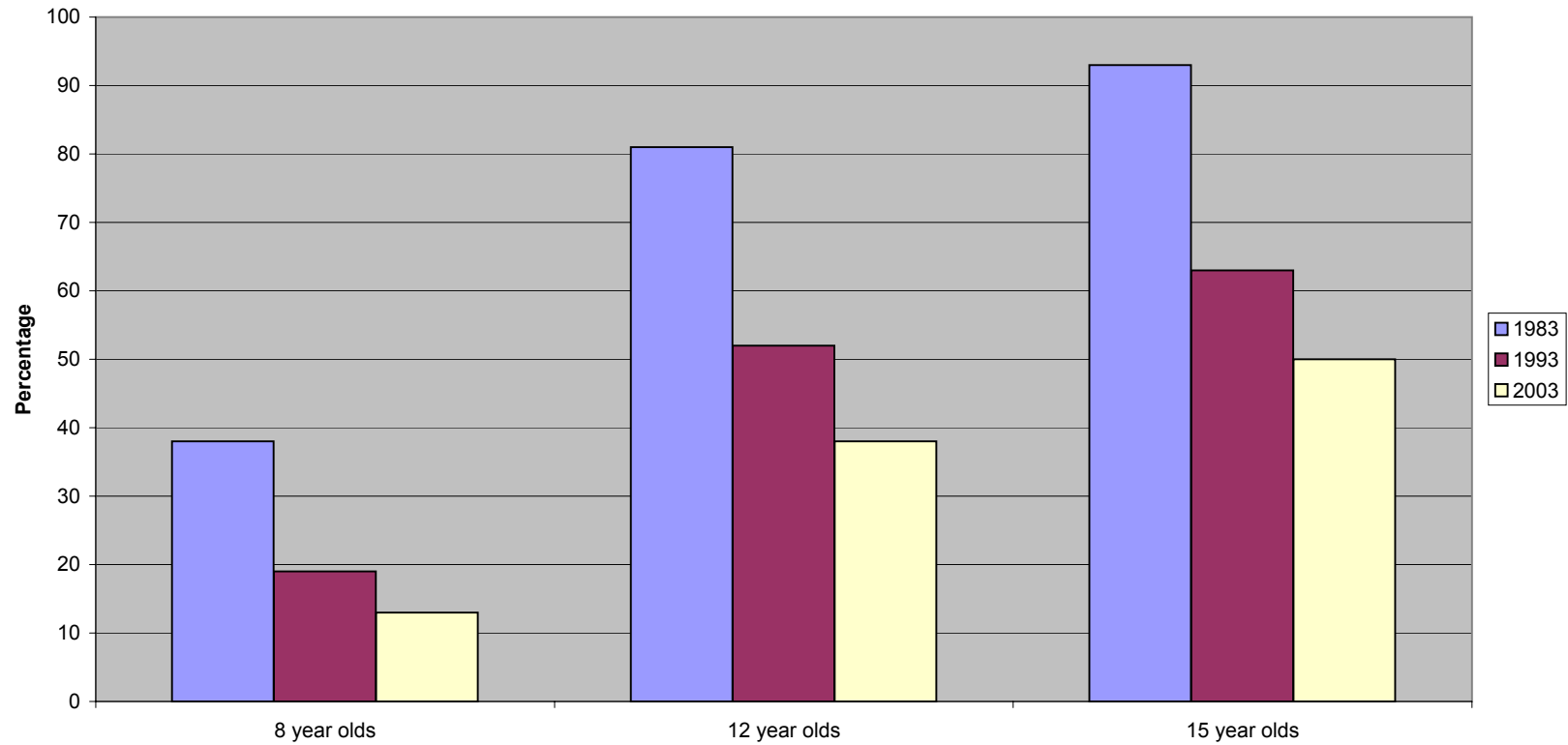


Figure 2 Proportion of children with cavities into dentine in the permanent teeth by age (United Kingdom, 1983, 1993, 2003)

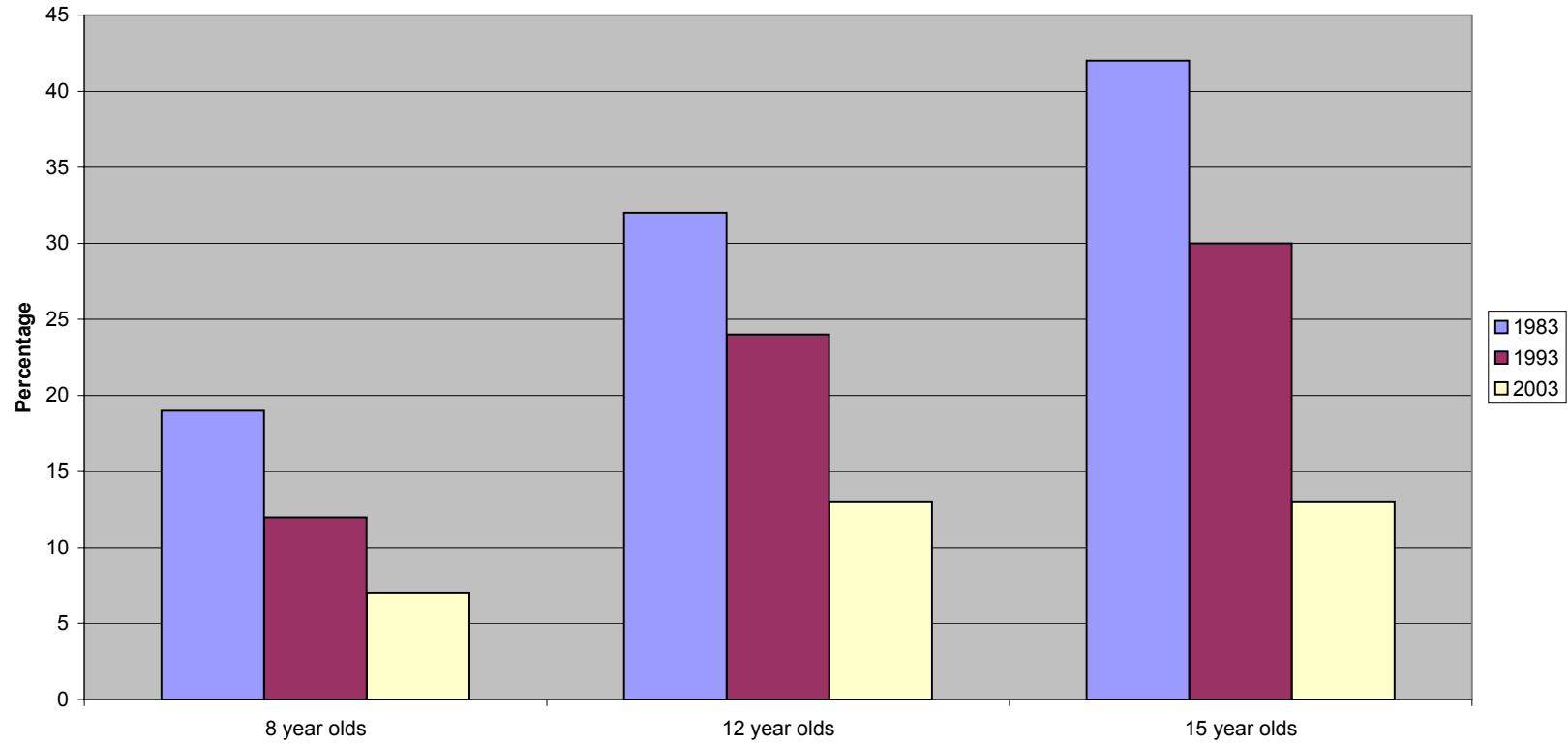


Figure 3 Proportion of children with filled permanent teeth by age (United Kingdom, 1983, 1993, 2003)

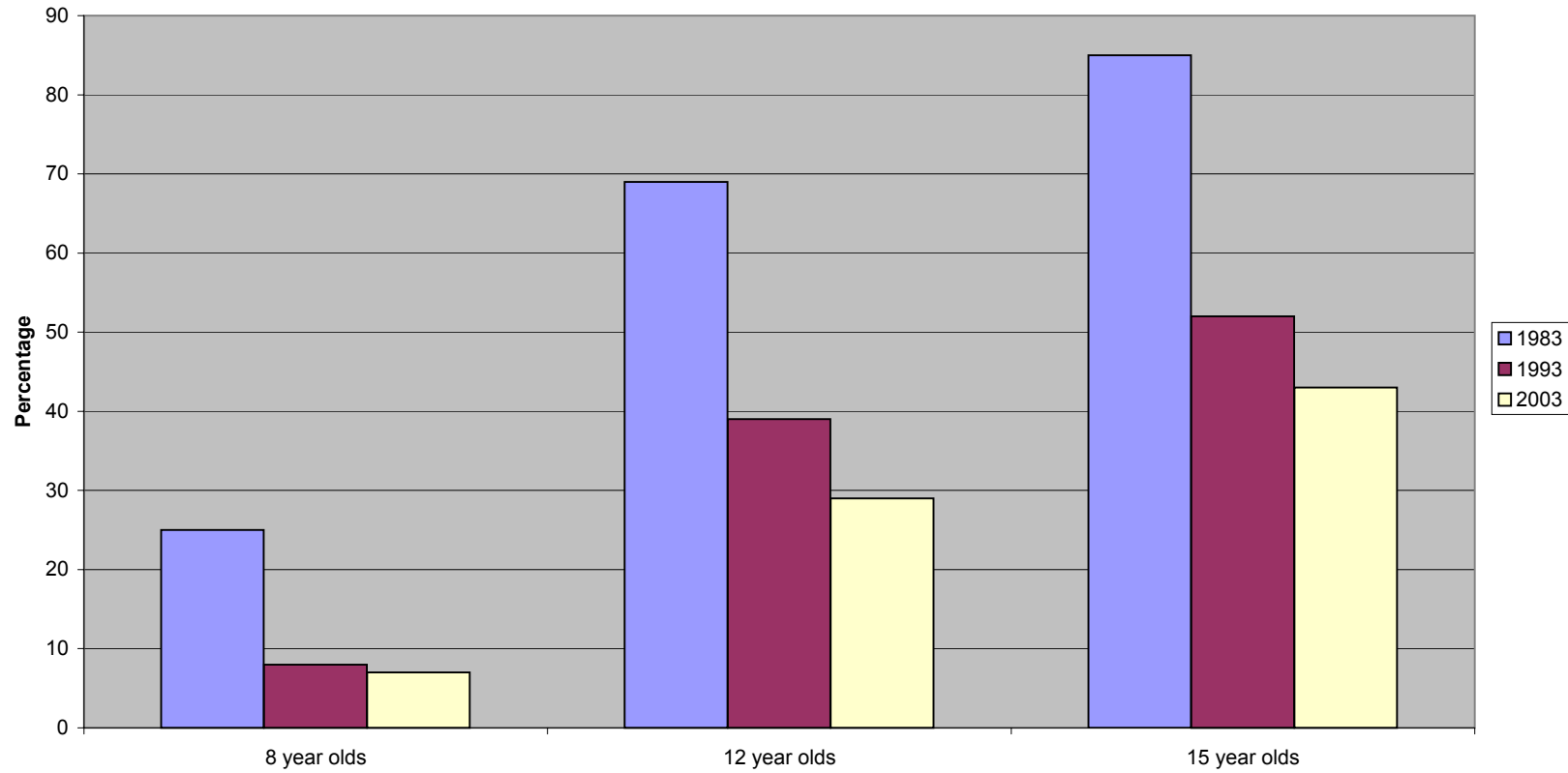
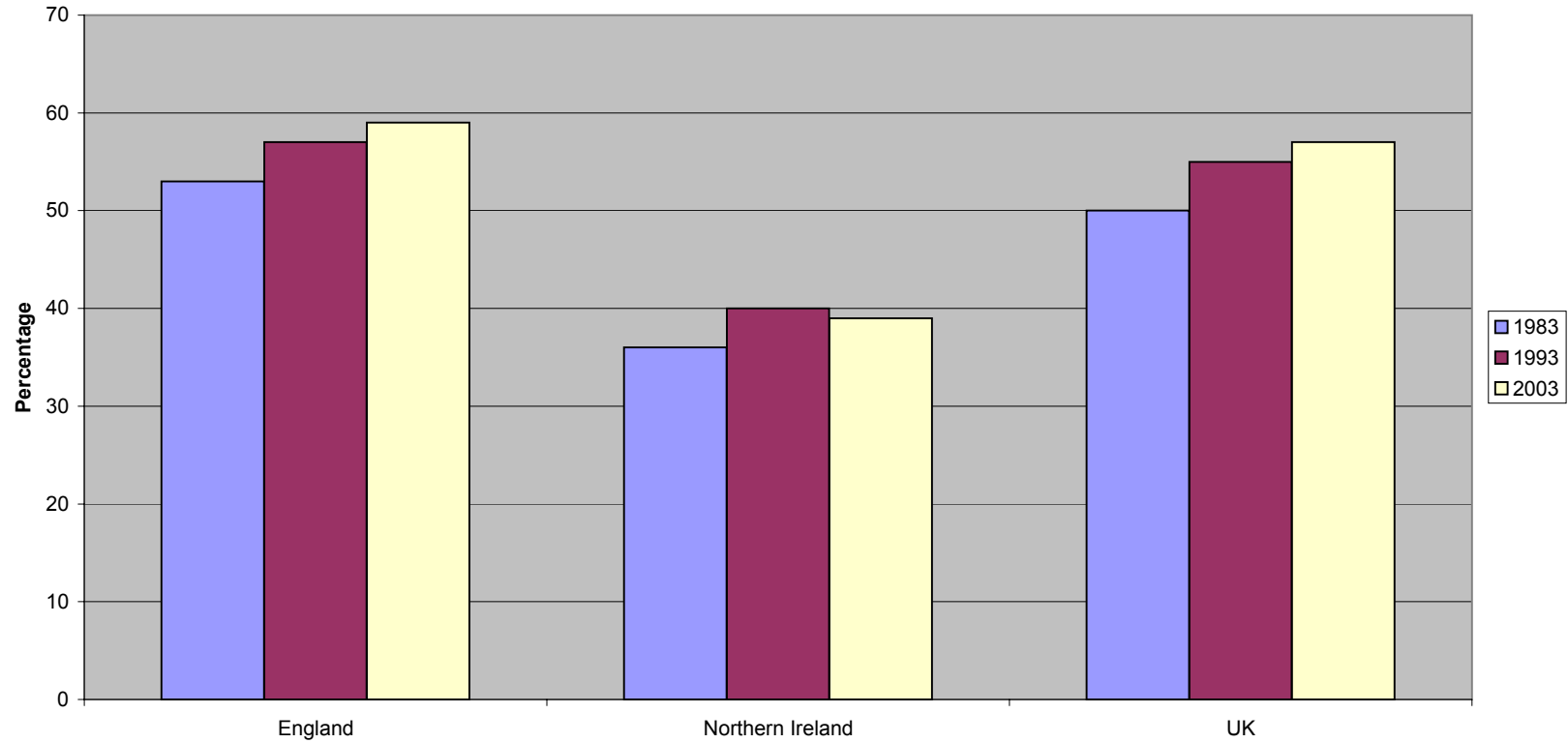


Figure 4 Proportion of five-year old children with no obvious dental decay experience in the primary teeth (England, Northern Ireland and United Kingdom, 1983, 1993 and 2003)



BACKGROUND NOTES

1. The 2003 Children's Dental Health Survey, commissioned by the four United Kingdom Health Departments, is the fourth in a series of national dental health surveys carried out since 1973. The Office for National Statistics carried out the survey in collaboration with 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.
2. The survey was based upon a representative sample of children aged five, eight, 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 per cent.
3. Proportionately larger samples were selected in Wales and Northern Ireland than in England to provide estimates for these three countries within the UK. The data needed to be reweighted in order to produce representative figures for the UK as a whole. There was no oversampling in Scotland relative to England as a separate analysis for Scotland was not required by the Scottish Executive.
4. In the 2003 survey the criteria for assessing dental caries were changed from those used in the earlier surveys. In 2003, teeth with untreated visual caries into dentine were classified as decayed but in the 1993 survey and earlier they were recorded as sound and untreated. Restored teeth with recurrent visual caries into dentine were also treated as decayed in the 2003 classification whereas they were defined as teeth with sound restorations according to the pre-2003 criteria. Tables presented in this release have used the pre-2003 criteria to allow comparisons with the previous rounds of the survey. There will be space for a range of more comprehensive and detailed information and analyses of the 2003 data using the new criteria in the topic report which will be published in October 2004.
5. A series of other topic reports will also present results on other important aspects of children's dental health.
6. Analysis of the condition of the primary teeth was carried out on 5 and 8-year-olds only due to the small numbers of 12 and 15-year-olds with primary teeth. Similarly, 5-year-olds were excluded from analyses of permanent teeth as the prevalence of permanent teeth among this age group is low.
7. Differences cited in the text are statistically significant ($p < 0.05$) unless otherwise stated.
8. Details of the policy governing the release of new data are available from the press office.
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