


2009



National
Dental
Inspection
Programme
of Scotland

Report of the National Dental Inspection Programme on the detailed inspection of **P7 Children** and the basic inspections of P1 & P7 throughout Scotland during the school year 2008/2009 prepared for the Scottish Dental Epidemiological Co-ordinating Committee

National Dental Inspection Programme of Scotland

Report of the 2009 Survey of P7 Children

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National Dental Inspection Programme

The 2009 National Dental Inspection Programme (NDIP) undertaken during the school year 2008/2009

It is important that every child's dental wellbeing is assessed so that children and their parents can maintain oral health and take necessary steps to remedy any problems that may have arisen. There is also a need to monitor children's dental health at national and regional levels so that reliable oral health information is available for planning and for evaluating initiatives directed towards improvements.

The National Dental Inspection Programme (NDIP) aims to fulfil these functions by providing an essential source of information for keeping track of the changes in the dental health of Scottish children. Combined with the full historical nature of the existing data bank collected from 1987 by the Scottish Health Boards' Dental Epidemiological Programme (SHBDEP) ¹, NDIP has been able to identify trends and assist in planning future dental services.

Children in two key child age groups are inspected: those entering school in primary one (P1) and those in primary seven (P7) before their move to secondary education. The Inspection Programme has two levels: a *Basic Inspection* (intended for all children) and a *Detailed Inspection* (for a representative sample of a specific age group in alternate years to assist in planning). In the school year 2008/2009, the focus of the *Detailed Inspection* programme was P7.

Dental health of P7 children in Scotland in 2009

All young people should hope to enter adult life with a healthy mouth. However, despite improvements in the last thirty years, many children in Scotland still suffer from tooth decay and have already embarked upon a lifelong journey of deteriorating oral health.

Historically, SHBDEP surveys examined children aged 12 years, with the most recent results for that age group being presented for the school year 1996/1997 ². In 2005, the primary seven (P7) age group was surveyed for the first time ³. This 2009 NDIP survey is the third in the series and the results can be compared against the figures obtained in the earlier surveys of this age group.

At the end of their primary school career and just prior to secondary school, 64% of 11-year old children have been found to have no obvious dental decay experience in their permanent teeth. Overall, the results for this 2008/2009 cohort exceed, for the first time, the national target set for this age group by the Scottish Government. Compared to 2007, this is an improvement of more than four percentage points.

In previous years, child dental health in Scotland did not compare well with other countries in the United Kingdom. In the 2004/2005 BASCD (British Association for the Study of Community Dentistry) survey of eleven-year old children ⁴, the most recent year that data comparison from England and Wales are available, Scotland had the highest mean number of Decayed, Missing and Filled Teeth (D₃MFT) at 1.29 per school, while Wales had 1.09 and England 0.64. In 2009, the mean D₃MFT in Scotland has decreased to 0.88, while the level of P7 children across Scotland with obvious decay experience has fallen to 36.4%, compared to 40.9% in 2007 and 47.1% in 2005.

The majority of dental disease continues to be borne by children from more deprived backgrounds, where 11-year olds are very much more likely to suffer from obvious decay experience in their permanent teeth than children from more affluent homes, and there is a clear gradient across the population.

Principal aims of the Programme in 2009

The principal aims are to gather appropriate information in order to inform children and parents of their dental/oral health status and, through appropriately anonymised and aggregated data, to advise the Scottish Government, NHS Boards and other organisations concerned with children's health of the prevalence of oral disease.

The 2009 NDIP work took place across all areas of Scotland and involved the collaboration of many people and organisations, including the Consultants in Dental Public Health and Chief Administrative Dental Officers Group, the Scottish Association of Community Dental Directors, Community Dental Officers, Scottish NHS Boards, Local Education Authorities and schools, the Community Oral Health Section of Glasgow Dental School, University of Glasgow, and the Information Services Division of NHS National Services Scotland.



What did the NDIP Basic Inspection consist of?

The *Basic Inspection* involved a simple assessment of the mouth of each child using a light, mirror and ball-ended probe. The dental status found in each child was then placed into one of three categories depending on the level of dental health and the treatment need, and a letter sent to the parents.

More information regarding the data from the NDIP *Basic Inspection* can be seen in part 2 of this report on page 22.

One of three letters was sent to parents informing them of the state of dental health observed in the mouth of their child at the time of the school inspection (these letters vary slightly depending on whether a P1 or a P7 child has been inspected). The letters were as follows:

- Letter A - should seek immediate dental care on account of severe decay or abscess.
- Letter B - should seek dental care in the near future due to one or more of the following: history of tooth decay, a broken or damaged front tooth, tooth wear, poor oral hygiene or may require orthodontics.
- Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

The results of the *Basic Inspection* are then anonymised and aggregated. They are used to monitor the impact of local and national oral health improvement programmes, and to assist in the development of dental services.

What did the NDIP Detailed Inspection consist of?

The *Detailed Inspection* was a more rigorous and comprehensive assessment that involved recording the status of each surface of each tooth in accordance with international epidemiological conventions.

The specific goals of the *Detailed Inspection* were to determine current levels of established tooth decay, and to determine the impact of deprivation on the dental health of primary seven children in Scotland in 2009.

The remainder of this first section of the report gives the results for the *Detailed Inspection*, while those sections for the *Basic Inspection* can be found at the end of this document.

The results shown in this report are weighted results by deprivation in each NHS Board as measured by the Scottish Index of Multiple Deprivation (SIMD) 2006. Further information on the weighted and non-weighted results can be found at www.scottishdental.org.

How was consistency achieved in the conduct of the inspections across Scotland?

An important part of the NDIP process is that the conduct of the *Detailed Inspections* remains consistent with key elements of the previous SHBDEP system all over Scotland and that the participating, specially trained salaried dentists record their findings in the same manner. In order to ensure this, the dentists are required to undergo training and calibration exercises before the programme begins.

Mandatory two-day training courses took place in Perth in November 2008 consisting of illustrated lectures, IT training and discussion sessions on how to record the inspections, in accordance with criteria set down by the British Association for the Study of Community Dentistry (BASCD) ⁵, appropriately modified for the National Dental Inspection Programme (NDIP).

These were followed by clinical training sessions using P7 children from three local primary schools. When these were completed, the dentists conducted a series of calibration assessments on further groups of schoolchildren. The results were then compared and only dentists falling inside the range of 'substantial agreement' ⁶ were allowed to participate in the *Detailed Inspections*.

How many P7 children had a Detailed Inspection?

Each NHS Board was required to identify the number of Local Authority (LA) schools needed to obtain a representative sample of a given size from their primary seven populations ⁷. The sample sizes used provided adequate numbers to allow meaningful comparisons between NHS Boards. The sampling procedure for NDIP differs from the previous SHBDEP surveys in so far as whole classes are now selected to simplify the process for schools while ensuring that results reflect the P7 population (or P1 population) in Scotland.



Table 1 shows that 11,578 children from Local Authority schools across Scotland were inspected in detail. This represents 19.5% of the P7 population in LA schools. Across all NHS Boards, the percentage of P7 children inspected varied from 9.2% to 92.2%.

NHS Boards can choose to increase the sample size in order to assist with local planning needs, while some less populated Boards need to include large proportions to achieve statistically meaningful results. In the course of the survey, 10% of the children were re-inspected in order to assess the consistency of the examination results of the dentists who were undertaking the inspections.

Table 1: Primary 7 populations involved and the number of children from Local Authorities who received a Detailed Inspection by NHS Board across Scotland

NHS Board	LA Primary 7 children populations	Number of LA P7 children receiving a Detailed Inspection	% of P7 population receiving a Detailed Inspection
Ayrshire & Arran	4,252	945	22.2
Borders	1,339	402	30.0
Dumfries & Galloway	1,628	352	21.6
Fife	4,115	411	10.0
Forth Valley	3,601	657	18.2
Grampian	6,134	632	10.3
Greater Glasgow & Clyde	13,480	3,675	27.3
Highland	3,668	1,187	32.4
Lanarkshire	7,031	827	11.8
Lothian	8,706	1,337	15.4
Orkney	263	210	80.0
Shetland	307	283	92.2
Tayside	4,617	423	9.2
Western Isles	324	237	73.1
Total for Scotland	59,465	11,578	19.5

When did the Dental Inspections occur and how old were the children?

The NDIP inspections took place from November 2008 until June 2009. The staff of the Community Dental Service within each NHS Board undertook all the clinical work associated with both *Basic* and *Detailed Inspections*.

The mean age of the children examined in the *Detailed Inspection* across Scotland was 11.5. The mean age for boys was 11.6 and that for girls was also 11.6. The range of ages across NHS Boards was 10.0 – 13.0 years.

What is meant by ‘obvious decay’ in this report?

It is important to note that when ‘obvious tooth decay’ (D₃T) is discussed in this report it means *decay that can be seen to involve the dentine* (i.e. the layer below the outer white enamel of permanent teeth) and includes *pulpal decay*. The *Detailed Inspection* measures obvious decay into dentine when seen under school (rather than dental surgery) conditions.



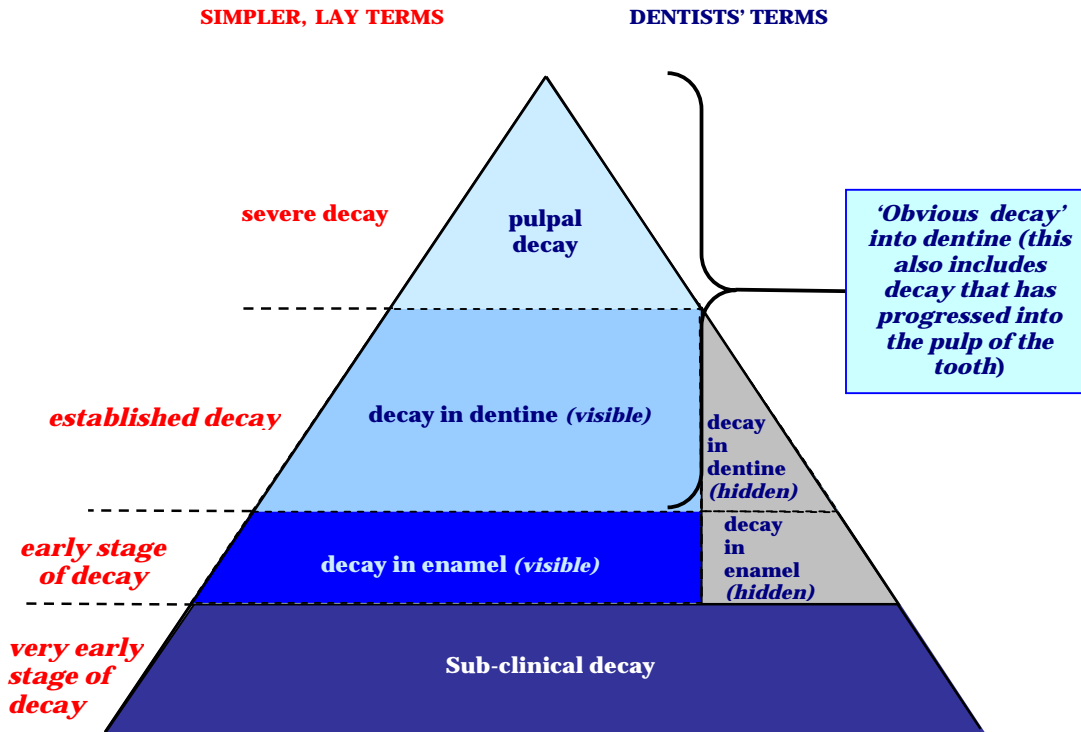
What is meant by ‘obvious decay experience’ in this report?

When the term ‘obvious decay experience’ (D₃MFT) is discussed in this report it means ‘obvious decay’ (noted above), plus missing teeth (MT - extracted due to decay), plus filled teeth (FT).

What are the stages of tooth decay?

Dentists use specific professional terms to identify the different stages of tooth decay. However, simpler terms are provided in diagram 1 below to help illustrate the various stages of tooth decay.

**Diagram 1:
Stages of tooth decay**



What definitions of decay do the dentists conducting the NDIP Detailed Inspection use?

The definitions of decay used are in accordance with the BASCD guidelines and international epidemiological conventions, thus allowing comparisons to be made with other countries in Europe and beyond.

The data presented for decay only relate to dental decay that clinically appears to have penetrated dentine (the inside of the tooth). This is a different diagnostic level from that used by dentists when examining patients in a dental surgery, i.e. dental check-ups.



National Dental Inspection Programme (NDIP) 2009

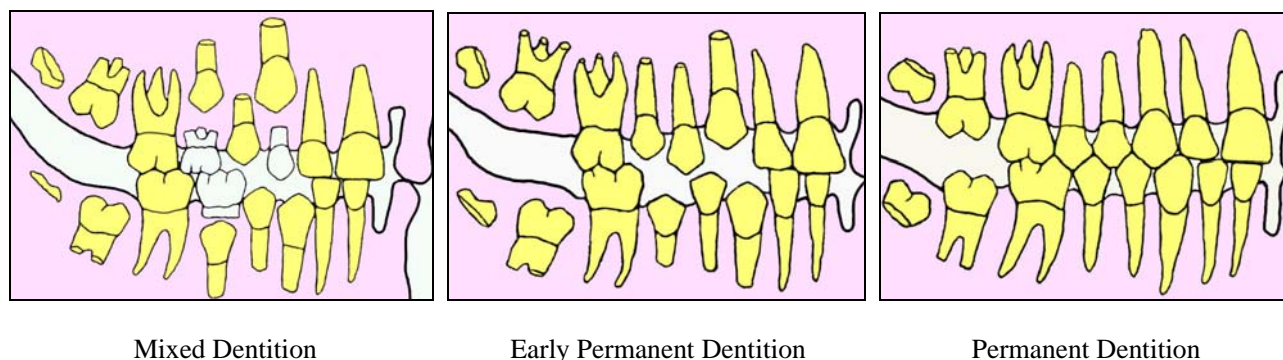
PART 1

DETAILED INSPECTION RESULTS

What is the relevance of age and stage of dental development to this survey?

The dental condition of the P7 children examined during 2008/2009 was found to be of either a mixed dentition (both deciduous and permanent teeth) or a permanent dentition. The types of dentitions that were observed are illustrated as a cross section of the mouth in Diagram 2 (with deciduous teeth represented in white and permanent teeth in yellow).

Diagram 2: Range of stages of dental development seen in P7 children



In the 2005 NDIP P7 Report, an analysis of the prevalence of decay experience in the deciduous or first dentition was included. However, due to the range of dental development shown in diagram 2, some or many P7 children had already lost deciduous teeth and consequently the history of the disease experience of these missing teeth was unknown.

Whilst the analysis of caries experience in the deciduous dentition is informative with regard to future caries risk, at the age of eleven years, the first permanent molars have been present in the mouth since approximately the age of six and these, together with other permanent teeth that are present in the mouth, are more indicative of dental disease experience.

The main intention of this survey was to examine the dental status of permanent teeth in P7 children, and all the analysis of the P7 dentition was concentrated on the permanent dentition alone and not on the state of the remaining deciduous dentition.

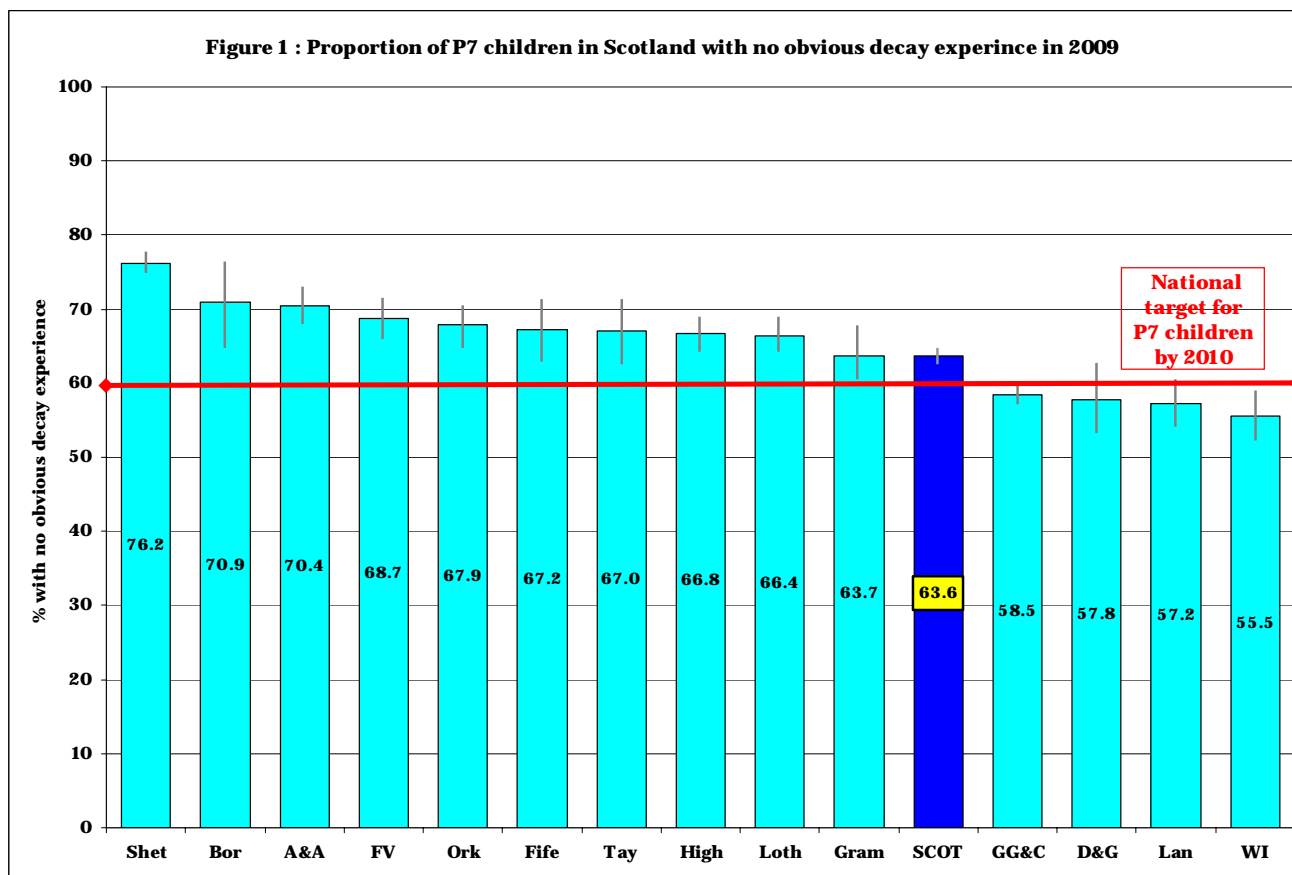
What proportion of P7 children in Scotland had no obvious decay experience in their permanent teeth?

One of the targets originally set by the Scottish Executive for the year 2010 was that 60% of P7 children should be free of obvious decay experience⁸.

Figure 1 shows the proportion of P7 children in NHS Boards who showed no signs of obvious decay experience in their permanent teeth. Across Scotland, 63.6% of P7 children fall into this category, with a range of 55.5% to 76.2% across the fourteen NHS Boards.

These findings illustrate the extent to which some NHS Boards have already achieved the 2010 target and how close other NHS Boards are to achieving that same target.

The 2009 P7 result of 63.6% with no obvious decay experience is a benchmark figure against which future P7 *Detailed Inspection* results will be measured. It is not only an improvement over the 2007 P7 NDIP results, where the figure for Scotland was 59.1%, but it is also the first time that this figure for Scotland has exceeded the national target of 60% for P7 children.



A detailed description of the decay experience distribution is shown in Table 2 below.

Table 2 : Overall obvious decay experience in permanent teeth of P7 children in Scotland

	%	NHS Board range
Free of obvious decay experience at the dentinal level ($D_3MFT = 0$)	63.6	55.5 – 76.2
With obvious decay experience, $D_3MFT > 0$ (as per BASCD)	36.4	23.8 – 44.5
With 'current decay', $D_3 > 0$ (as per BASCD)	15.7	9.2 – 22.0
With severe decay	2.7	0.5 - 4.6
Care index (FT/ D_3MFT)	50.0	40.6 – 59.7
	Mean	NHS Board range
Obvious decay experience (D_3MFT) across Scotland	0.88	0.53 – 1.17
Decayed teeth (D_3T) across Scotland	0.31	0.17 – 0.44
Missing teeth (MT) across Scotland	0.13	0.07 – 0.17
Filled teeth (FT) across Scotland	0.44	0.23 – 0.56
Decayed, missing and filled teeth for those with obvious decay experience ($D_3MFT > 0$)	2.41	2.12 – 2.74

It should be noted that, although the average number of decayed, missing and filled teeth across P7 children examined in Scotland was 0.88, for the 36.4% of this age group who have experienced dental decay, the average number of affected teeth was nearly three times this figure at 2.41.



What proportion of obvious decay experience among P7 children was treated with fillings?

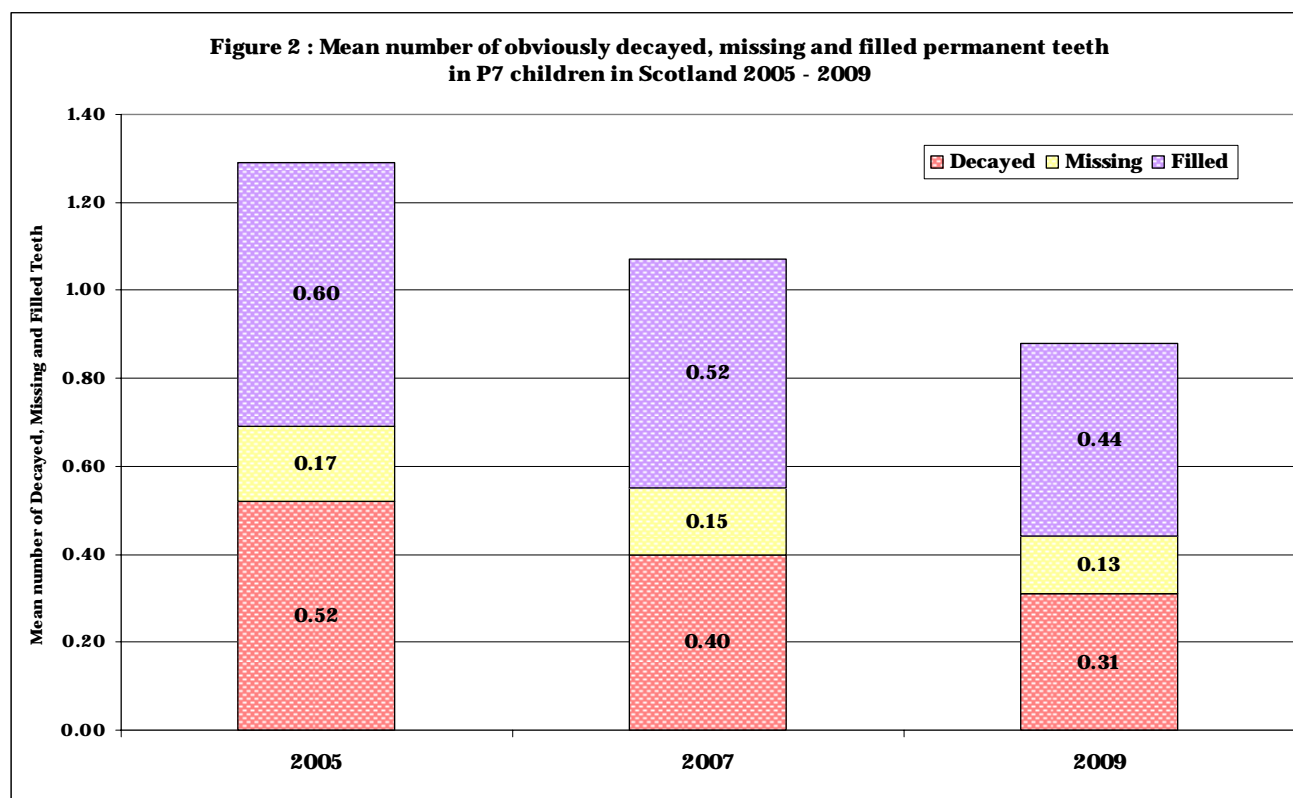
The Care Index is used to describe the proportion of obvious decay experience which has been treated restoratively $[(FT \div D_3MFT) \times 100]$. In 2009, the Care Index for this age group is 50.0%. This is an improvement compared to 2005 and 2007 but there is continuing concern in Scotland that some children will first enter secondary school, and then reach adulthood, with untreated dental disease. These data can be seen in Figure 10 of Appendix I in the *Detailed Inspection* section of this report.

This survey has also recorded that 35.2% of the decay experience is apparently in an unrestored state $[(D_3T \div D_3MFT) \times 100]$. As a result, every effort should be made to encourage regular routine dental care, so that oral health is restored and maintained, thus establishing a more sound foundation for adult life.

How has the dental health of P7 children in Scotland changed since the last survey in 2007?

The importance of monitoring the dental health of children and being able to make comparisons over a longer period of time is illustrated by Figure 2. The bar chart shows the analysed data from the three NDIP P7 surveys of 2005, 2007 and 2009. By viewing the results as a series, the trend in the number of decayed, missing and filled permanent teeth (D_3MFT) can be seen.

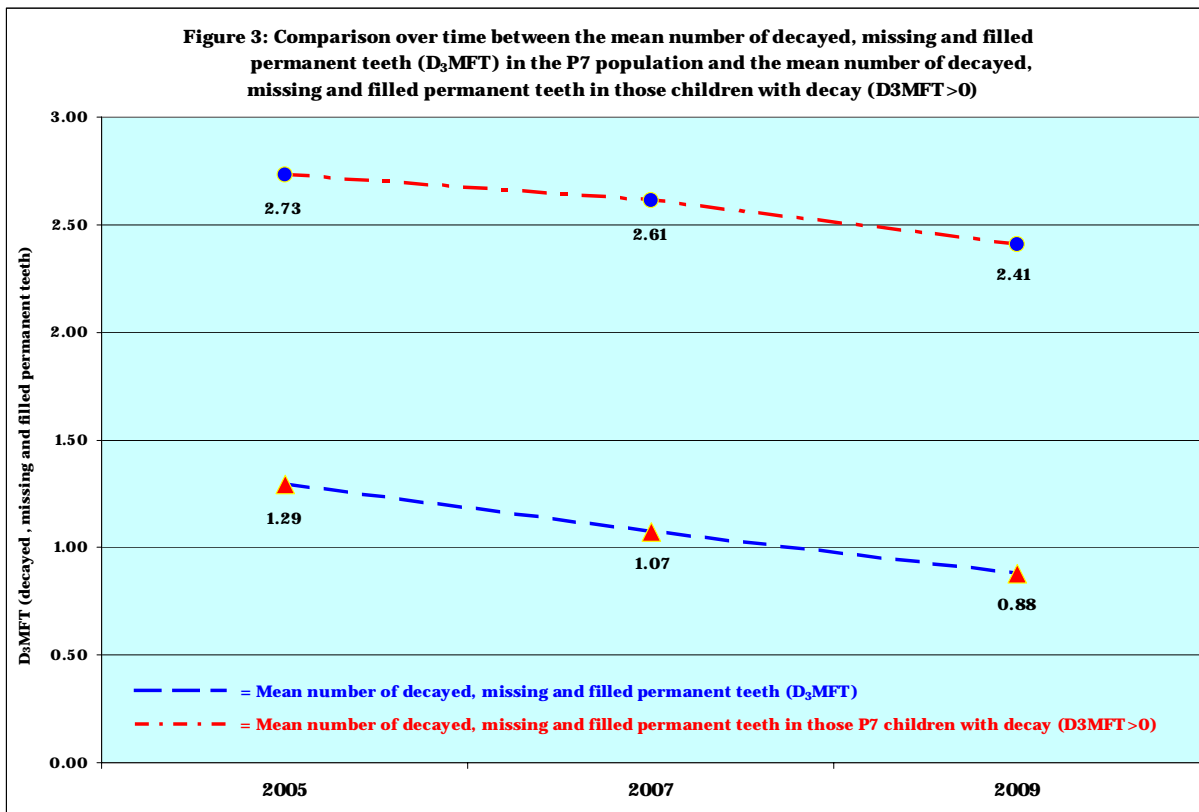
Since 2005, the underlying trend has been a reduction in the mean number of obviously decayed, missing and filled permanent teeth of P7 children in Scotland with the most pronounced fall being seen in the last two years. The largest reduction is in the decayed (D_3T) component.



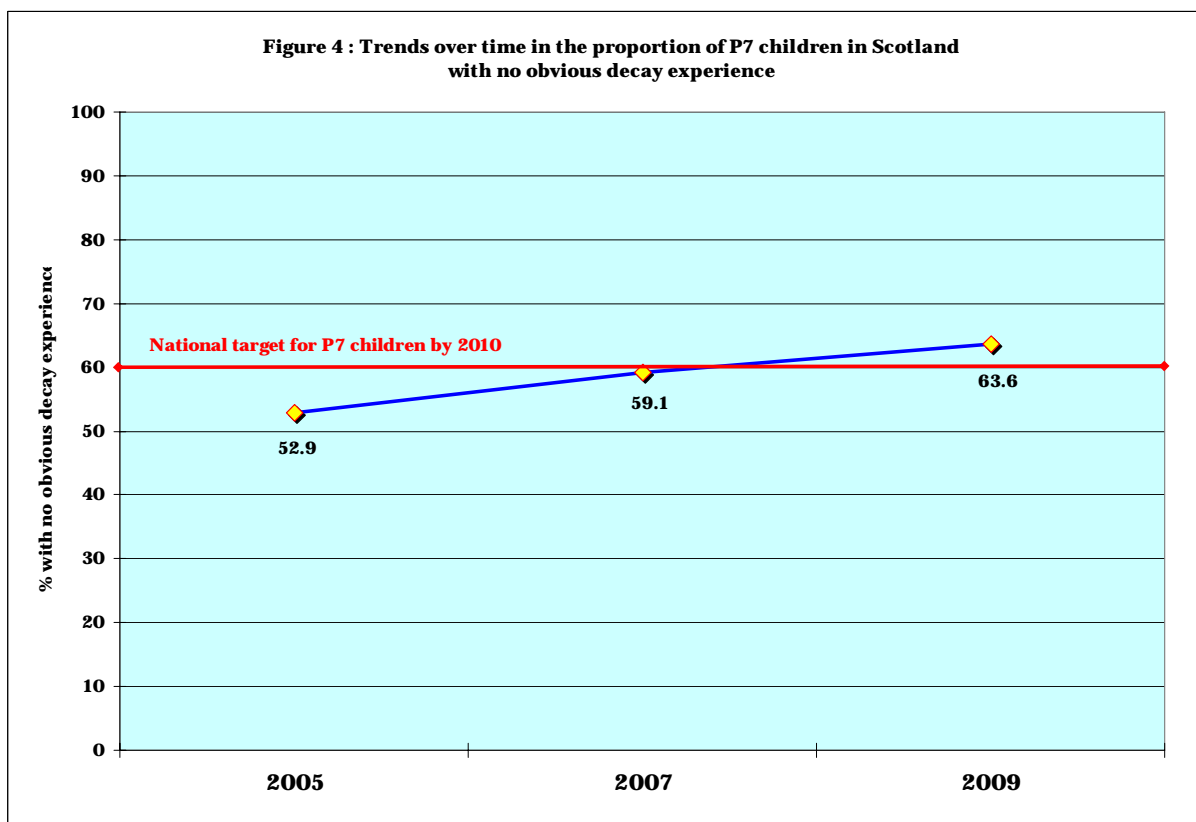
Similarly, the changes in the mean number of decayed, missing and filled permanent teeth (D_3MFT) are shown in Figure 3 and show a steady decline over the last four years.

The value of 0.88 is the lowest level seen in this age group to date. The comparison in Figure 3 also illustrates the mean number of decayed, missing and filled permanent teeth in those children with decay ($D_3MFT > 0$). These figures also show a steady decline during the period 2005 to 2009, with a reduction of 0.32 over the four-year period of these three P7 NDIP Reports.





The Figure 4 data illustrates a rise in the proportion of P7 children with no obvious decay experience (i.e. a decline in the prevalence of decay) during the two-year period between the 2007 and 2009 NDIP surveys – a change from 59.1% to 63.6%. This trend is a continuing improvement since the first NDIP epidemiological survey of this age group was carried out in 2005.



Was the amount of obvious decay experience spread evenly throughout the P7 child population in Scotland?

The results shown in Table 3 demonstrate that decay experience was not spread evenly throughout the P7 population. Some 36% of P1 children had 100% of the obvious decay experience while an unfortunate 4% had 25% of the recorded decay experience. Of greater concern, teeth with observed severe decay into the pulp of their permanent teeth were seen in just 3% of the children inspected.

Table 3 : Skewed prevalence of obvious decay experience in the permanent teeth of P7 children in Scotland

Proportion of P7 population		Share of disease	
Established decay experience (D₃MFT)			
36% of population	was observed to have	100% of the teeth with established decay experience	
10% of population	was observed to have	50% of the teeth with established decay experience	
4% of population	was observed to have	25% of the teeth with established decay experience	
Established decay (D₃T)			
16% of population	was observed to have	100% of the teeth with established decay	
4% of population	was observed to have	50% of the teeth with established decay	
1% of population	was observed to have	25% of the teeth with established decay	
Severe decay into the pulp			
3% of population	was observed to have	100% of the teeth with severe decay	
1% of population	was observed to have	50% of the teeth with severe decay	

What are the obvious decay experience results in permanent teeth of P7 children across Scotland?

Table 4 shows the results for the prevalence of decay for NHS Boards across Scotland. The table details a measure of the total obvious decay experience (decayed, missing and filled teeth [D₃MFT]) and its individual components.

Table 4 : Obvious decay experience in permanent teeth for each NHS Board in Scotland

NHS Board	% with no obvious decay experience in permanent teeth	Mean no. of decayed, missing and filled permanent teeth (D ₃ MFT)	Mean no. of decayed permanent teeth (D ₃ T)	Mean no. of missing permanent teeth (MT)	Mean no. of filled permanent teeth (FT)	For those with decay, the mean no. of decayed, missing and filled permanent teeth (D ₃ MFT>0)
Ayrshire & Arran	70.4	0.63	0.19	0.08	0.36	2.17
Borders	70.9	0.61	0.17	0.07	0.36	2.12
Dumfries & Galloway	57.8	0.98	0.30	0.16	0.52	2.31
Fife	67.2	0.73	0.21	0.14	0.38	2.24
Forth Valley	68.7	0.69	0.19	0.13	0.37	2.18
Grampian	63.7	0.91	0.38	0.12	0.41	2.49
Greater Glasgow & Clyde	58.5	1.03	0.39	0.14	0.50	2.51
Highland	66.8	0.79	0.26	0.10	0.42	2.35
Lanarkshire	57.2	1.17	0.44	0.17	0.56	2.74
Lothian	66.4	0.78	0.27	0.13	0.37	2.30
Orkney	67.9	0.68	0.31	0.10	0.27	2.13
Shetland	76.2	0.53	0.21	0.09	0.23	2.24
Tayside	67.0	0.81	0.19	0.17	0.45	2.46
Western Isles	55.5	1.01	0.38	0.11	0.52	2.26
Scotland	63.6	0.88	0.31	0.13	0.44	2.41



What is the picture of dental health in the permanent teeth of P7 children across Scotland?

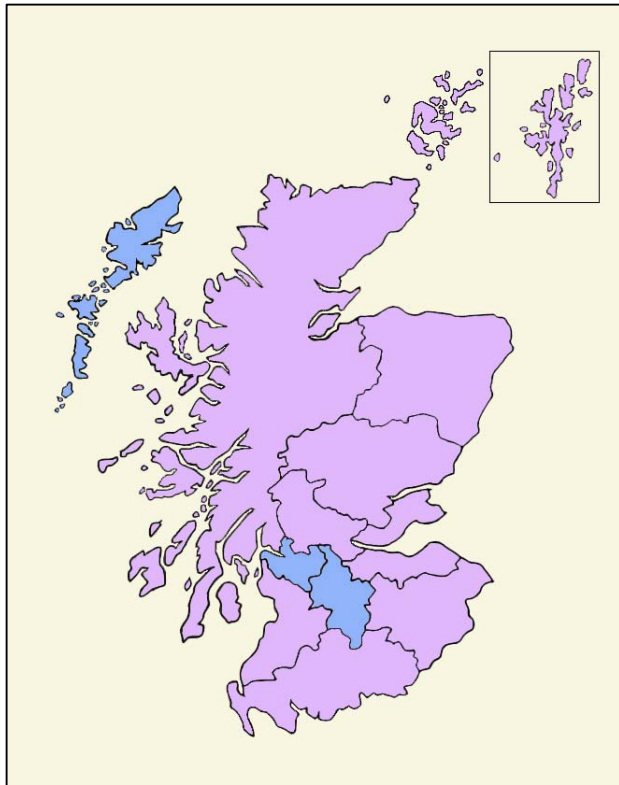


Figure 5 :

Obvious decay experience (D₃MFT) in permanent teeth of P7 children in Scotland by NHS Board

Mean number of decayed, missing and filled teeth (D₃MFT)

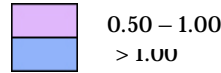


Figure 5 illustrates the mean prevalence of obvious decay experience in permanent teeth of P7 children across Scotland. Greater Glasgow & Clyde, Lanarkshire and the Western Isles have the greatest mean number of the permanent teeth affected by dental disease in this P7 age group.

The amount of obvious decay experience in primary 7 children for each of the 14 NHS Boards is displayed in Figure 6, together with that for Scotland as a whole

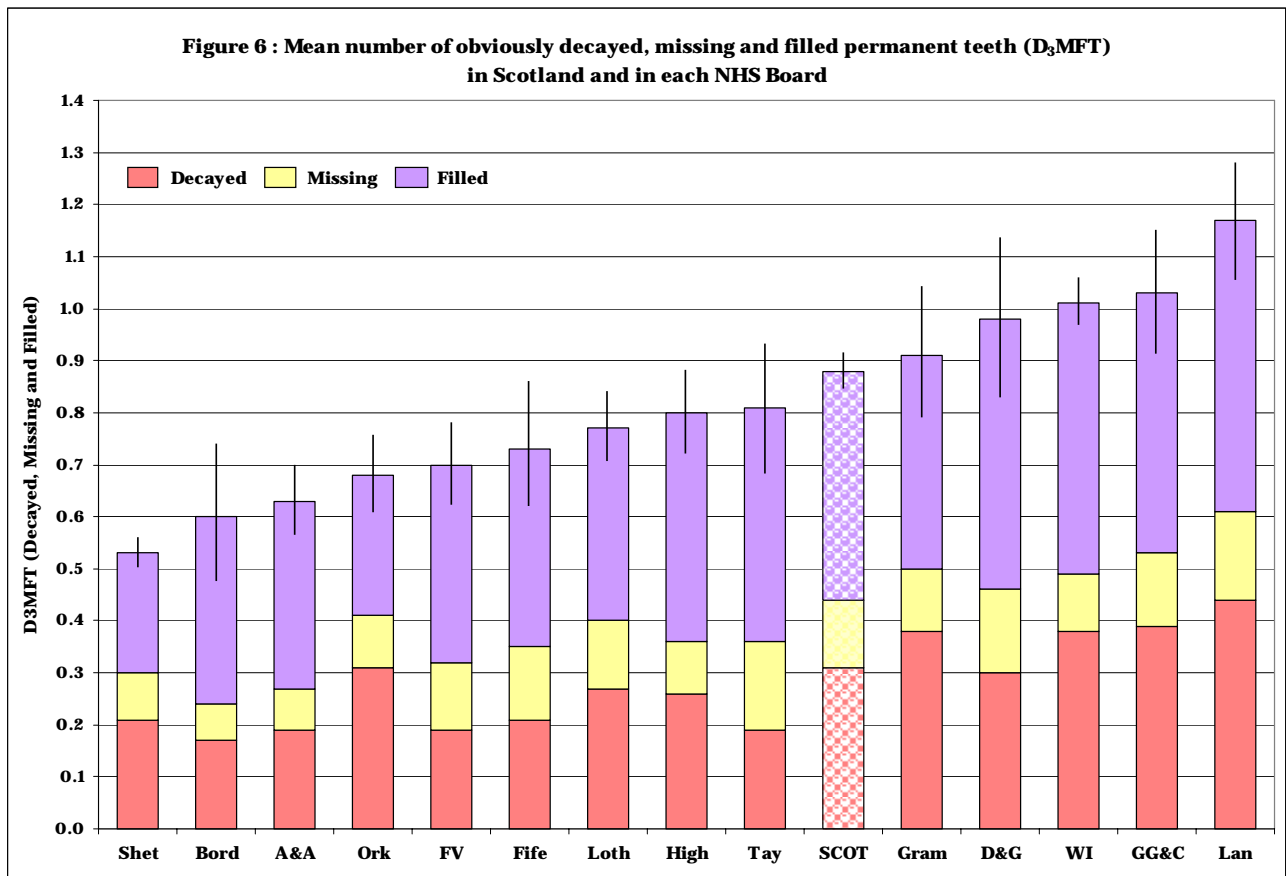


Figure 6 displays the average number of decayed, missing and filled teeth per P7 child for the fourteen NHS Boards across Scotland and that for Scotland as a whole. The mean obvious decay experience in the permanent dentition of children in this age group varies widely between the different NHS areas: for example, in Lanarkshire P7 children had on average over twice as much dental disease as their contemporaries in Shetland.

The vertical lines indicate the 95% confidence limits associated with each value and illustrate the limited extent to which the figure can be interpreted as a “league table”. While there is a difference between those NHS Boards at the extreme left of the figure and those on the extreme right, it would be unwise to ascribe too much importance to minor variation in the ranking of NHS Boards, especially those in close proximity to one another.

What was the average level of decay for those who had experienced obvious decay in their permanent teeth?

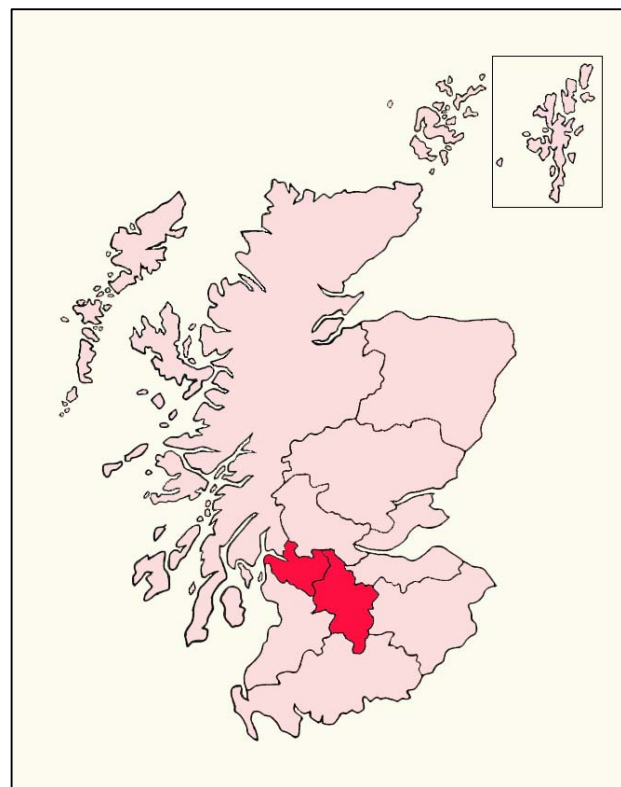


Figure 7 :

Decay experience in the permanent teeth of P7 children with obvious decay experience (D₃MFT for those where D₃MFT > 0)

Mean number of decayed, missing and filled teeth (D₃MFT)



In this 2009 survey, 36.4% of P7 children had obvious decay experience in their permanent teeth. For those children, the mean number of affected teeth ranged from 2.12 to 2.74 across the fourteen NHS Boards (as detailed in Table 4, page 11). Since the last survey in 2007, this is an overall reduction in the mean number of teeth affected. However, it is still of concern that children have experienced decay in so many of their permanent teeth at this young age.

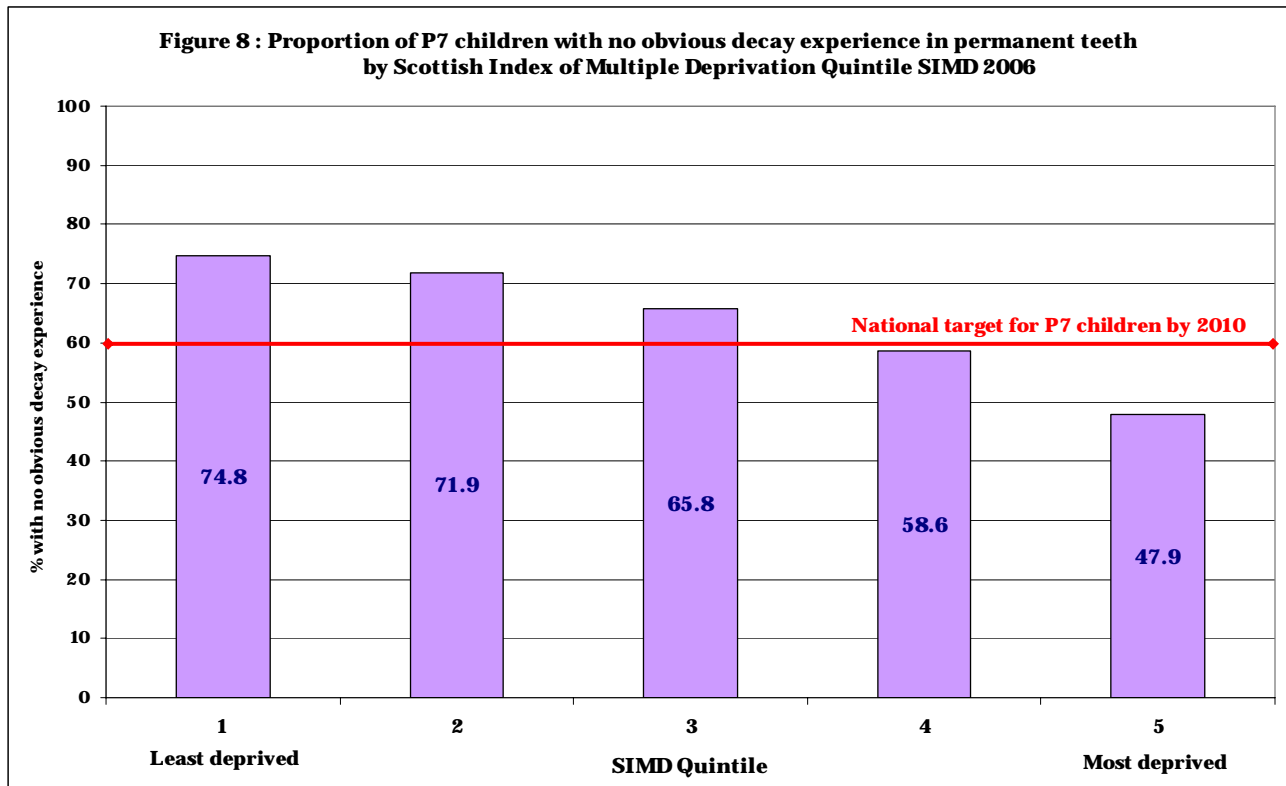
Is there a link between social deprivation and poor dental health in P7 children in Scotland?

It was noted in the 2007 NDIP Report on P7 children⁹ that all future NDIP surveys on deprivation would report using the Scottish Index of Multiple Deprivation (SIMD)¹⁰, rather than DepCat (Deprivation Category)¹¹ which had been used in previous reports and which has been shown to be closely linked with measures of life expectancy, illness and use of the health services. A clear association has been established between DepCat measured by social deprivation and dental decay in children.

This 2009 NDIP Report is the first to display SIMD data for P7 children. The SIMD classification identifies datazones across all of Scotland and is based on full postcode unit information. It has seven domains, namely income, employment, education, housing, health, crime and geographical access, which have been combined into an overall index to rank relative multiple deprivation in all geographical areas throughout Scotland.

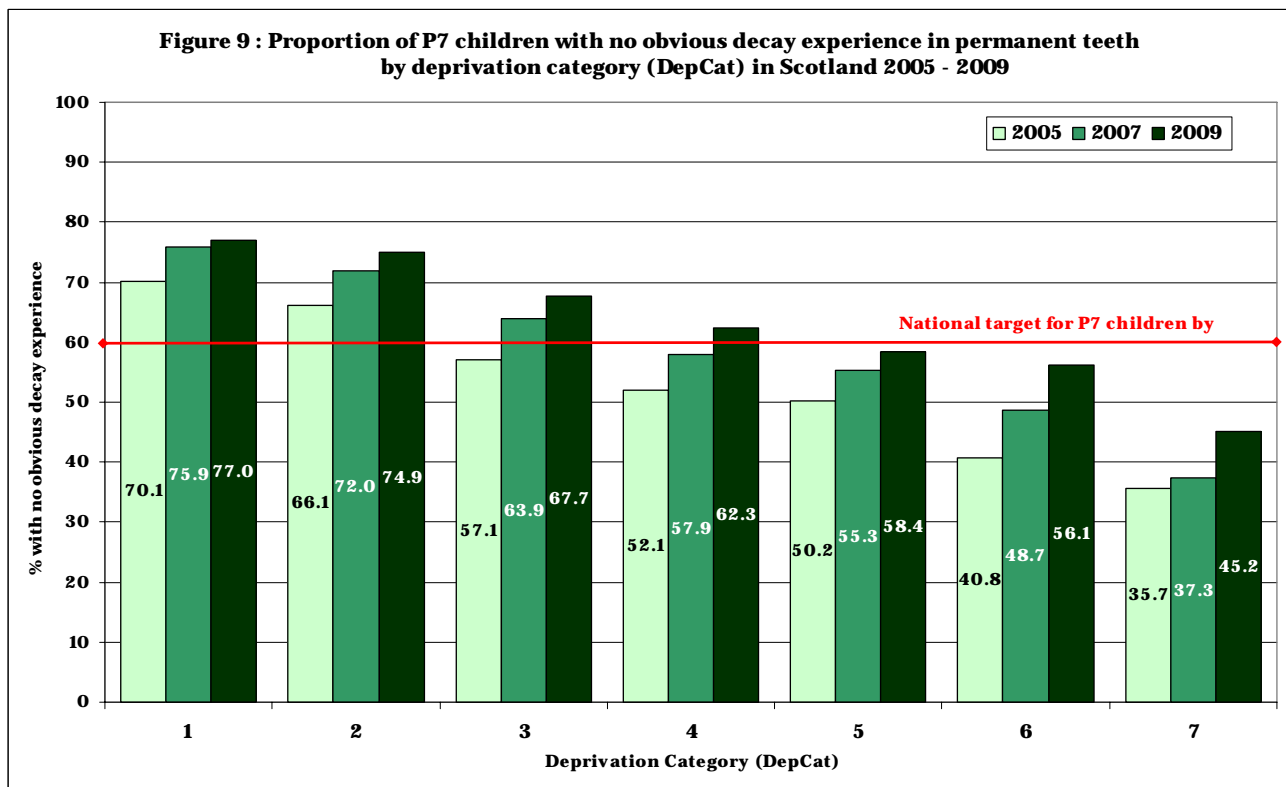
One of the SIMD classifications is based on quintiles of deprivation where category 1 is the least deprived and category 5 is the most deprived. Figure 8 demonstrates the relationship between dental health and these quintiles. The difference in dental health between the deprivation categories in P7 children can clearly be seen. SIMD quintiles 1, 2 and 3 have already exceeded the 2010 National Target of 60% with no obvious decay experience, while quintile 5 (the most deprived area) falls well short, with only 47.9% of P7 children having no obvious decay experience. *N.B. Future NDIP reports will present SIMD analyses ordered thus: 1 most deprived to 5 (or 10) least deprived, as this is now the preferred ordering of the Scottish Government.*





A similar bar chart but based on SIMD deciles can be seen in Figure 11 of Appendix II in the *Detailed Inspection* section. The decile classification has 10 divisions of deprivation from 1 (least deprived) to 10 (most deprived).

As SIMD data for P7 children are being used in this report for the first time, it is not yet possible to show any trend when this measure of deprivation is applied. The DepCat data reported in the two previous epidemiological dental surveys of P7 children across Scotland, together with those gathered in 2008/2009, are displayed in Figure 9.



DepCat (deprivation category) is a scale of deprivation based on information gathered in the national census every ten years and describes the socio-economic status of communities in postcode sectors. The last census was held in 2001. DepCat was measured for each postcode sector in Scotland by calculation from the percentage of unemployed males, overcrowded households, lack of car ownership and the Registrar General social class. The scale ranges from DepCat 1 (least deprived) to DepCat 7 (most deprived).

In this *Detailed Inspection*, it was possible to attribute DepCat values to the data for 91% of the 11,578 children who were examined. Postcode sector information was absent from one NHS Board, incomplete for five NHS Boards and 99 - 100% complete in eight NHS Boards.

Figure 9 graphically illustrates the inequality in dental health of the permanent dentition between P7 children in the most deprived areas (DepCat 7) and that of their more fortunate contemporaries in DepCats 1 and 2.

In 2009, the DepCat 1, 2, 3 and 4 groups have already reached the 2010 National Target of 60% with no obvious decay experience. However, DepCat 7 is still only at 45.2%, i.e. nearly 55% of the P7 children in DepCat 7 have already experienced the effects of decay in their permanent teeth.

Nevertheless, when comparing the 2009 P7 NDIP Report with the last two P7 reports in 2005 and 2007, it is very encouraging to note that all seven categories of deprivation show an improvement in the proportion of those with no obvious decay experience. Those in DepCat 7 show the greatest improvement of nearly eight percentage points.

What do the findings of this P7 NDIP Detailed Inspection Survey show?

This was the third NDIP survey to examine the specific age group of P7 children and it enables a comparison to be made with the initial survey of this age group in 2005 and that of 2007. The Dental Action Plan of the Scottish Government requires regular monitoring and has set a national target of 60% of this P7 age group to be free of obvious decay experience by the year 2010.

Results show that the amount of obvious decay experience in permanent teeth of P7 children still varies widely between NHS Boards, with high levels of decay still associated with children from socially deprived backgrounds. However, since the 2005 P7 survey, there has been an improvement in the dental health of this age group, and it is important to note that the national dental prevalence target of 60% has been achieved for the first time. Improvement in dental health is evident across all seven deprivation categories, with the result that the proportion of P7 children with no obvious decay experience across Scotland has risen by eleven percentage points since 2005 and now stands at 64%. However, those in the worst deprivation category of all appear to have improved to a greater extent, albeit they still have much poorer dental disease experience than those in more affluent categories and a clear gradient can be seen across both SIMD and DepCat measures. As seen in the appendix to this report, the major improvement would seem to be the decrease in the level of dental decay seen in the *first permanent molar teeth*.

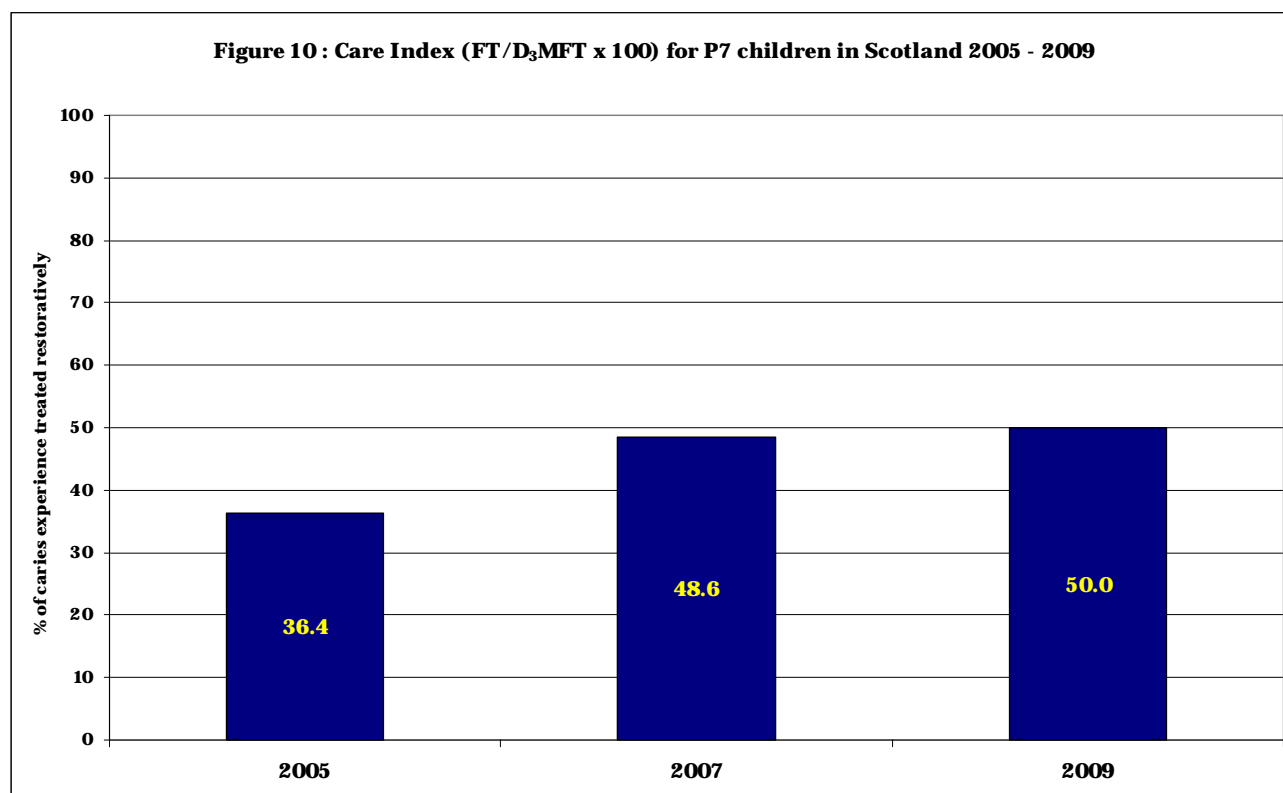
Initiatives that are both population-based and targeted at children at high risk from dental disease have been introduced by the Scottish Government and NHS Boards to prevent dental disease from an early age. The intention to prevent dental disease in infants, pre-school and primary school-aged children, also seems to be improving the dental health in this P7 age group. It is to be hoped that, with the continuing support of parents, healthcare professionals and others, these good oral health regimes for young children will be carried through school life into adulthood.



Appendices to the *Detailed Inspection*

I. Care Index for P7 children in Scotland

The Care Index is used to describe the level of restorative care (the number of filled teeth divided by the number of obviously decayed, missing and filled teeth and multiplied by 100 [(FT/D₃MFT) x 100]). For Scotland as a whole, 50% of the teeth with decay experience have now been filled compared to 36.4% in 2005 NDIP Survey. There was an earlier concern expressed that a high level of unrestored decay indicated a failure in primary dental care provision to this young age group but the current data shows that the level of restorative dental care is improving. Figure 10 illustrates these changes in the Care Index over time.



Although dental registration figures have improved, there are still numbers of children in P7 who are not registered with an NHS dental practice and the Scottish Government and NHS Boards continue to encourage improvement in this area.

The process does not end with simply registering with a dental practice. Patients register with an NHS general dental practitioner to receive the full range of treatment available under NHS general dental services. Before April 2006, all registrations automatically lapsed after 15 months, unless the patient returned within the period to the same or another NHS practice; from 1st April 2010, the Scottish Government has determined that the registration period of all patients registered with an NHS dentist is non-time limited. All existing patients and all new patients will be registered for life and registration arrangements no longer lapse after a set period of time. However, there remains a need for parents to maintain their child's regular attendance with the family dentist and to help combat tooth decay.

To encourage families, projects supported by the NHS in Scotland and locally co-ordinated community health improvement programmes that promote children's dental registration, are encouraging parents to seek and maintain professional dental care for children as part of a holistic approach to improving children's health. These initiatives, funded by the Scottish Government, are collectively known as the 'Childsmile' programme and are aimed at establishing a good preventive oral hygiene regime from an early age that will carry through into adulthood.

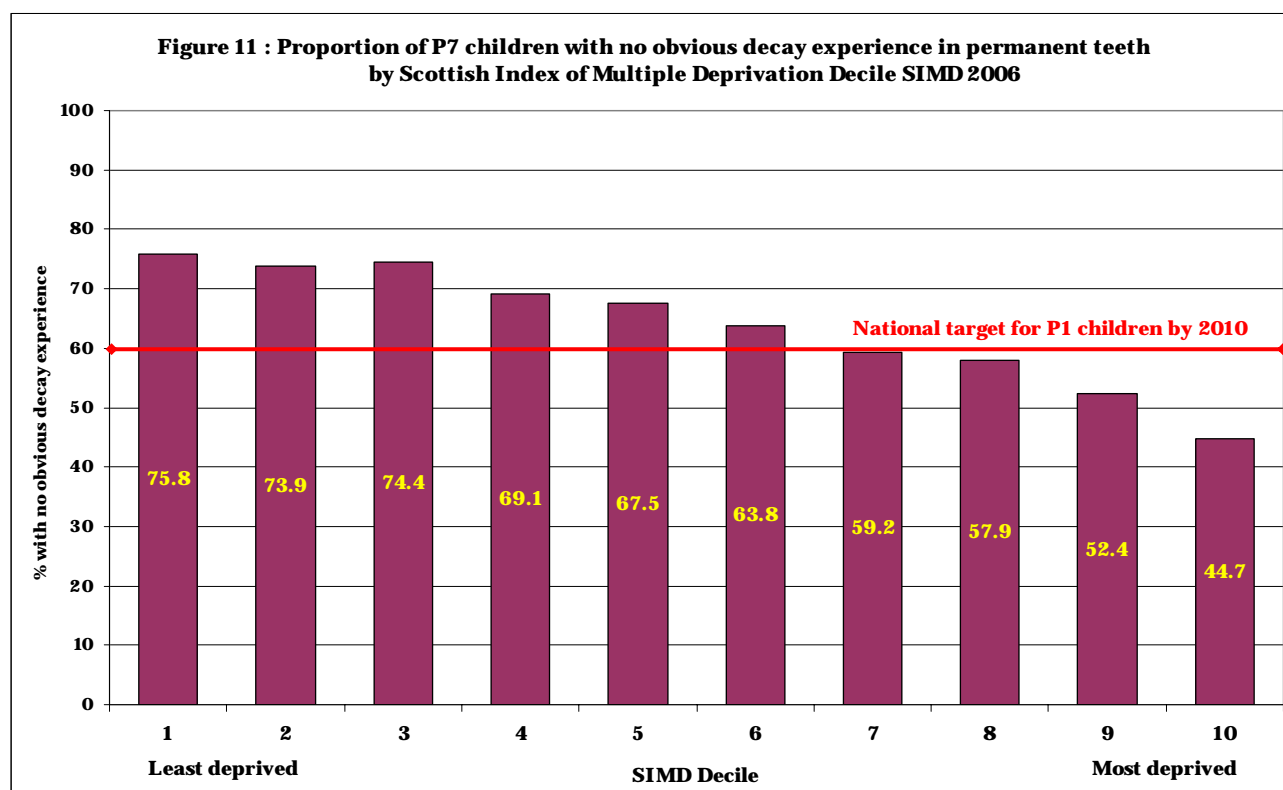
II. Scottish Index of Multiple Deprivation Decile Classification

As noted earlier in the report, the SIMD classification identifies datazones across all of Scotland and is based on full postcode unit information. It has seven domains, namely income, employment, education, housing, health, crime and access to services, which have been combined into an overall index to rank relative multiple deprivation in all geographical areas throughout Scotland.

One of the SIMD classifications is based on deciles of deprivation where category 1 is the least deprived and category 10 is the most deprived. Figure 11 gives the relationship between dental health and these deciles and can be compared with the quintile bar chart detailed earlier in this report.

The difference in dental health between the deprivation categories in P7 children can clearly be seen. SIMD deciles 1- 6 have already exceeded the 2010 National Target of 60% with no obvious decay experience, while deciles 7 and 8 lie very close to the target. Deciles 9 and 10 (the most deprived areas) fall well short, with only 52.4 and 47.9% respectively of P7 children having no obvious decay experience.

As noted in Part 1 of the report, this is the first time that the SIMD classification has been utilised in the analysis of the data for P7 children. These results will act as a benchmark against which future P7 survey data can be compared.



N.B. Future NDIP reports will present Scottish Index of Multiple Deprivation (SIMD) analyses ordered thus: 1 most deprived to 5 (or 10) least deprived, as this is now the preferred ordering of both quintiles and deciles by the Scottish Government.



III. Dental Health of the *First Permanent Molar teeth only*

The main report has analysed the data relating to all the permanent teeth in the dentition of P7 children. However, as noted in the 2005 P7 NDIP Report and again in 2007, there is considerable variation in eruption dates, particularly of premolar teeth, with some teeth being exposed to the risk of dental decay for longer periods of time than others. *First permanent molar teeth*, however, as they have no predecessors, are most likely to have erupted within a twelve-month window around the age of six years and to have been exposed to the rigours of the oral cavity for some five years.

Analysis of the *first permanent molar* first began in the 2005 Report, and this appendix is concerned with the continued analysis of the 2009 results from these four *first permanent molar teeth* only.

What is the prevalence of dental disease experience in P7 children for *first permanent molar teeth only*?

The average number of decayed, missing and filled *first permanent molar teeth* per P7 child in Scotland was 0.75, a reduction from 0.88 found in this age group in 2007 and 1.05 in 2005. There was a broad range of averages across NHS Boards of 0.40 – 0.96.

What is the obvious decay experience in P7 children of *first permanent molars only*?

Table 5 shows the results of the data collected on *first permanent molar* teeth across the fourteen NHS Boards in Scotland.

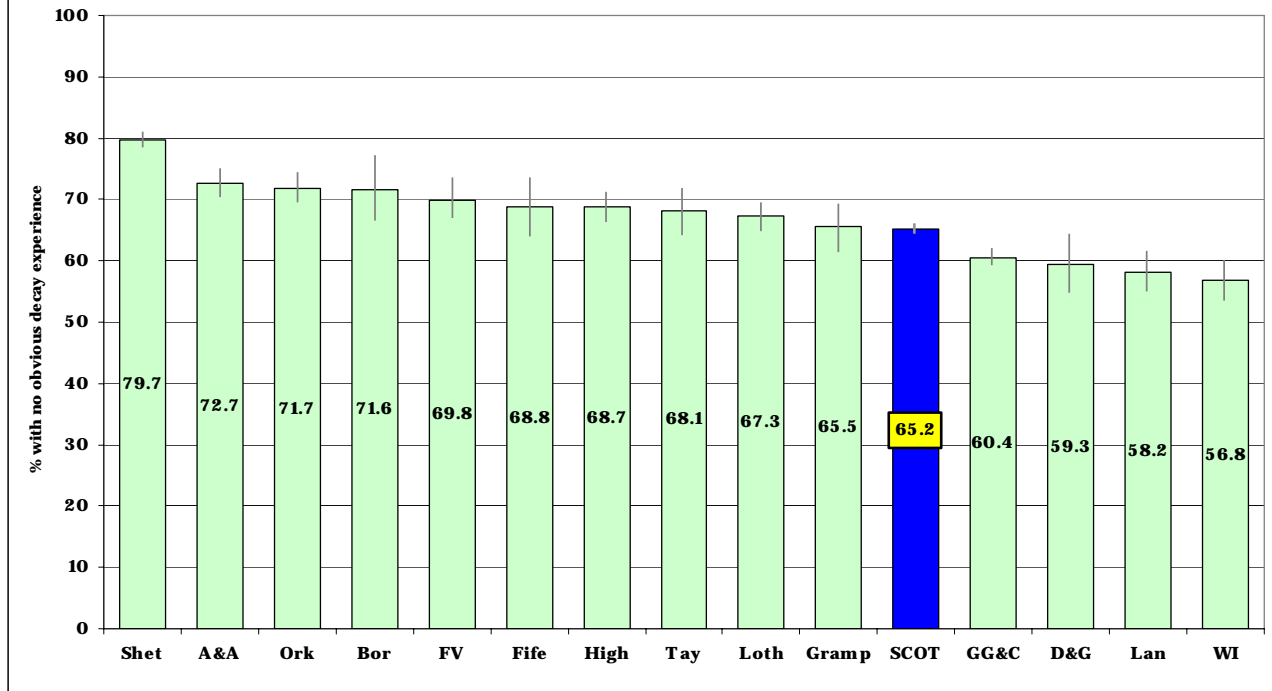
Table 5: Obvious decay experience in *first permanent molar teeth* for each NHS Board in Scotland

NHS Board	% with no obvious decay experience in <i>first permanent molar teeth</i>	Mean no. of decayed, missing and filled <i>first permanent molar teeth</i> (D ₃ MFT)	Mean no. of decayed <i>first permanent molar teeth</i> (D ₃ T)	Mean no. of missing <i>first permanent molar teeth</i> (MT)	Mean no. of filled <i>first permanent molar teeth</i> (FT)	For those with decay, the mean no. of decayed, missing and filled <i>first permanent molar teeth</i>
Ayrshire & Arran	72.7	0.51	0.11	0.08	0.31	1.88
Borders	71.6	0.55	0.15	0.07	0.33	1.97
Dumfries & Galloway	59.3	0.86	0.23	0.16	0.47	2.10
Fife	68.8	0.65	0.15	0.14	0.37	2.09
Forth Valley	69.8	0.61	0.14	0.13	0.35	2.02
Grampian	65.5	0.77	0.30	0.12	0.35	2.18
Greater Glasgow & Clyde	60.4	0.87	0.28	0.14	0.46	2.22
Highland	68.7	0.66	0.19	0.10	0.37	2.10
Lanarkshire	58.2	0.96	0.31	0.15	0.49	2.30
Lothian	67.3	0.69	0.21	0.13	0.34	2.10
Orkney	71.7	0.53	0.19	0.10	0.23	1.87
Shetland	79.7	0.40	0.13	0.09	0.18	2.00
Tayside	68.1	0.74	0.16	0.17	0.41	2.32
Western Isles	56.8	0.86	0.29	0.11	0.45	1.98
Scotland	65.2	0.75	0.22	0.13	0.40	2.14

Across Scotland, the level of P7 children with no obvious decay experience in their *first permanent molars* was 65.2% (an improvement on the 2007 figure of 61.1% and 54.5% in 2005). There was a range of 56.8% - 79.7% across all 14 NHS Boards. This range is illustrated in Figure 12 on the opposite page.



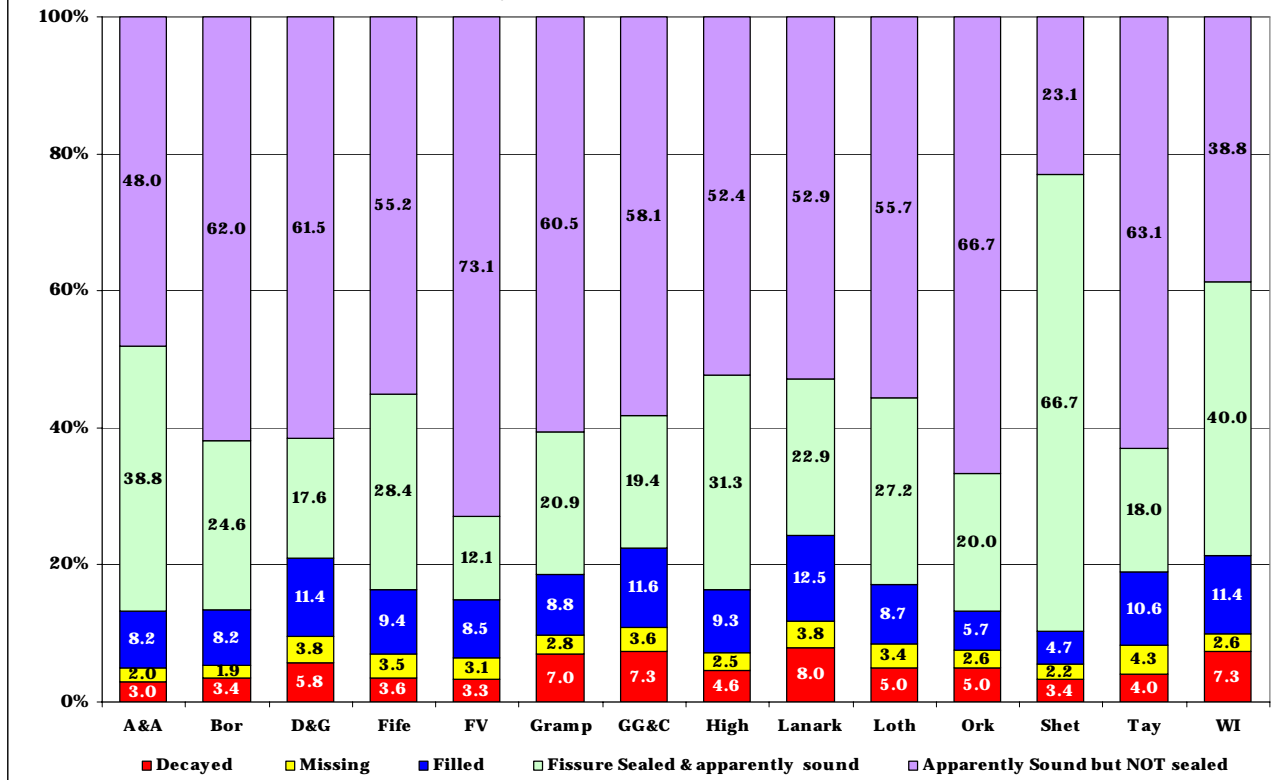
Figure 12 : Proportion of P7 children with no obvious decay experience in their first permanent molar teeth by NHS Board



What were the levels of dental disease and treatment history for first permanent molar teeth of P7 children across Scotland?

Figure 13 shows the proportion of decayed, missing and filled, fissure sealed, and apparently sound first permanent

Figure 13 : Proportion of D₃MFT, fissure sealed and apparently sound, and apparently sound but NOT sealed first permanent molar teeth

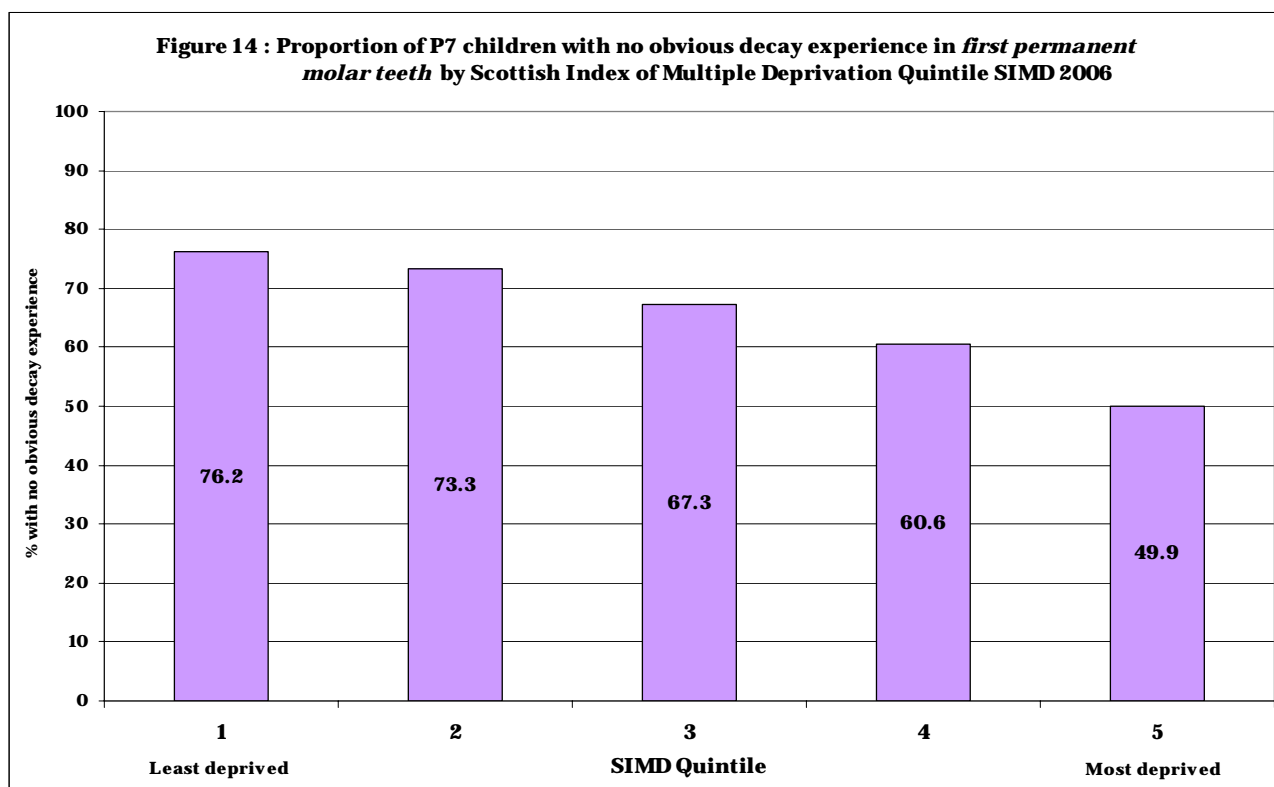


molar teeth across all fourteen NHS Boards in Scotland. A similar figure on the condition of the *first permanent molar teeth* was also documented in the 2005 and 2007 NDIP Reports on P7 children.

Figure 13 shows in detail not only the proportion of obvious decay experience in the *first permanent molar teeth* and those that are apparently sound, but also the level of apparently sound teeth that have received fissure sealant treatment. The proportion of fissure sealant treatment carried out across NHS Boards ranged widely from 12.1% in Forth Valley to a high of 66.7% in Shetland. As a preventive measure, the placement of fissure sealants has been recommended in children of high caries risk to help reduce the level of dental decay ¹².

Is there a difference between the level of dental disease or restorative treatment performed on *first permanent molars* of P7 children across Scotland in relation to social deprivation?

Of all the permanent teeth present in the oral cavity of P7 children, the *first permanent molar teeth* have been exposed to the rigours of the mouth for the longest period of time. Additional analysis on the data from *first permanent molar teeth* was undertaken in respect of socioeconomic deprivation and the new SIMD socioeconomic quintile deprivation classification, and is shown in Figure 14 below.



The level of dental disease in *first permanent molar teeth* of P7 children in Scotland is highest in those from the most deprived areas with a gradient across the quintiles. Those living in SIMD quintile 5 have fewer sound *first permanent molar teeth* with no obvious caries by more than ten percentage points compared to those that live in SIMD quintile 4.

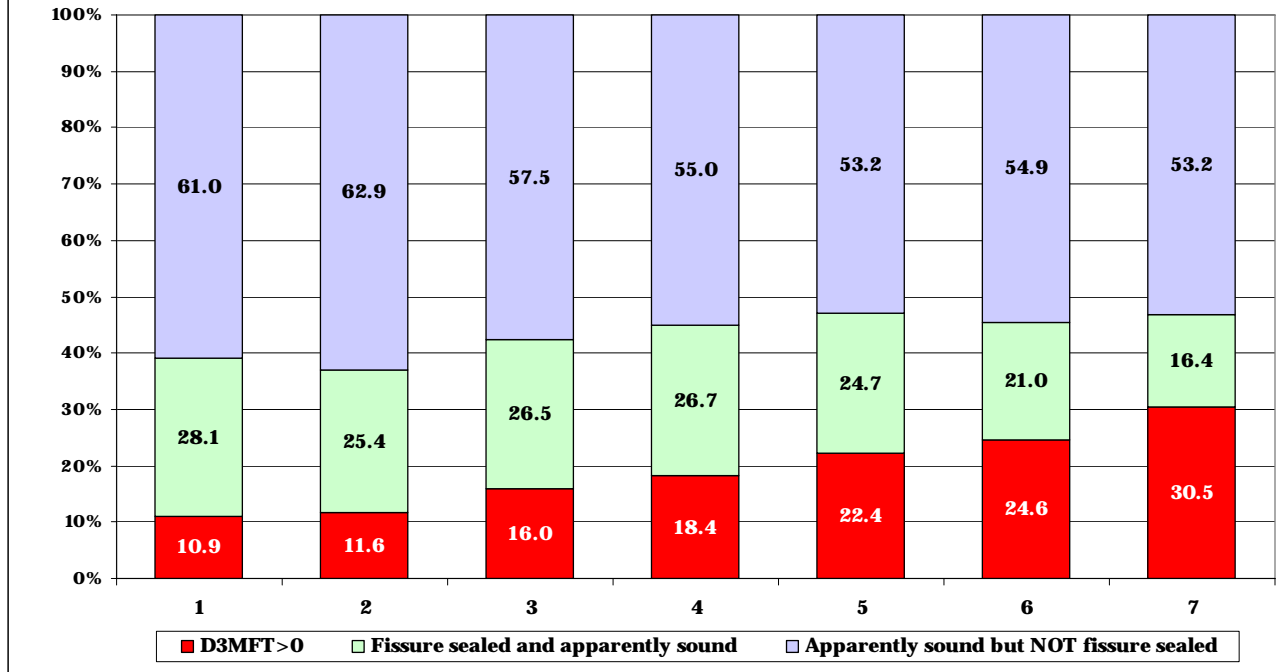
Compared to those living in the least deprived quintile 1 areas, there is an even greater disparity of twenty-six percentage points. There is also a steady gradient of dental disease between the least and most deprived groups.

Further analysis of social deprivation using the much older DepCat analysis allows a comparison with the previous NDIP survey of this age group in 2007 and the change in dental disease in *first permanent molar teeth* over time. These results can be seen in Figure 15.

By comparing the proportion of *first permanent molar teeth* by deprivation category (DepCat) with their obvious decay experience (D₃MFT), those that are both apparently sound and fissure sealed, and those that are apparently sound but not fissure sealed, a visual representation of the dental decay in the mouths of primary seven children across Scotland can be seen.



Figure 15 : Proportion of D₃MFT, fissure sealed and apparently sound, and apparently sound but NOT fissure sealed first permanent molar teeth by deprivation category (DepCat)



As to be expected, the proportion of *first permanent molar teeth* affected by dental disease increases with the increasing level of deprivation. The proportion of these teeth with obvious decay experience in DepCat 7 is nearly three times greater than those living in the more affluent areas of DepCat 1 or 2.

When considering the number of fissure sealed and apparently sound *first permanent molar teeth*, proportionally less have been treated in the more deprived DepCat 6 and 7 than in more affluent areas. As recommended in the SIGN Guidelines in 2000, more effort would therefore seem appropriate in the placement of fissure sealants in children of high caries risk in order to help reduce their level of dental decay.



References

- 1 Pitts NB & Davies JA. Scottish Health Boards' Dental Epidemiological Programme, 1987/88 Report. University of Dundee, 1994.
- 2 Pitts NB, Davies JA & Fyffe HE. Scottish Health Boards' Dental Epidemiological Programme, 1996/97 Report. University of Dundee, 1997.
- 3 Merrett MCW, Goold S, Jones CM, Levin KA, McCall DR, Macpherson LMD & Topping GVA. National Dental Inspection Programme of Scotland, 2005 Report. Scottish Dental Epidemiological Co-ordinating Committee, 2006
- 4 Pitts NB, Boyles J, Nugent ZT, Thomas N & Pine CM. BASCD Survey Report. The dental caries experience of 11-year-old children in Great Britain. Surveys co-ordinated by the British Association for the Study of Community Dentistry, 2004/2005.
- 5 Mitropoulos C, Pitts NB & Deery C. BASCD Trainers' Pack for Caries Prevalence Studies, 1992/93. University of Dundee, 1992.
- 6 Landis JR & Koch GG. The measurement of observer agreement for categorical data. *Biometrics*, 1977; 33: 159 - 174.
- 7 Watkins TR & Pitts NB. Scottish Health Boards' Dental Epidemiological Programme. Protocol; 1994 version. Stirling, 1994.
- 8 An Action Plan for Improving Oral Health and Modernising NHS Dental Services: Scottish Office, 2005.
- 9 Merrett MCW, Goold S, Jones CM, McCall DR, Macpherson LMD, Nugent ZJ & Topping GVA. National Dental Inspection Programme, 2007 Report. Scottish Dental Epidemiological Co-ordinating Committee, 2008
- 10 Scottish Index of Multiple Deprivation 2006: General Report, Scottish Government, 2006.
- 11 Carstairs V, Morris R. Deprivation and Health in Scotland. Aberdeen University Press, 1991.
- 12 Preventing Dental Caries in Children at High Caries Risk: SIGN Guideline Number 47, 2000.



National Dental Inspection Programme (NDIP) 2009

PART 2

Basic Inspection Results

The *Basic Inspection* of the NDIP programme aims to inform the parents/carers of individual P1 or P7 children by letter of the oral health of their child. These letters record the principal clinical findings of the dental inspection of the child and convey the degree of urgency with which an appointment for attendance at a dentist is suggested.

One of three possible letters was sent to parents informing them of the state of dental health observed in the mouth of their child at the time of the school inspection – the wording of these letters varies slightly depending on whether a P1 or a P7 child has been inspected. The letters are as follows:

- Letter A - should seek immediate dental care on account of severe decay or abscess.
- Letter B - should seek dental care in the near future due to one or more of the following: history of tooth decay, a broken or damaged front tooth, tooth wear, poor oral hygiene or may require orthodontics.
- Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

The results of the *Basic Inspection* are then anonymised and aggregated. They are used to monitor the impact of both local and national oral health improvement programmes, and to assist in the development of dental services. In the school year 2008/2009, the aim of the *Basic Inspection* of NDIP was to invite children in all P1 and P7 classes of Scottish Local Authority (LA) schools to participate.

Primary 1 Data

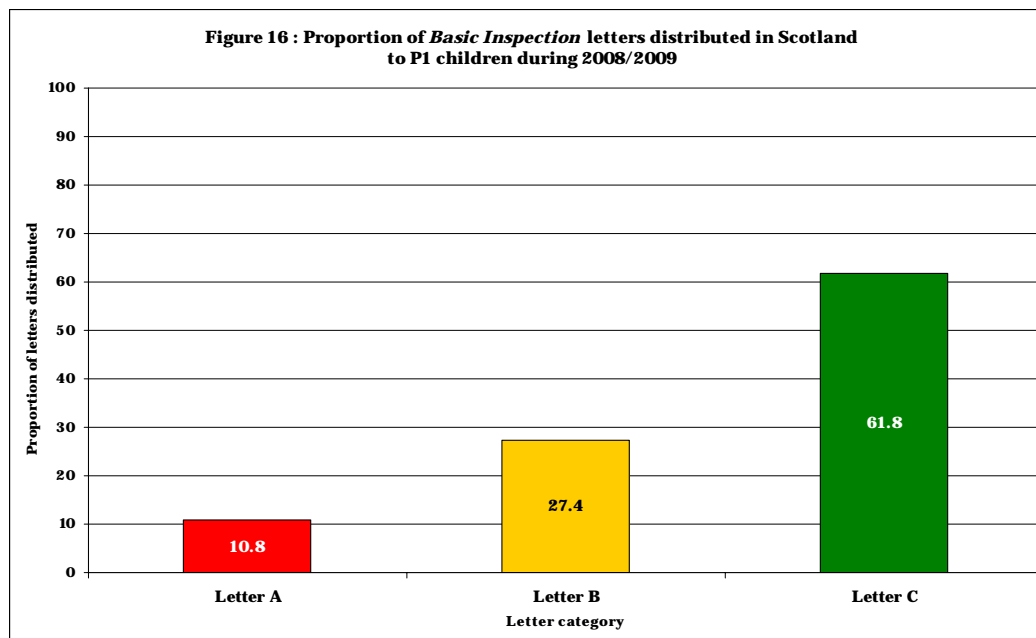
During 2008/2009, all P1 classes of Scottish Local Authority schools were invited to participate. The *Basic Inspections* were conducted in primary schools in all NHS Boards, and overall 45,126 P1 children were inspected (Table 6). This represents 85% of P1 children who attended mainstream Local Authority schools across Scotland in the 2008/2009 school year and whose parents/guardians were advised by letter of the oral health of their child.

Table 6 : Number of P1 children inspected by NHS Boards during the school year 2008/2009

NHS Board	Total no. of P1 children in Local Authority schools 2008/2009	Total no. of P1 children inspected 2008/2009	Proportion of P1 children inspected 2008/2009
Ayrshire & Arran	3,771	3,383	89.7%
Borders	1,180	1,009	85.5%
Dumfries & Galloway	1,409	1,177	83.5%
Fife	3,794	2,721	71.7%
Forth Valley	3,192	2,741	85.9%
Grampian	5,510	3,586	65.1%
Greater Glasgow & Clyde	12,258	10,850	88.5%
Highland	3,019	2,652	87.8%
Lanarkshire	6,196	5,642	91.1%
Lothian	8,055	7,084	87.9%
Orkney	186	140	75.3%
Shetland	259	237	91.5%
Tayside	4,033	3,658	90.7%
Western Isles	273	246	90.1%
SCOTLAND	53,135	45,126	84.9%



The proportion of letters distributed in the three categories across Scotland is shown below in Figure 16. Within NHS Boards, similar comparisons can be made at CHP and Local Authority level, or for each primary school or clusters of schools.



Primary 7 Data

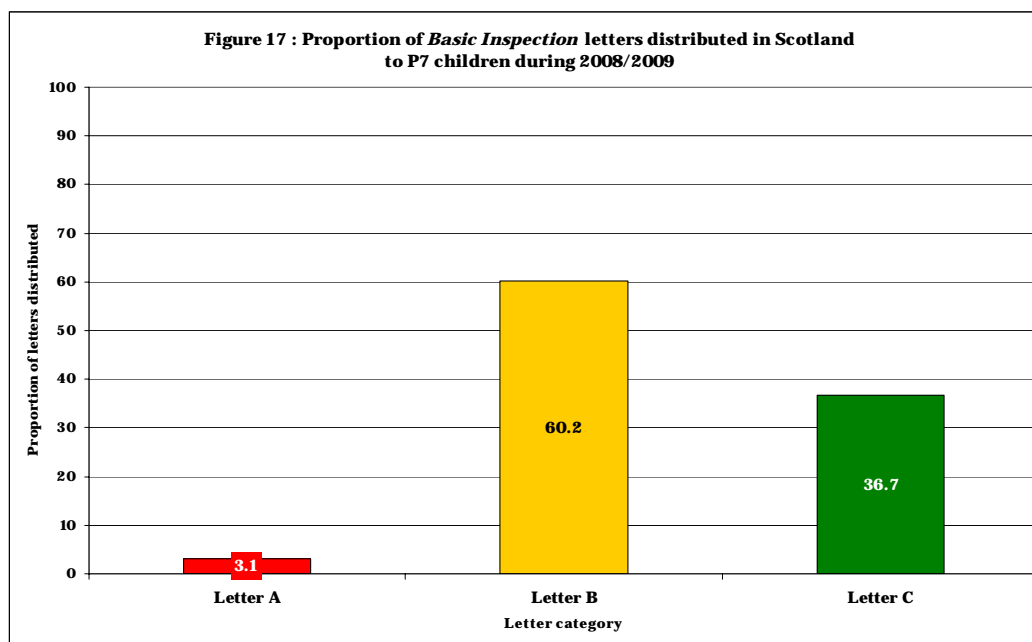
All NHS Boards were required to undertake *Basic Inspections* on not only P1 but also P7 children during the school year 2008/2009. In total, 47,744 Primary 7 children received a *Basic Inspection*. This represented 80% of P7 children attending mainstream Local Authority schools across Scotland (Table 7). As with the P1 children, all the parents of the P7 children who received a *Basic Inspection* were advised by letter of the oral health of their child.

Table 7 : Number of P7 children inspected by NHS Boards during school year 2008/2009

NHS Board	Total no. of P7 children in Local Authority schools 2008/2009	Total no. of P7 children inspected 2008/2009	Proportion of P7 children inspected 2008/2009
Ayrshire & Arran	4,252	3,633	85.4%
Borders	1,339	1,164	86.9%
Dumfries & Galloway	1,628	1,291	79.3%
Fife	4,115	2,788	67.8%
Forth Valley	3,601	2,757	76.6%
Grampian	6,134	3,832	62.5%
Greater Glasgow & Clyde	13,480	11,535	85.6%
Highland	3,668	3,126	85.2%
Lanarkshire	7,031	6,178	87.9%
Lothian	8,706	7,016	80.6%
Orkney	263	215	81.7%
Shetland	307	283	92.2%
Tayside	4,617	3,648	79.0%
Western Isles	324	278	85.8%
SCOTLAND	59,465	47,744	80.3%



The distribution of these letters across Scotland for P7 children is shown in Figure 17 and, as with the P1 data in Figure 16, these can be analysed within NHS Boards according to local requirements.



Were there any difficulties experienced in collecting the *Basic Inspection* data?

Several logistical issues, albeit fewer than with previous surveys, affected the ability of several NHS Boards to deliver comprehensive inspection coverage of all schools. These included limitations in professional manpower in some Community Dental Services in meeting conflicting service demands and difficulties with some of the computer software. However, NHS Boards, CHPs and Local Authorities across Scotland continue to work in partnership to improve the NDIP programme. The coverage of both P1 and P7 classes has continued to improve, helped as it is by the introduction of better NDIP software specifically designed to collect and analyse the dental inspection data. For the interpretation of any local results contained in Tables 6 and 7, readers are advised to contact the NHS Board concerned.

While the target is that all P1 and P7 children should receive a *Basic Inspection*, it is improbable that this will be conducted on every child within a target population in participating schools for the following reasons: parental permission not given, child unable/unwilling to co-operate or child not at school on the day of the dental inspection. The variation in the size of the P7 population between the *Basic* and *Detailed Inspections* in some areas is a reflection of the different times that the fluctuating numbers of children attending school were assessed during the school year.

Readers are advised that if more precise and consistent details of dental health are required at either national or sub-national level, they should refer to the Detailed Inspection results recorded in Part 1 of this Report.

How can the NDIP Programme results be applied to local NHS services, CHPs and Local Authorities?

As noted above, the information from the NDIP programme can be utilised at both NHS Board and Community Health Partnership (CHP) level. These data can be useful in highlighting areas that require health promotion or dental services input and will be a useful monitoring tool over time. Local Authorities can also receive anonymised and aggregated data at both individual primary school or ‘cluster’ levels.

With the Scottish Government Dental Action Plan and other appropriate local oral health strategies of NHS Boards either in place or being initiated, an improvement in the level of dental health is expected in both nursery and primary schools, with sustained progress being seen at each of the monitoring levels.



Acknowledgements

The National Dental Inspection Programme would not have been possible without the efforts of many people throughout Scotland who worked together to ensure its success.

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