

# The medical and dental attendance pattern of patients attending general dental practices in Warwickshire and their general health risk assessment

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## IN BRIEF

- Compares patient attendance patterns at primary care medical and dental practices.
- There is a subgroup of patients who attend general dental practices more frequently than they do primary medical services.
- Dental teams are in strong position to identify patients at high risk of general medical health problems.
- Supports the development of a preventive general healthcare philosophy by the dental team in general dental practice.

**Background** The dental team could have an important role to play in general health risk assessment within primary and community healthcare. **Aims** To describe medical and dental attendance patterns, demographics and health profiles of patients routinely attending general dental practices in Warwickshire. To identify whether a subgroup attend dental practices regularly but attend medical practices infrequently and discuss whether preventive healthcare interventions delivered in general dental practice would be appropriate. **Methods** A self-completion questionnaire was administered to patients attending 16 dental practices in Warwickshire. **Results** Eight hundred and eleven completed questionnaires were returned (74% response). Seven hundred and eighty-nine (98%) respondents visited their dentist every one to two years or more frequently and of these a subgroup of 121 (15.3%) visited their general medical practice surgery or health centre less often than every two years. In the subgroup 9.5% reported high blood pressure, 17.6% currently smoked, 22% drank above recommended guidelines, 32.1% were overweight and 7.3% obese. **Discussion** The data suggest there may be a role for dental practitioners in identifying patients at risk of having undiagnosed or future general health problems and providing appropriate general health advice, screening or signposting the patient to relevant general healthcare facilities either within or external to the dental practice.

## BACKGROUND

The government is keen to encourage an environment where National Health Service (NHS) dentistry can become a more active part of local health services and an integral part of overall health improvement.<sup>1</sup> The report of the NHS Future Forum states that 'every healthcare professional should use every contact with an individual to maintain or improve their mental and physical health and well-being where possible, whatever their specialty or the purpose of the contact'.<sup>2</sup> This suggests that the dental team could have an important role to play in the wider sphere of primary healthcare in not only being involved in preventive healthcare programmes, such as

smoking cessation,<sup>3,4</sup> but also in the identification of general health risk factors such as excessive alcohol consumption,<sup>5</sup> high blood pressure<sup>6</sup> and obesity.<sup>7</sup> Reducing obesity is a priority for the Government since nearly one in four adults is obese<sup>8</sup> and obesity can have a severe impact on people's health, increasing the risk of type 2 diabetes,<sup>9</sup> some cancers,<sup>10</sup> heart<sup>11</sup> and liver disease.<sup>12</sup> Diabetes is particularly relevant in a primary dental care setting since patients with poor glycaemic control have a significantly increased prevalence of severe periodontitis.<sup>13</sup> Furthermore, there is increasing evidence that periodontal disease contributes to problems of glycaemic control<sup>14</sup> and inflammatory responses produced by inflamed periodontal tissues can increase the severity of diabetes, worsen cardiovascular outcomes and increase mortality.<sup>15</sup>

Recent research has shown that the screening in general dental practice for hypertension, an important risk factor for stroke and coronary heart disease, may be of benefit to the population at large.<sup>6</sup> If the identification of risk factors and

screening is to be considered in general dental practice it is useful to establish if there is a subgroup of the patient population routinely visiting a dental practice but infrequently attending a primary care general medical practice: this would add additional relevance to the potential benefits of undertaking a general health risk assessment and the dental team becoming more involved in general preventive healthcare programmes.

Since caries and periodontal disease are both widespread in the community and generally asymptomatic, dentists encourage their patients to be monitored on a regular basis, whereas many patients report attending their general medical practitioner only when symptomatic or for the ongoing management of an identified medical condition. However, there is very little evidence to support the contention that these two populations are different. Haughney *et al.*<sup>16</sup> included dentistry in established screening programmes in a combined medical and dental health centre but provided no data on the attendance patterns of the patients, other than

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that 24% of patients were common to both practices. In a retrospective study of general medical practice by Carney *et al.*<sup>17</sup> it was concluded that diseases, rather than patients, appear to dictate high consultation rates in general medical practice, and that high attendance is largely due to the presence of multiple pathology. The 2009 Adult Dental Health Survey<sup>18</sup> showed that approximately twice as many dentate adults in the UK reported attending regular dental check-ups (61%) than reported only attending when they had trouble with their teeth (27%). The survey reported that dentate women were more likely than men to attend for regular check-ups (68% for women compared with 54% for men). No studies have been identified which compare the attendance patterns of patients attending both primary care medical and dental practices. The Department of Health undertakes a quarterly patient survey addressing a number of NHS issues, particularly focusing on the accessibility of general dental and general medical services and the frequency of attendance<sup>19</sup> but not the relationship in attendance at both primary dental and medical care centres.

## METHODS

The aim of this study was to describe the medical and dental attendance patterns, demographics and health profiles of patients routinely attending general dental practices in Warwickshire, to identify whether there is a subgroup who regularly attend dental practices but attend medical practices (general practitioner surgery or health centre) infrequently and to discuss whether preventive healthcare interventions delivered in general dental practice would be appropriate. The study was approved by the Coventry and Warwickshire NHS Research Ethics Committee.

The study involved the administration of an anonymous 25 item paper-based self-completion questionnaire to patients attending general dental practices in Warwickshire. All 74 NHS dentistry providers on the NHS Warwickshire list providing general dental services under contract (67 practices with approximately 232 dentists) were invited to participate by letter and non-responders were sent a reminder letter three weeks after the initial invitation. It

was planned to deliver 100 questionnaires to a maximum of 20 providers selected at random from those that agreed to participate. The sample size and number of questionnaires was limited by the available funding. The first 100 consecutive patients attending the selected practices aged 18 years or over who consented were invited to complete the questionnaire either at the surgery or at home after their visit. The patients participating were not differentiated according to whether care was being received under private or NHS contract. Completed questionnaires were either collected from the practice or sent in a free-post envelope to a member of the research team. The questionnaire was developed with the input of the Warwick Diabetes Research and Education User Group and piloted in one practice to establish any practical difficulties in administering the questionnaire. The questionnaire addressed attendance at general dental and medical practices, age, gender and ethnicity, height and weight and general health history, including diabetes, cardiac and circulatory disease, smoking and drinking habits.

## RESULTS

A total of 20 NHS providers initially agreed to participate in the study. Since this was the intended sample size, no random selection was necessary. The participating providers covered a large geographical area of Warwickshire and represented a range of urban, rural, deprived and non-deprived settings.

The questionnaire was piloted at one practice and since no modifications to the questionnaire were made, the 50 completed responses from this practice were included in the data analysis. Questionnaires were distributed during January and February 2011 and 811 completed questionnaires were returned giving a 74% response rate of which 39% were male and 61% female. This represented data from 16 practices since four participating practices were excluded because they failed to follow the research protocol.

### Whole sample data

From the questionnaire data analysis (Table 1) almost half the respondents were aged 45–64 (mean age 51.7, SD 14.78). Ninety-five percent gave their ethnicity as White British. Ninety-eight percent

stated that they visited their dentist every one to two years or more frequently and 84% visited their doctor every one to two years or more frequently. Fifty-three percent were on medication from their doctor. Eighty-eight percent rated their general health as good, very good or excellent and 12% rated it as fair or poor. 55.6% stated they undertook 30 minutes of moderate exercise on at least five days each week. 6.4% had diabetes (4.4% type 2) and 19.4% had a relative with diabetes. Twenty-nine percent had high blood pressure; 7% had heart problems and 7% had circulation problems. 11.3% reported currently smoking and 29% had smoked in the past. 16.4% admitted to drinking more than the daily recommended guidelines.<sup>20</sup>

The mean body mass index (BMI) calculated from the patient's age, height and weight was 26 (SD 4.99) from which it was calculated that 2% were underweight (BMI  $\leq$ 18.5), 45% were a healthy weight (BMI = 18.5–24.9), 35% overweight (BMI = 25–30) and 18% obese (BMI  $\geq$ 30) (Table 2). Where data were complete, the QD score<sup>21</sup> was calculated to estimate the 10% or greater risk of developing type 2 diabetes within ten years and 14.6% were found to be at risk (excluding 8.1% who already had diabetes).

### Subgroup data

One of the aims of the study was to identify whether there was a subgroup of the population who frequently visited the dentist but rarely visited their doctor. In this sample, 789 (98%) stated that they visited their dentist every one to two years or more frequently and of these 121 (15.3%) stated that they visited their doctor or nurse at their general practice surgery or health centre less often than every two years. The data from this selected subgroup were analysed separately.

In this subgroup 55% were male and 45% were female. The age range was similar to the whole sample although there were fewer respondents aged 65–84 (11.6%) (mean age 49.7, SD 12.69). Ninety-nine percent gave their ethnicity as White British. 9.1% were on medication from their doctor. Ninety-five percent rated their general health as good, very good or excellent and 5% rated it as fair or poor. 55.5% stated they undertook 30 minutes of moderate exercise on at least five days

each week. 0.8% had diabetes and 22.9% had a relative with diabetes. 9.5% had high blood pressure; 2.5% had heart problems and 5% had circulation problems. 17.6% reported currently smoking and 25.2% had smoked in the past. Twenty-two percent admitted to drinking more than the daily recommended guidelines. The mean BMI was 24.5 (SD 3.29) from which it was calculated that 3.7% were underweight, 56.9% healthy weight, 32.1% overweight and 7.3% obese. Where data were complete, the QD score<sup>21</sup> was calculated to estimate the 10% or greater risk of developing type 2 diabetes within 10 years and 10.8% were found to be at risk.

## DISCUSSION

### Attendance characteristics of the whole sample

The results from this study (Table 1) indicated that 61% of females regularly attended the dentist which was similar to the national attendance pattern of 68%.<sup>18</sup> However, there was a significant subgroup of the sample population (15.4%) who attended their dentist frequently but accessed primary medical care services infrequently. It was found that there was a smaller percentage of females (45%) in this subgroup when compared to the whole sample (61%) which is not surprising since consultation rates in general practice tend to be higher for females except in the very young and very elderly.<sup>22</sup> These results suggest that there may be a significant subgroup of the population who infrequently visit their doctor and could be potentially at risk from general health problems, for example diabetes and heart disease, and could be identified within the dental practice setting.

### Health characteristics of whole sample

In the whole sample (Table 1), which was predominantly White British, the number of respondents who reported that they currently smoked (11%) was lower than a reported national level of 22%<sup>18</sup> but this was not directly comparable as the present study excluded children under 18 years. Excessive drinking was reported by 16.4% of the whole sample. Of concern was that 35% were overweight which was similar to national statistics<sup>23</sup> and nearly

**Table 1 Comparison of demographics for the whole sample, a subgroup of patients regularly attending dental practice but infrequent attenders at a doctor's practice and Warwickshire population characteristics. \*Data from Warwickshire Observatory: Warwickshire health profile 2010**

Sample characteristic	Whole sample population (n = 811)	Subgroup of frequent dental attenders who were infrequent attenders at doctor's practice (n = 121)	Warwickshire population* (n = 530,700)
Gender	39.4% male: 60.6% female (n = 808)	55.4% male: 44.6% female (n = 121)	49.5% male: 50.5% female
Ethnicity	97.3% White British (n = 806)	99% White British (n = 121)	96.6% White
Aged 18-24	4.0% (n = 795)	2.5% (n = 119)	Not available
Aged 25-44	27.2% (n = 795)	32.2% (n = 119)	25.5%
Aged 45-64	49.3% (n = 795)	52.1% (n = 119)	27.4%
Aged 65-84	19.0% (n = 795)	11.6% (n = 119)	15.9%

**Table 2 Comparison of whole sample data and a subgroup of patients regularly attending dental practice but infrequent attenders at a doctor's practice**

Sample characteristic	Whole sample population (n = 811)	Subgroup of frequent dental attenders who were infrequent attenders at doctor's practice (n = 121)
Current smoker	11.3% (n = 804)	17.6% (n = 119)
10% diabetes risk within the next 10 years	14.6% (n = 589)	10.8% (n = 102)
Drinking more than recommended guidelines	16.4% (n = 797) M = 8.0% (n = 64) F = 8.4% (n = 67)	22.0% (n = 118) M = 12.7% (n = 15) F = 9.3% (n = 11)
Overweight	35.2% (n = 708) M = 44% (n = 130) F = 29% (n = 119)	32.1% (n = 109) M = 22.0% (n = 24) F = 10.1% (n = 11)
Obese	17.9% (n = 708) M = 16% (n = 48) F = 19% (n = 78)	7.3% (n = 109) M = 4.6% (n = 5) F = 2.8% (n = 3)
Relative with diabetes	19.4% (n = 803) M = 7.7% (n = 62) F = 11.7% (n = 94)	22.9% (n = 118) M = 14.4% (n = 17) F = 8.5% (n = 10)
Physically active	55.6% (n = 803) M = 59% (n = 318) F = 53% (n = 485)	55.5% (n = 119) M = 35.3% (n = 42) F = 20.2% (n = 24)
BMI (mean)	26.0 (n = 707) M = 26.3 (n = 295) F = 25.8 (n = 412)	24.5 (n = 109) M = 24.8 (n = 62) F = 24.0 (n = 47)

18% were obese: in 2007, 24% of adults (aged 16 or over) in England were classified as obese (BMI 30 kg/m<sup>2</sup> or over) an overall increase from 15% in 1993.<sup>23</sup> Over half of the sample reported undertaking regular exercise (Health and Safety Executive high activity level defined as 30 minutes of moderate physical activity on at least five days each week).

### Health characteristics of the subgroup of regular attenders at their dental practice and infrequent attenders at their medical practice

In this subgroup, there were 16% more males and 84% of the population was

in the 25-64-year-old age group. The risk factors for disease were notable in that 17.6% were smokers and 22% were drinking above recommended guidelines. Although obesity was lower than in the whole sample, there were a similar number of patients overweight (32%). Obesity can have a severe impact on people's health, increasing the risk of type 2 diabetes, some cancers, and heart and liver disease and when these data were used to calculate the risk of suffering from type 2 diabetes within 10 years,<sup>21</sup> 10.8% were found to be at risk. These results suggest that within this subgroup there are patients at significant risk with respect to their general

health. This may be because they may not be participating in health promoting behaviour as frequently as those who visit their doctor more often. Patients who do not visit primary medical services may be unaware of services that can offer support in smoking cessation, dietary advice, etc and the dental team may have an important role to play in signposting patients to these services.

### Signposting and screening

The Government has the aim of improving the health of the whole population and there is a clear role for local agencies acting together, offering help with the decisions that individuals make.<sup>24</sup> Questions about diabetes, tobacco use and alcohol consumption are now commonly included in dental patient medical history questionnaires;<sup>25</sup> there is a stipulation for completion of a medical history questionnaire for 90% of all patients in the new dental contract pilots Dental Quality Outcome Framework (DQOF) and so it should be an essential part of dental practice.<sup>26</sup> The questionnaire used in this study included additional questions on height and weight which enabled the calculation of BMI and diabetes risk and it was found that 88% of participants were prepared to disclose this information which is encouraging. Although errors in self-reported height and weight may occur, it may not be practical to measure these parameters in a primary dental care setting.

Asking health-related questions, however, does not necessarily mean that the dental team are acting on the information given by patients. The 2009 Adult Dental Health Survey (ADHS)<sup>18</sup> found that only 9% of adults sampled had been given smoking cessation advice by their dental practice in the preceding two years (22% of the sample population reported being smokers); the ADHS report states that this figure 'may well reflect a reluctance among members of the dental team to give this sort of advice'.

The use of dental practices to provide general health prevention and screening is becoming increasingly common. Some primary care trusts have commissioned services from dental practices that include brief interventions for smoking cessation and alcohol consumption, and screening for chlamydia. It is suggested that dental

professionals should establish the smoking status of their patients on a regular basis,<sup>4</sup> as has been the case with the majority of Scottish dentists since 1995,<sup>3</sup> and evidence exists to suggest that undertaking alcohol brief interventions (ABIs),<sup>27</sup> brief interventions for smokers<sup>28</sup> and screening for hypertension<sup>6</sup> can be effective and could be considered reasonable preventive practice.<sup>29</sup>

The level of trust placed in professionals, particularly health professionals, may help to prompt people towards behaviour change if advice and support is provided in a sympathetic and realistic manner.<sup>30</sup> UK dentists who undertake conscious sedation must measure blood pressure as part of their pre-operative patient assessment<sup>31</sup> and the dental team is therefore well placed to do this.<sup>32</sup> A recently published study from the USA describes a more invasive intervention: identifying patients at possible risk of developing diabetes by questionnaire, periodontal examination and a blood test.<sup>33</sup>

The dental practice is often perceived by patients as being outside or independent of primary medical care services. However, for all patients identified as being at risk, particularly those who infrequently attend their doctor, dentists and the dental team are ideally placed to provide preventive advice and health promotion messages,<sup>34</sup> undertake screening, or direct patients to appropriate services outside the dental practice. It has been suggested that the more we can use dental appointments to communicate a 'staying healthy' message, not only will the impact be more widespread and consistent but also more sustainable in the long term.<sup>35</sup> Dietary advice, for example delivered by dental teams, has traditionally had a narrow focus not always consistent with general health advice and could be more effective if it is integrated into general health advice.<sup>36,37</sup> This supports guidance by the National Institute for Health and Clinical Excellence (NICE).<sup>38</sup>

### Barriers

A number of barriers to the delivery of general health interventions in general dental practice have been reported which include insufficient funding, poor use of dentists' time, need for training, lack of knowledge, lack of a health focus and more of a disease

focus by dentists<sup>32</sup> and these must all be addressed. The views of patients regarding dental teams' involvement in health screening and risk assessment should also be explored. However, there appears to be a real willingness by dentists to expand the dental team's remit through using dental care professionals (DCPs) in a public health role.<sup>32</sup> It is to be hoped that the new dental contract currently under development will provide an opportunity to address some of these barriers.

### IT development

One of the current problems of capturing patient medical health data is the inability to transfer the data electronically from the medical health questionnaire into a computerised patient management system. This currently wastes time and can lead to transcription errors. With the wide availability of electronic touch-pads, once the legality problems of the acceptance of electronic signatures have been resolved,<sup>39</sup> it should be possible for patients to input their medical health details directly into their electronic record. Calculating the BMI and from this the obesity level and the diabetes risk using such algorithms as the QD score<sup>21</sup> could all be undertaken electronically with no loss of clinical or administrative time. This would provide an opportunity for software developers to provide the dentist with an alert system that could give a visual display of those patients who are potentially at an increased health risk based on their medical history. The dentist could then provide appropriate advice, signposting or screening more selectively.

### CONCLUSION

This study suggests that there is a subgroup of the population who attend the dentist more frequently than primary medical services. The results of this study suggest that there is a role for the dental team firstly in identifying those patients who could be at risk of current or future general health problems by means of a comprehensive medical health questionnaire and secondly after having identified the at risk patient, by providing appropriate general health advice, screening or signposting the patient to relevant general health care facilities either within or external to the dental practice.

The authors would like to acknowledge the financial support of the University of Liverpool Dental Alumni Research Fund in supporting this study and the Warwick Diabetes Research and Education User Group for their valuable contributions to the questionnaire development.

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