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BASCD Survey report

The dental caries experience of 5-year-old children in Great Britain (2005/6). Surveys co-ordinated by the British Association for the Study of Community Dentistry.

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Objective This paper reports the results of standardized clinical caries examinations of 5-year-old children from across England, Wales and Scotland in 2005/6. These co-ordinated surveys are the latest in a series which seek to monitor the dental health of children and to assess the delivery of dental services. ***Method*** The criteria and conventions of the British Association for the Study of Community Dentistry were used. Representative samples were drawn from participating strategic health authorities (SHAs), primary care trusts (PCTs) and health boards (HBs). Caries was diagnosed at the caries into dentine threshold using a visual method without radiography or fibre-optic transillumination. ***Results*** 239,389 five and six year-old children from across England, Wales, Scotland and the Isle of Man were examined in 2005/2006. The results again demonstrated a wide variation in disease prevalence and care strategies across Great Britain. Mean $d_3$mft across England was 1.47 (d_3t=1.l0, mt=0.20, ft=0.16), across Wales the corresponding values were 2.38 (d_3t=1.70, mt=0.43, ft=0.25) and in Scotland 2.16 (d_3t=1.45, mt=0.51, ft=0.20). Overall, 39.4% of children in Great Britain had evidence of caries experience in dentine ($d_3$mft>0, including visual dentine caries). The distribution of caries was highly skewed. Thus the mean caries experience for those with dentinal decay was 3.99, as opposed to the overall mean of 1.57. Trends over time demonstrate a small change in mean $d_3$mft since 2003/4 when the mean was 1.62, although the mean value for those with dentine decay experience remained constant (4.00 vs 3.99). The care index has also fallen marginally from 12% to 11%. The BASCD co-ordinated NHS Epidemiology Programme will evolve in coming years as differing priorities in the frequency of inspecting particular age groups is being seen as well as a desire to measure other aspects of oral health in addition. ***Conclusion*** Overall, there has been only a small overall improvement in the dental health of 5-year-old children over the last 2 years and no diminution of the level of disease in those affected for some time, although in Scotland a pattern of continuing steady progress from previously high levels is seen. While many children enjoy good oral health, sizable groups remain within the population of 5-year-old children who have a clinically significant burden of preventable dental disease.

Key words: caries prevalence, dental caries, dental epidemiology, national surveys, oral health

Introduction

This paper sets out the results of the most recent series of surveys of 5-year-old children conducted within the National Health Services (NHS) under the auspices of the British Association for the Study of Community Dentistry (BASCD) Dental Epidemiology Programme during 2005-6. This includes data collected in Scotland by the NHS Boards under the National Dental Inspection Programme.

The Programme seeks to link together the various (and increasingly diverse) dental epidemiology activities carried out locally and nationally in order to monitor the dental health of children using as comparable criteria and methodology as is possible given current logistics and priorities. The Programme contributes to the national monitoring of service provision and targets in a devolved United Kingdom, while also providing data locally to aid in service planning and evaluation of Oral Health Strategies and Plans.

There has been a phase of continuing change within the NHS organisations across Great Britain, leading to a continuing need to overcome a number of significant logistical challenges in covering and reporting results according to moving boundaries and service configurations.

Method

The agreed BASCD criteria (Pitts *et al*., 1997) and conventions set out in the BASCD trainer's pack (Mitropoulos *et al*., 1992) were employed. Within Wales and within each English 'region', a designated NHS epidemiology coordinator was responsible for the local delivery of the Programme, assisted by a 'regional' trainer who attends the biennial national training and calibration exercise. In Scotland the National Dental Inspection Programme inspects children in Primary 1 classes. It is managed by the NHS boards (National Dental Inspection Programme, 2007) and a central training and calibration exercise is conducted annually in Perth.

Representative samples were drawn from participating health authorities and boards according to the agreed BASCD guidelines (Pine *et al*., 1997). Dental caries

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was diagnosed at the caries into dentine (d_3) threshold using a visual method (including visual dentine caries) without radiography, fibre-optic transillumination, or compressed air. The results in the text therefore use the $d_3$mft nomenclature but, for brevity, the term dmft has been used in the tables.

Teeth are dried with cotton wool rolls or cotton buds and inspected under standardised illumination. Examiners were also to note the presence of any intra-oral dental abscesses or draining sinuses. The number of those children with one or more abscesses/sinuses was summated. This provided an estimate of the proportion of children affected by dental sepsis.

Results

A total of 239,389 five and six year-old children from across England, Wales, Scotland and the Isle of Man were examined in 2005/2006. The number examined in England and Wales is some 27% more than in the 2003/2004 survey (Pitts *et al*., 2005). On average this represents 42% of the total population of this age group in England, 38% in Wales, and 21% in Scotland. It should be noted that within the different areas there was a wide range in the size of samples chosen according to local needs and practices.

For this Report (and for future ones in the series), the full Table showing all the Primary Care Trust and other local area data is now published on the BASCD website <http://www.bascd.org/>, rather than in the Journal. This full Table gives, for England, Wales, Scotland and the Isle of Man in 2005/2006, the total populations and samples, ages, results for $d_3$mft and its components, sound teeth, the percentage of and mean disease experience for children with $d_3$mft > 0 and d_3t>0, the percentage with abscess/sepsis, and values for care index percentage (ft/ $d_3$mft x 100%) for every participating local health board (LHB) or primary care trust (PCT), and for the strategic health authorities (SHA) of the National Health Service in England. Table 1 in this paper shows summary data on all these variables, but as mean values for England, Wales, Scotland and Great Britain only.

The results once again demonstrated a wide variation in disease prevalence and care strategies. Across England and Wales, mean values for $d_3$mft within the current English strategic health authorities ranged from 0.60 in South Staffordshire (Midlands and the East) to 3.21 in Blackburn with Darwen (North); in Wales mean values ranged from 1.62 in Conwy (NW) to 3.96 in Blaenau Gwent (SE); in Scotland mean values ranged from 1.33 in Forth Valley to 2.68 in Lanarkshire. Mean $d_3$mft across England was 1.47 (d_3t=1.l0, mt=0.20, ft=0.16), across Wales the corresponding values was 2.38 (d_3t=1.70, mt=0.43, ft=0.25) and in Scotland 2.16 (d_3t=1.45, mt=0.51, ft=0.20).

Overall, 39.4% of children in Great Britain had evidence of caries experience in dentine ($d_3$mft>0, including visual dentine caries). The distribution of caries was highly skewed. Thus the mean caries experience for those with dentinal decay was 3.99, as opposed to the overall mean of 1.57. Trends over time demonstrate a small change in mean $d_3$mft since 2003/4 when the mean was 1.62, although the mean value for those with

Table 1. Overall results for England, Wales, Scotland: total populations, samples and ages, findings for $d_3$mft and its components, sound teeth, the percentage of and mean disease experience for children with $d_3$mft > 0 and d_3t>0, the percentage with abscess/sepsis, and care index percentage (ft/ $d_3$mft x 100%) for every participating local health board (LHB) or primary care trust (PCT), and for the strategic health authorities (SHAs) of the National Health Service in England.

Country								*Sound*	*dmft for dmft>0*		*dt for dt>0*		*Abscess/ Sepsis*	*CI*
	Population	*Sample*	*Age*	*dt*	*mt*	*ft*	*dmft*	*Teeth*	*%*	*Mean*	*%*	*Mean*	*%*	*%*
ENGLAND	510606	216873	5.63	1.10	0.20	0.16	1.47	17.7	38.0	3.86	33.3	3.31	2.5	11
WALES	28256	10660	5.79	1.70	0.43	0.25	2.38	16.5	52.8	4.51	47.7	3.57	4.1	11
SCOTLAND	52982	11161	5.49	1.45	0.51	0.20	2.16	17.1	46.0	4.70	38.4	3.78	2.4	9
GREAT BRITAIN	591844	238694	5.63	1.16	0.24	0.17	1.57	17.6	39.4	3.99	34.5	3.38	2.6	11

dentine decay experience remained constant (4.00 vs 3.99). The care index (CI) has also fallen marginally from 12% to 11%.

The geographical variation of caries experience at the macro level is highlighted in Figure 1 in map form. Figure 2 presents this mean $d_3$mft data as a bar chart which shows an overall ranking of the strategic health authorities in England, Wales and Scotland, including the 95 per cent confidence intervals. Mean caries experience in this age group is modest in the Midlands & East and the South, rises in London and the North before reaching respectively higher levels in Scotland and Wales. Figure 3 shows the direction and magnitude of changes in the various areas over the last two years. Statistically significant reductions (t test with correction for thirteen comparisons) in dentinal caries experience were seen in Yorkshire & Humber, North West and Scotland, while significant increases were seen in South East Coast and North East.

In England, although coverage is not yet complete, clinically significant proportions of children were affected by dental abscesses, with the highest numbers in the North of England, with one PCT reporting more than 1 in 10 of every 5-year-old affected. Similar findings were evident in Wales and Scotland.

Discussion

These latest surveys and inspections have shown that, overall, there has been only a small overall improvement in the dental health of 5-year-old children over the last two years and no diminution of the level of disease in those affected for some time (Pitts *et al*., 2005, 2003, 2001). Geographic variation in oral health is marked at both the local and national levels. In Scotland a pattern of continuing steady progress is seen (National Dental Inspection Programme, 2007), although mean levels remain higher than those seen in many parts of England.

Overall, the provision of operative care for those with dentinal decay has again decreased slightly. While many children enjoy good oral health, sizable groups remain within the population of 5-year-old children who have a clinically significant burden of preventable dental disease.

The ability of the BASCD co-ordinated NHS Epidemiology Programme to maintain synchronized examinations and inspections across the UK is being compromised by post-devolution changes in service configurations, differing priorities in the frequency with which particular age groups are being seen and a desire to measure other aspects of oral health in addition to traditional caries

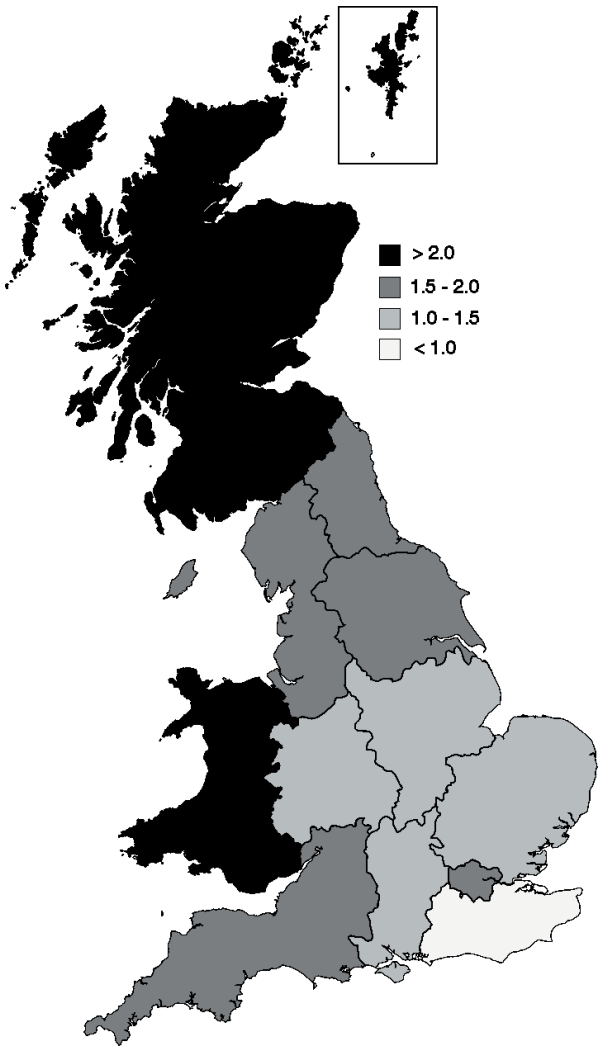

Figure 1. *Dental caries experience ($d_3$mft)of 5-year-old children in Great Britain, BASCD co-ordinated NHS Dental Epidemiology Programme surveys 2005/2006 including National Dental Inspection Programme in Scotland.*

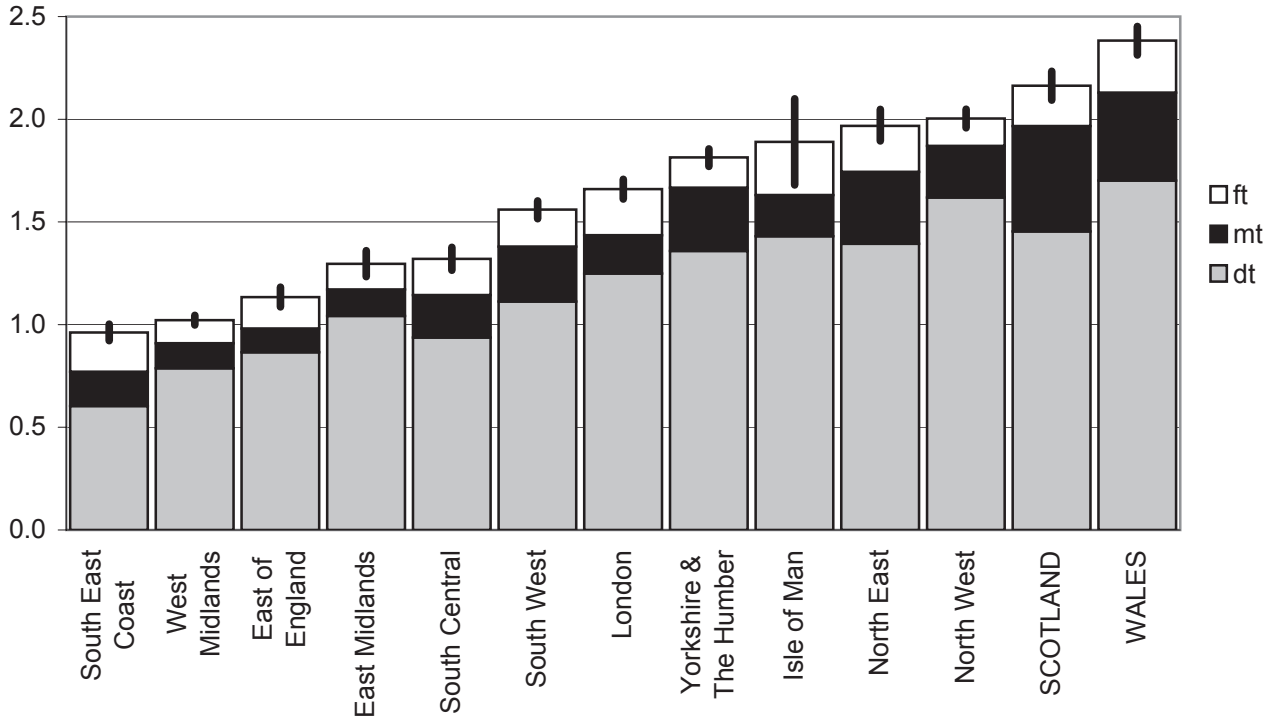

Figure 2. *Dental caries experience in 2005/2006 ($d_3$mft and 95% confidence intervals) of 5-year-old children in English Strategic Health Authorities, Wales and Scotland; BASCD coordinated NHS Dental Epidemiology Programme surveys including National Dental Inspection Programme in Scotland.*

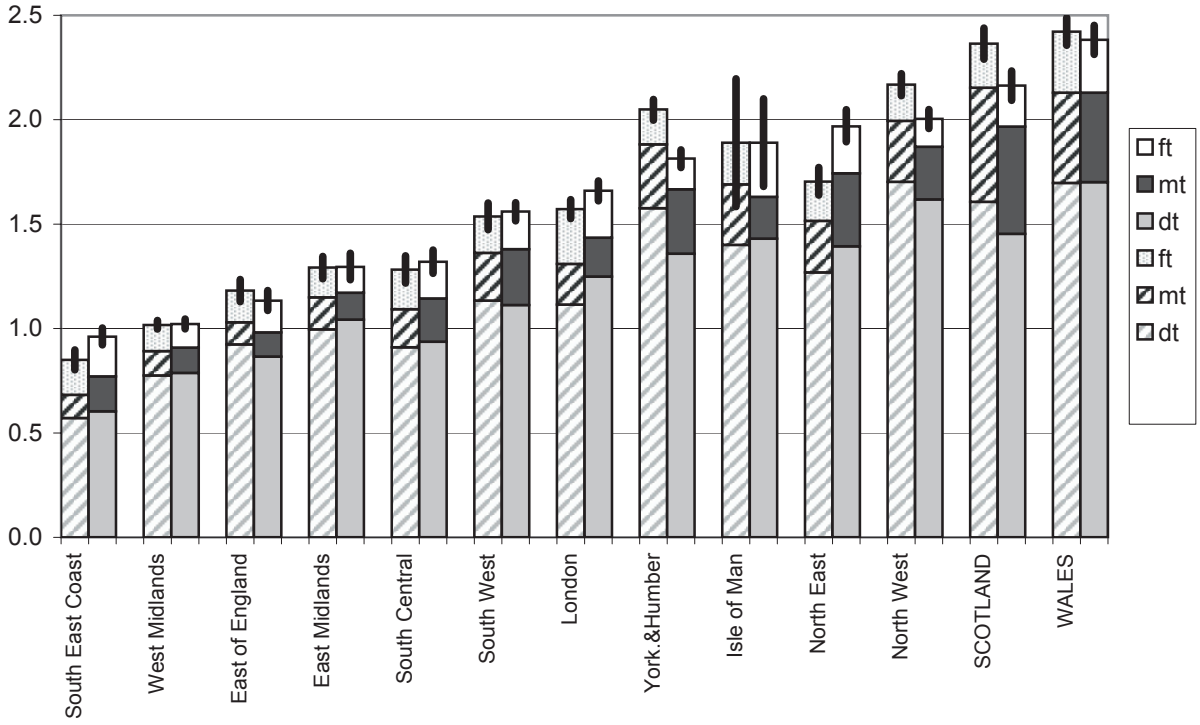

Figure 3. *Changes in dental caries experience ($d_3$mft and 95% confidence intervals) of 5-year-old children between 2003/4 and 2005/6 in English Strategic Health Authorities, Wales and Scotland; BASCD coordinated NHS Dental Epidemiology Programme surveys including National Dental Inspection Programme in Scotland.*

epidemiological indices (Pitts, 2004; Drugan, 2004). The Programme is continuing to review its activities and hopes to be able to help provide robust, standardised and comparative measurement tools as these activities evolve further across Great Britain. When possible, comparative data will be published.

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