



# Executive Summary: Adult Dental Health Survey 2009

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# Introduction

The 2009 Adult Dental Health Survey (ADHS) is the fifth in a series of national dental surveys that have been carried out every ten years since 1968. The main purpose of these surveys has been to get a picture of the dental health of the adult population and how this has changed over time. The 2009 survey was commissioned by the NHS Information Centre for health and social care and was conducted on behalf of the Department of Health in England, the Welsh Assembly Health Department, and the Department of Health, Social Services and Public Safety in Northern Ireland. The survey was carried out in England, Wales and Northern Ireland only: Scotland did not participate in the 2009 survey. The aims of the survey were to establish the condition of the natural teeth and supporting tissues; to investigate dental experiences, knowledge about and attitudes towards dental care and oral hygiene; to examine changes over time in dental health, attitudes and behaviour; and to monitor the extent to which dental health targets set by the Government are being met.

The Office for National Statistics managed the survey, working in consortium with the National Centre for Social Research, the Northern Ireland Statistics and Research Agency, and dental experts from the Universities of Birmingham, Cardiff, Dundee, Newcastle, and University College London. The survey consisted of a questionnaire interview with all adults aged over 16 years at all sampled households, and an oral examination of the mouth and teeth of all those adults who had at least one natural tooth.

The sample size for the survey was 13,400 households (1,150 in each English Strategic Health Authority and Wales, and 750 households in Northern Ireland). Data collection for the survey took place between October 2009 and April 2010, and the final household interview response rate was 60 per cent. A total of 11,380 individuals were interviewed, and 6,469 dentate adults were examined, making this the largest ever epidemiological survey of adult dental health in the United Kingdom.

A series of reports from the 2009 survey have been published which provide both national and regional estimates focusing specifically on eight distinct themes. What follows is a summary of the key findings from each theme with a discussion of the implications of these findings, focusing on issues that remain cause for concern or may become more important in the future.

## Summary

The results of the survey show that across almost all of the indicators of oral health and disease there has been a continued improvement in adults' dental health. There are some differences between England, Wales and Northern Ireland, but in all areas the continuation of improvement in younger age groups, first detected over 20 years ago, are now evident up to age 45. However, for those who do have decay or gum problems, disease can be extensive, whilst for many people in old age and older middle age, dental needs are very complex. Good health behaviours, such as regular brushing, are shown to be associated with better health and a greater proportion of dentate adults than ever before are engaging in these behaviours. The large majority of adults also indicate that they are attending the dentist at least once every two years, the maximum recommended interval. Finally, the results also show that although accessing NHS dental services remains difficult for a small minority, the large majority of adults who tried to get an NHS dental appointment in the three years prior to being interviewed successfully made and attended an appointment.

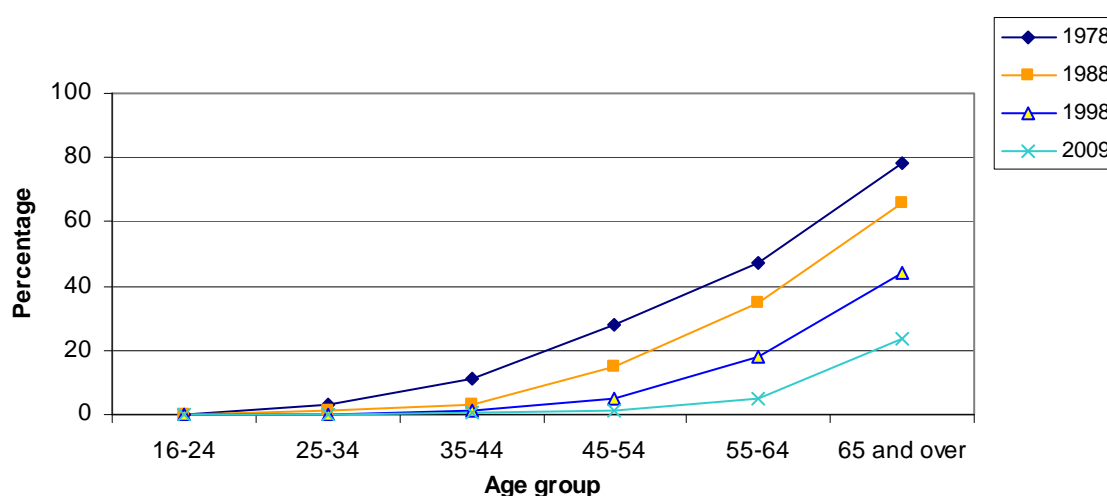
Full background and methodological details for the survey, including response and clinical examination conversion rates can be found in *Foundation report: Adult Dental Health Survey 2009*. A glossary of all clinical terms can also be found in this report. Specific references can be found in the main reports in the survey series. In addition, confidence intervals for key measures are published as an annex to this report.

# 1 Oral health and function

This report considers the major indicators of oral health and function. The key findings were:

- In 2009, 94 per cent of the combined populations of England, Wales and Northern Ireland were dentate, that is had at least one natural tooth.
- The proportion of adults in England who were edentate (no natural teeth) has fallen by 22 percentage points from 28 per cent in 1978 to 6 per cent in 2009.

**Figure 1.1 Trends in percentage edentate by age: England, 1978 to 2009**



- The overall mean number of teeth amongst dentate adults was 25.7, with the majority of dentate adults (60 per cent) having between 27 and 32 teeth. Dentate adults had an average of 17.9 sound and untreated teeth but this varied hugely with age.
- Only 17 per cent of dentate adults had very healthy periodontal (gum) tissues and no periodontal disease (that is no bleeding, no calculus, no periodontal pocketing of 4mm or more, and in the case of adults aged 55 or above, no loss of periodontal attachment of 4mm or more anywhere in their mouth).
- Ten per cent of dentate adults had excellent oral health (that is having 21 or more natural teeth, 18 or more sound and untreated teeth and roots, no decay detected at any site, no periodontal pocketing<sup>1</sup> of 4mm or more, no loss of attachment<sup>1</sup> of 4mm or more, and no calculus (a form of hardened plaque) or bleeding).

In 1968, with 37 per cent of the population of England and Wales edentate the idea that more than half of people aged 85 or more would retain some natural teeth would have seemed unthinkable. Yet this was the case in 2009. The transformation in the population's oral health, first observed in the 1988 ADHS, has been extensive, and it is likely that a similar transformation has taken place across the United Kingdom.

For those under 45, the likelihood of retaining not just some teeth, but a considerable number of healthy teeth through the whole of a long life, is now very high. In particular, the prospects for young adults aged 16 to 24 look better than they have ever been. For those aged over 45, the legacy of higher disease levels earlier in the life course and different patterns of dental care remain visible in the form of far fewer teeth and fewer sound teeth, but this generation still has a better outlook than their predecessors.

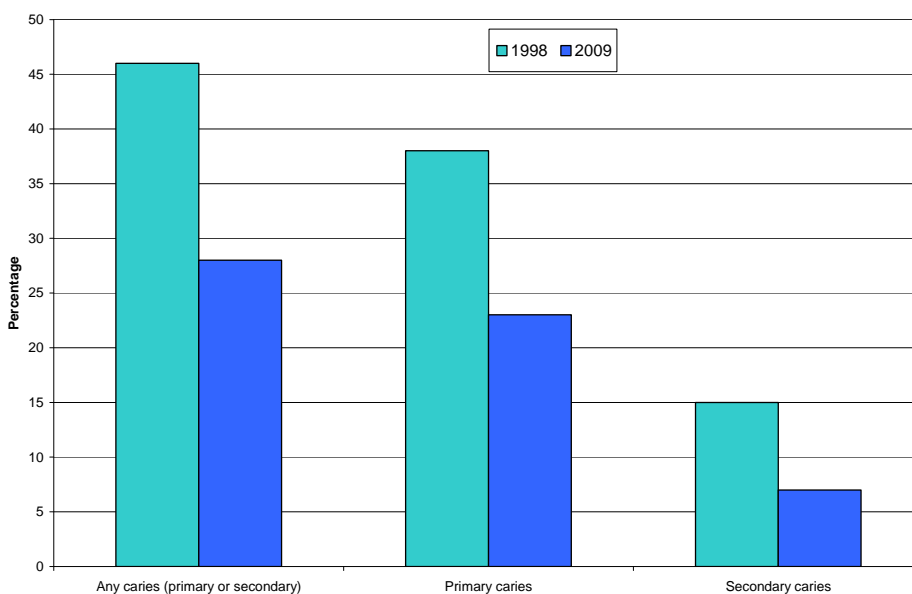
There are, however, still many people whose oral health and function does not meet the best possible standards. Good oral health cannot be taken for granted, even in the young, and the variations with social class and, to a lesser extent, geography are very apparent.

## 2 Disease and related disorders

This report considers the prevalence of dental disease and related disorders. The key findings were:

- Just under one third of dentate adults (31 per cent) had obvious tooth decay in either the crowns or roots of their teeth. For those adults who had some decay, the average number of teeth affected was 2.7, compared with an average of 0.8 among all dentate adults.
- There are social variations in dental decay with adults from routine and manual occupation households being more likely to have decay than those from managerial and professional occupational households (37 per cent compared with 26 per cent )
- The prevalence of decay in the crowns of the teeth varied with age, with the highest prevalence in adults aged 25 to 34 (36 per cent) compared with those aged 65 to 74 (22 per cent).
- Primary dental decay (decay on the surface of a tooth that may or may not have evidence of restorations on another surface) affected almost a quarter (23 per cent) of all dentate adults and comprised the majority of decay in crowns.
- The prevalence of decay (using the natural tooth crowns as the measure) in England has fallen from 46 per cent to 28 per cent since 1998, and this reduction is reflected in all age groups.

**Figure 2.1 Trends in percentage of dentate adults with dental caries (decay) by age: England, 1998 to 2009**





- Seven per cent of adults had active root decay and this proportion varied by age, with 1 per cent of 16 to 24 year olds affected compared with 11 per cent of 55 to 64 year olds and 20 per cent of 75 to 84 year olds.
- Overall 45 per cent of adults had periodontal (gum) pocketing exceeding 4mm, although for the majority (37 per cent) disease was moderate with pocketing not exceeding 6mm.
- Moderate tooth wear has increased from 11 per cent in 1998 to 15 per cent in 2009, although severe wear remains rare.

Several diseases and processes are a threat to the retention of natural teeth for a lifetime. Dental decay has traditionally been the greatest threat to natural teeth and is still prevalent in the population. Almost a third of the population showed decay and this represents many millions of people with decay. Whilst the younger age groups have the most people with good oral health they also have the highest prevalence of decay and are substantially more likely to have multiple teeth with decay. Despite the relative abundance of disease detected, and the clear history of previous disease in the form of fillings and other restorations, particularly for older age groups the trend is of a continued reduction over time.

Periodontal disease remains common at a low level although overall there has been a reduction in mild disease associated, perhaps, with a general increase in cleanliness. However, there has been a slight increase in the prevalence of more severe disease and the impacts of severe disease are concentrated in a relatively small proportion of the population. The associations with a range of health behaviours (for example, smoking or infrequent tooth brushing) are perhaps expected but the social gradient is relatively minor.

Severe tooth wear remains rare, but there are signs of an increase since the last survey and there are a small but increasing proportion of younger adults with moderate wear which is likely to be clinically important.

## 3 Urgent conditions

This report outlines the prevalence of pain, oral sepsis and other conditions that indicate poor oral health. The key findings were:

- Nine per cent of dentate adults reported current pain related to their teeth in the clinical examination. Older adults were less likely than younger adults to report current pain in their teeth, and adults from professional and managerial households were less likely than adults from routine and manual occupation households to report current pain.
- Eight per cent of dentate adults reported that they had experienced pain in their mouths fairly or very often in the previous 12 months. Women were slightly more likely than men to report that they had experienced pain fairly or very often in the previous 12 months.
- Seven per cent of dentate adults had one or more PUFA lesions (PUFA is the presence of open pulp, ulceration, fistula and abscesses in the mouth), most commonly an open pulp (4 per cent). Ulceration related to decayed teeth was observed in 1 per cent of dentate adults and fistula or abscess in permanent dentition was present in 2 per cent.
- A positive PUFA score, that is having any symptoms was more commonly recorded in men (8 per cent) than women (6 per cent), was associated with socio-economic classification, was much more common among those who reported that they only saw a dentist when they had trouble (13 per cent) and was also related to the length of time since respondents had last seen a dentist.
- There was a marked difference in the prevalence of PUFA according to the frequency of tooth brushing, high levels of dental anxiety, poor general and dental health. PUFA was related to both current and long-term pain.
- Eight per cent of dentate adults had one or more untreated teeth with unrestorable decay, and those who did, had an average of 2.2 teeth in this condition.
- Untreated and unrestorable decay was present in 23 per cent of those who reported current dental pain and 20 per cent of those who reported frequent pain or discomfort in the past 12 months.
- Adults had an increased likelihood of both pain and serious decay or sepsis if they did not attend a dentist for regular check-ups, brushed their teeth less than once a day, or were smokers.

The very significant improvements in oral health reported in this survey need to be considered alongside urgent conditions. Although these conditions affect a minority of people even a minority reporting pain or problems amounts to many millions in need of immediate care within the total population. The greater prevalence of pain in the youngest age groups as well as the high levels of people with the most severe levels of anxiety suggest that there are groups of people who may need special types of care in order to return them to a pain free condition.

Although an increasing proportion of people are enjoying improved oral health, these findings illustrate that this situation is not universal and for many, easy access to services for management of pain and discomfort remains relevant.

## 4 Complexity and maintenance

This report identifies the markers of complex lifetime dental treatment and discusses the implications of maintaining these complex restorations. The key findings were:

- Eighty four per cent of dentate adults had at least one filled tooth, and for those with a filling the mean number of teeth affected was 7.2 with an average of 2.1 surfaces affected per restored tooth.
- Adults aged under 45 years were less likely to have any fillings, and those who did had relatively low numbers of filled teeth. By contrast, 97 per cent of dentate adults aged 45 to 54 had a filled tooth and they had 9.1 teeth affected on average.
- In 2009, 37 per cent of dentate adults had artificial crowns. There was significant variation with age; only 5 per cent of the 16 to 24 year olds had crowns compared to between 55 and 59 per cent of those aged 45 to 74.
- For those with crowns, on average there were three per person, amounting to an estimated 47.6 million crowns across England, Wales and Northern Ireland.
- The majority of dentate adults (85 per cent) had a tooth affected by restoration
- Among people with at least one restoration, 9 per cent had some secondary decay (decay which is immediately adjacent to previously placed fillings or fissure sealants) in their mouth, and 26 per cent had either secondary decay or an unsound restoration for some other reason, in other words the likely need for some sort of intervention.
- Not surprisingly, failing restorations were most common in the groups with the most restored teeth, so there was a significant age related risk of having a restored tooth needing some attention.
- The average number of restored but otherwise sound teeth has fallen from 8.1 teeth in 1978 to 6.7 in 2009.
- In 2009, nearly one in five adults wore removable dentures of some description (partial or complete). This included almost all of the 6 per cent who were edentate, as well as 13 per cent who relied on a combination of dentures and natural teeth.
- Over a third of people (37 per cent) had none of the eight indicators of complexity<sup>1</sup> and a further 27 per cent had only one. Three or more indicators would represent a fair degree of complexity in terms of ongoing management of multiple conditions, and this threshold was reached by 19 per cent of the population.

Dental disease has lifelong impacts through the need for continued maintenance of treatments provided, even long after the disease has been eliminated. The heavy

maintenance load resulting from high decay levels in previous generations is clearly illustrated by the large numbers of restorations in those currently aged 45 and over. The maintenance needs for their successors, those aged under 45 should become progressively lower provided that disease levels can be maintained at low levels and modern treatment philosophies are applied where treatment does become necessary. When looking at the distribution of restorations and restored surfaces there is a concentration of higher levels of disease in a relatively small number of people.

Combining measures of restoration and disease into a crude complexity measure indicates the presence of combinations of conditions that would suggest particularly complex needs. These conditions are most prevalent in late middle age but affect all ages to some degree. This area needs further investigation but analysis indicates the very strong association between relevant health behaviours and potential needs.

## 5 Preventive behaviour and risks to oral health

This report describes oral health risk factors and behaviours and identifies who engages in them. The key findings were:

- Seventy-five per cent of adults said that they cleaned their teeth at least twice a day and a further 23 per cent of adults said that they cleaned their teeth once a day. Only 2 per cent of adults said that they cleaned their teeth less than once a day and 1 per cent said that they never cleaned their teeth.
- The majority of dentate adults reported using toothpaste with a high (1,350 to 1,500 parts per million) level of fluoride (76 per cent) and a further 18 per cent said that they used a brand with a medium (1,000 to 1,350 parts per million) level of fluoride.
- Overall 78 per cent of dentate adults said that they had been given advice by a dentist or a member of the dental team on cleaning their teeth and/or gums.
- Twenty-two per cent of all adults said that they currently smoked. A small minority of adults (9 per cent) reported having been given advice on quitting smoking in the last two years.
- Two-thirds (66 per cent) of dentate adults had visible plaque (bacterial material which collects on teeth and/or other solid oral structures such as dentures) on at least one tooth. The average number of teeth with plaque was 6.0 teeth and given that the average number of teeth was 25.7, represented just under a quarter (23 per cent) of all teeth.
- A similar proportion (68 per cent) of dentate adults had calculus present in at least one sextant of the mouth; on average 1.8 sextants were affected.

The importance of tooth brushing twice a day is a message that appears to have been taken on board by the majority of dentate adults; 75 per cent of adults questioned on the survey said that they brushed their teeth at least twice a day. Dentists and members of the dental team have contributed to this message with 78 per cent of adults recalling receiving advice from them. Despite this, 66 per cent of adults had plaque on at least one tooth and 68 per cent had calculus in at least one sextant. Whilst twice-daily brushing is now a fact of life for three quarters of the population, there is still some room for improvements in the effectiveness of that cleaning.

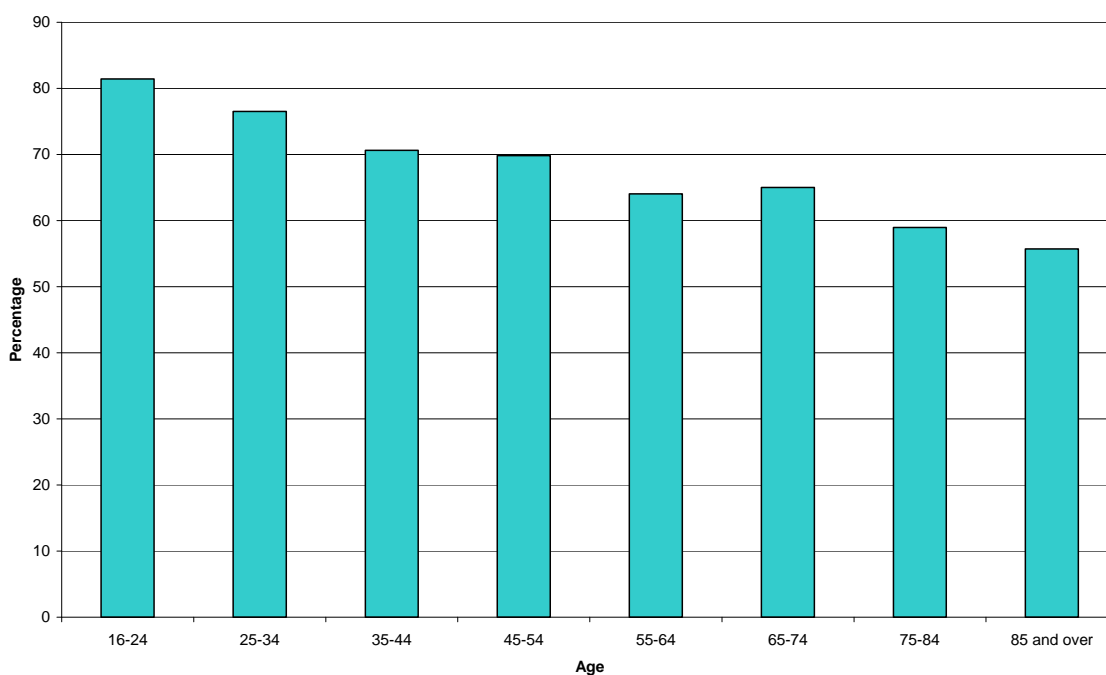
Dental teams are also in a position to provide advice on diet and smoking, both of which impact on oral health, and for the first time in the ADHS series these issues were considered in the 2009 survey. Only 9 per cent of dentate and 7 per cent of edentate adults who attended the dentist in the last 2 years recalled being asked about smoking; two thirds of adults said they had never been asked about their diet.

## 6 Service considerations

This report outlines and discusses access to NHS versus private dental health services, the types of treatment received and the experience of attending. The key findings were:

- Almost two-thirds (61 per cent) of dentate adults said that the usual reason they attended the dentist is for a regular check-up. Furthermore, 10 per cent said that they attended for an occasional check-up, 27 per cent said that they attended when having trouble with their teeth, and 2 per cent said that they never attended the dentist.
- Overall half of all dentate adults (50 per cent) reported that they attended the dentist at least once every six months; 21 per cent indicated that they attended at least once a year; and a further 6 per cent once every two years.
- Fifty-five per cent of dentate adults said they went to the dentist about the same as they did five years ago, 27 per cent said that they visit less often and 18 per cent reported visiting the dentist more often than they did five years ago.
- Seventy-one per cent of dentate adults had received NHS care at their last completed course of dental treatment: 45 per cent said that they paid for this care and 25 per cent said it was free. Private dental care was reported by 27 per cent and very few dentate adults (1 per cent) reported receiving mixed NHS and private care.

**Figure 6.1 Percentage receiving NHS care at last completed course of treatment (free or paid for) by age**



- The most frequently cited reasons for using NHS dental services were affordability (63 per cent) and location (23 per cent), although 10 per cent of adults indicated that the recommendation of family or friends was the reason, and a further 6 per cent said because of the better quality of care.
- Eighty-five per cent of adults rated the practice they had attended most recently as good or very good, for length of time waiting for routine appointments. Similarly, the vast majority of adults (87 per cent) indicated that their dental practice was good or very good in terms of the length of time waiting for an urgent appointment, however just over half (53 per cent) said that their practice was good or very good at providing evening and/or weekend appointments.

The majority of dentate adults attend the dentist within the maximum recommended recall interval, which is at least once every two years. However, the rate of improvement in the proportion of adults reporting attending regularly seems to have slowed in England and over a fifth of dentate adults in each of the three countries reported only attending the dentist when they had trouble with their teeth. There are also substantial differences by socio-economic classification of the households, with adults from the higher risk sections of society being more likely to report symptomatic attendance.

Much has happened since the last survey in 1998, not least the introduction of new NHS contractual systems. It is clear that the NHS remains the dominant provider of dental care in all areas surveyed, with 71 per cent of those in the survey having used the NHS for their last course of treatment. Patients appear to retain great confidence in the service, citing its affordability and convenience in particular. The use of private services accounted for 27 per cent of the last course of treatment, and 12 per cent indicated that the cost of their dental care and treatment was covered by a pre-payment plan or insurance scheme. There is clear evidence of some people using private services because they said they could not find an NHS dentist. It was a perception of lack of need that accounted for most of those who did not attend.

Modern dental care is centred around a preventive philosophy. This is backed up by the finding that about three-quarters of all respondents reported that they could recall receiving preventive oral hygiene advice from a dentist. Alongside this, there is evidence of high levels of satisfaction with dental services generally among those who had attended, and a feeling among most that services are reasonable value for money.

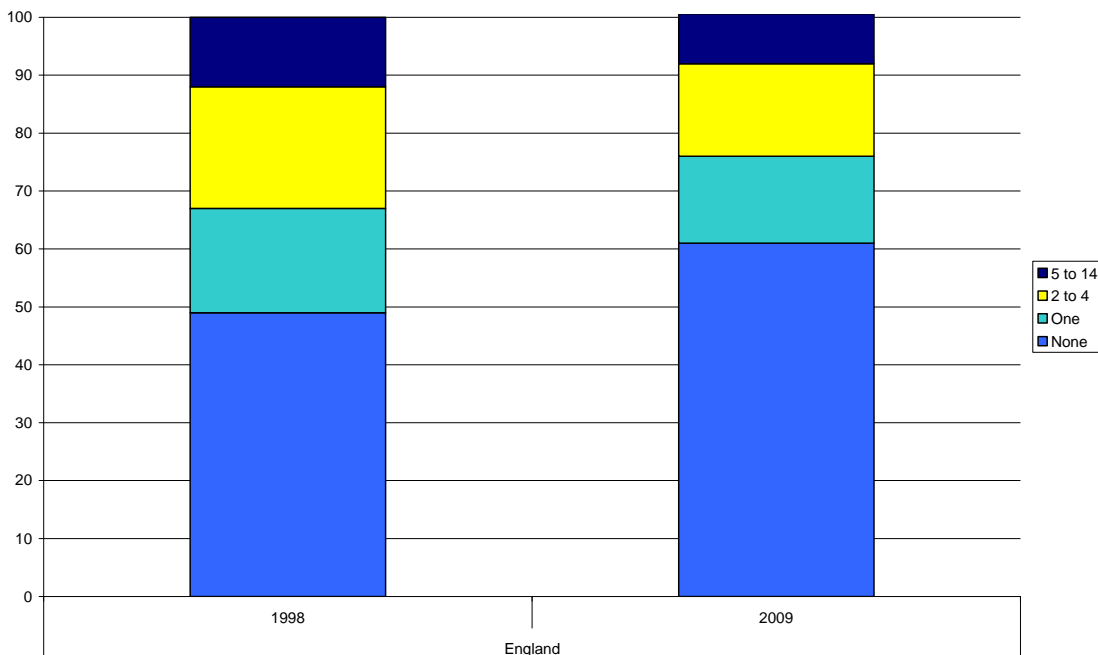


## 7 Outcome and impact

This report considers respondents' perceptions of their oral health and daily quality of life in terms of physical, psychological and social function. The key findings were:

- Overall, 81 per cent of adults said that their general health was good or very good and 71 per cent of adults said that their dental health was good or very good.
- Just under two-fifths of all adults (39 per cent) experienced one or more of the problems included in OHIP-14<sup>2</sup> (Oral Health Impact Profile-14, scale) occasionally or more often in the previous 12 months. The average number of problems experienced by adults, including those who experienced no problems, was 1.2 and the average total OHIP score was 17.4.
- The most commonly reported OHIP-14 problems were included in the categories of physical pain (30 per cent) and psychological discomfort (19 per cent)
- Between 1998 and 2009 the proportion of dentate adults in England who reported having experienced one or more problem on the OHP-14 scale occasionally or more often in the previous 12 months, fell by 12 percentage points; 51 per cent in 1998 to 39 per cent in 2009.

**Figure 7.1 The number of reported problems based on OHIP-14 experienced at least occasionally in the preceding 12 months, England: 1998 and 2009**



- A third of all adults (33 per cent) said they had difficulty performing at least one element of the OIDP<sup>2</sup> (Oral Impacts on Daily Performance). Overall, the more prevalent oral impacts among adults were difficulty eating (21 per cent), smiling (15 per cent), cleaning teeth (13 per cent) and relaxing (10 per cent).
- In general dentate adults attributed their oral impacts primarily to toothache, sensitive tooth or tooth decay, and to problems with their gums. However for problems with smiling, the main conditions identified were appearance of teeth, bad position of teeth and missing teeth.

The majority of adults were positive about their dental health with over seven-tenths saying that it was good or very good. The positive perception applied equally to dentate and edentate adults. On the other hand, a considerable proportion of adults experienced oral impacts as indicated on the OHIP-14 and OIDP scales. In comparison to the 1998 survey the prevalence of oral impacts is considerably lower in this survey.

Although fairly prevalent, oral impacts were very frequent for most people; most of those that reported OHIP-14 problems experienced them no more than occasionally in the last 12 months. Similarly, they were not very severe in general. Among dentate adults, oral health related quality of life varied by dental status, reason for attending the dentist, and several clinical measures of oral health. Furthermore, there was a very clear gradient in oral health related quality of life according to socio-economic position, with lower socioeconomic groups reporting more prevalent (OHIP-14) and also more severe (OIDP) oral impacts. This implies that some sections in the adult dentate population may be disadvantaged in terms of their oral health resulting in a considerable negative impact on their quality of life.

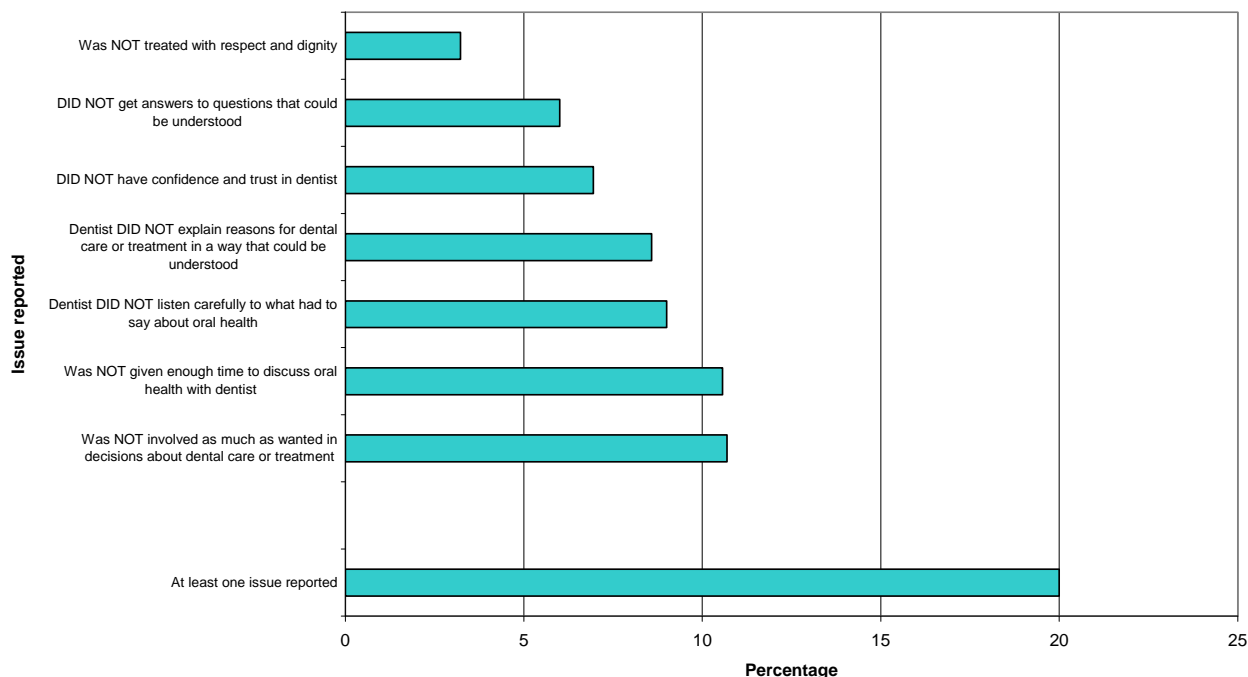
Perhaps the most unexpected finding was the lack of any marked overall differences between dentate and edentate adults in all 3 measures of impact (self-rated dental health, OHIP-14 and OIDP). In 2009, the group who reported most problems with the dental condition were not edentate adults but those with natural teeth combined with dentures.

## 8 Access and barriers to care

This report discusses access to dental care, and barriers to accessing dental services and care. The key findings were:

- Just under three-fifths (58 per cent) of adults said that they had tried to make an NHS dental appointment in the previous three years.
- Of those adults who had tried to make an NHS appointment the vast majority (92 per cent) successfully received and attended an appointment while a further 1 per cent of adults received an appointment but did not attend. The remaining 7 per cent of adults had unsuccessfully tried to make an appointment with an NHS dentist.
- Eighty-seven per cent of those adults who had successfully made an appointment with an NHS dentist (whether they went to this appointment or not) already had an NHS dentist when they last tried to make an appointment and a further 10 per cent were able to get an appointment with the first new NHS dentist they approached.
- Just over a quarter of adults (26 per cent) said that the type of dental treatment they opted to have in the past had been affected by the cost of this treatment and almost one-fifth (19 per cent) said that they had delayed dental treatment for the same reason.
- Twelve per cent of adults who had ever been to a dentist had an MDAS<sup>3</sup> (Modified Dental Anxiety Scale) score of 19 or more which suggests extreme dental anxiety.
- The two items on the MDAS that elicited anxiety most often were both associated with receiving dental treatment; 30 per cent of adults said that having a tooth drilled would make them very or extremely anxious and 28 per cent reported similar levels of anxiety about having a local anaesthetic injection.
- Overall, the majority of adults were positive about their last visit to the dentist; 80 per cent of adults gave no negative feedback about their last visit to the dentist. However, 20 per cent of consultations were considered to be less than satisfactory in one way or another.

**Figure 8.1 Relationship with dentist at last visit**



Clearly for the vast majority of patients NHS dentistry is accessible and it is relatively easy to get an appointment. That said for a small minority it took a considerable amount of effort for them to secure an NHS dental appointment.

Past experience of making oral health decisions around cost was markedly associated with self-reported attendance habits and self-assessed oral health. Being previously affected by treatment costs was associated with delaying attendance and having a poor level of oral health. The influence of cost on decisions about dental treatment applied to some degree to all groups in society.

Extreme dental anxiety was estimated to be experienced by over one-tenth of dentate adults and was clearly more of an issue for women than men.

A large majority of those interviewed were satisfied with all aspects of their interaction with the dentist at their most recent visit, feeling that the communication was good, that they had been treated with respect and that they had received a good explanation of options. This was not universal though. The quality of the relationship between dentist and patient assessed at the last visit to a dentist was markedly associated with the patients' assessment of their overall self-rated dental health, the length of time since their last dental visit and their level of dental anxiety. Generally speaking people whose last experience with a dentist was problematic gave a low rating of their own oral health, had not attended for a longer time and were more likely to be extremely dentally anxious than those whose experience was more positive. These findings suggest that dentist-patient communication, whilst generally good, can be a real barrier to achieving optimal dental health and care in just the same way as other more familiar barriers such as cost and anxiety.

# Notes and references

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<sup>1</sup> A definition of this term can be found in the glossary in the *Foundation report: Adult Dental Health Survey 2009*

<sup>2</sup> Full reference available in *Outcome and impact: a report from the Adult Dental Health Survey 2009*

<sup>3</sup> Full reference available in *Access and barriers to care: a report from the Adult Dental Health Survey 2009*

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