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ORIGINAL ARTICLE

Opinions and attitudes of the UK's GDPs and specialists in oral surgery, oral medicine and surgical dentistry on oral cancer screening

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OBJECTIVE: To survey two broad areas of oral cancer awareness and management of patients at risk of oral cancer by specialists in oral surgery, oral medicine, surgical dentistry and general dental practitioners (GDPs) in the UK. The first of these included knowledge and awareness of aetiological factors, changing patterns of disease, and screening/detection programmes including their effectiveness. The second included oral cancer detection methods, advice on avoidance of high-risk activity and self-examination, and referral pattern of GDPs.

DESIGN AND METHOD: A pretested, 44-item questionnaire, a covering letter, a brief outline of the research protocol and return, stamped envelope were mailed in March 2003. A sample of 200 GDPs whose names were obtained from the General Dental Council's main list and 305 dental specialist names obtained from specialist's list in surgical dentistry, oral medicine and oral surgery were selected randomly. Information on oral cancer awareness and practice, screening practice and education was obtained.

RESULTS: The response rate was 66.9%. The knowledge of the dental specialists was consistent with that in reports of current aetiological studies on oral cancer. However there were gaps in the GDP's knowledge and ascertainment of oral cancer risk factors. Over 70% of the dental specialists provided counselling advice on the risks of tobacco and alcohol habits compared with 41.2% of GDPs. More GDPs (52.4%) than specialists (35.4%) believed that oral cancer screening on a national basis would be effective in decreasing the mortality of oral cancer. Over 95% of all respondents used a visual examination for oral cancer screening and 89.9% of all respondents strongly believed that visual screening is effective in the early detection of oral cancer.

CONCLUSION: The results showed that GDPs had knowledge gaps in their awareness of oral cancer risk factors and the application of preventive measures. Most dental health providers in the UK perform visual screening of the oral mucosa for their patients. Opinion was equivocal as to whether a nationally based screening programme similar to cervical cancer would be effective in improving the mortality and morbidity of oral cancer.
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Introduction

Oral cancer is a global health problem with increasing incidence and mortality rates; more than 500 000 patients are estimated to have oral cancer worldwide (Parkin *et al*, 2005). The number of newly diagnosed cases of oral cancer (C00-C14, ICD-10, World Health Organisation, 1992) in the UK in 2001 was 4067 [Office for National Statistics (ONS), 2005]. Male patients accounted for 2606 cases and female patients for 1461 (ONS, 2005). Unfortunately, the 5-year survival rates have not changed during the last half-century, being still around 50–55% regardless of advances in diagnosis and treatment (Neville and Day, 2002).

Early detection of cancer permits a more conservative therapeutic approach with a shorter recovery and a more favourable prognosis (American Cancer Society, 1992). There is potential for the early detection of cancer through screening (Sankila and Coll, 2001). The British Dental Association (BDA) has advocated that dental health providers should implement opportunistic screening as part of their routine work (BDA, 2000).

A dental practitioner's attitudes and levels of knowledge are considered to be one of the factors that contribute to delaying or inadequately detecting the early stages of oral cancer (Sadowsky *et al*, 1988; Schnetler, 1992 and Shafer, 1975).

Warnakulasuriya and Johnson (1999) surveyed the opinions, attitudes and practices of UK dentists with regard to oral cancer prevention. Unfortunately, their study had a poor response rate (16%) and it was suggested that further surveys of a representative sample with follow up to achieve a higher response rate, should be undertaken.

Although the opinions and knowledge of general dental practitioners (GDPs) in respect of oral cancer screening have been sought previously, no survey has yet studied the attitudes and opinions of dental specialists to whom cases of oral cancer may be referred. The aim of this study was to survey oral cancer awareness and screening practice of potential oral cancer patients by consultants and specialists in oral surgery, oral medicine, surgical dentistry and general dental practitioners in the UK.

Subjects and methods

A cross sectional, questionnaire-based survey of the consultants and specialists whose names appeared in the General Dental Council's Specialist Lists in Distinctive Branches of Dentistry (The Dentists Register, 2002), under oral surgery, surgical dentistry and oral medicine was used to obtain the information. GDP's names were obtained from the General Dental Council's main list (The Dentists Register, 2002). The sample of 200 UK GDPs and 305 consultants and specialists in oral surgery, oral medicine and surgical dentistry were selected by systematic randomization. The West Midlands Multi-centre Research Ethics Committee (MREC) provided a favourable ethics opinion.

A 44-item questionnaire was piloted with four specialists and two GDPs. Small changes were made to some questions to improve clarity. The questionnaires to GDPs and specialists were modified to reflect the different nature of these groups. The mail shot consisted of a questionnaire, a covering letter, a brief outline of the research protocol and a return stamped envelope. Respondents were asked to provide information based on their own experiences. A single reminder was sent to all non-respondents 4 weeks after the initial mailing. For simplifying the statistical analysis, clinicians were grouped into; dentally qualified specialists, including those consultants with double qualifications (oral surgery/oral maxillofacial surgery, oral medicine and surgical dentistry) and GDPs. The statistical analysis included the use of descriptive statistics; frequencies/proportion (to examine the distribution of responses for all the variables and to describe sample demographics) and crossed tabulation (to examine the association between the variables). Chi-square tests were used to assess statistical significance. *P*-value <0.05 was considered significant.

Results

A total of 351 questionnaires were returned giving an initial response rate of 69.5%. Thirteen uncompleted responses were excluded from analysis because of various factors (specialists had retired from practice, other specialists had changed their work to a field no longer dealing with oral cancer, two GDPs worked as a senior dental officer in the community dental service treating mainly children with special needs and other GDPs had become specialists). In conjunction with the statistician, it was decided to omit these uncompleted responses from the analysis. The final response was 338 giving a response rate of 66.9%, made up of 143/200 GDPs (71.5%) and 195/305 dental specialists (63.9%) (Table 1).

Oral cancer awareness

Eleven health history assessments were probed by the GDPs questionnaire. It was found that 87.4% of GDPs asked patients about their current use of tobacco and over 70% asked about personal history of cancer. On the contrary, only 21% asked about family history of cancer. Interestingly 58.8% of all GDPs asked their patients about the present use of alcohol, but only 23.8% asked about past alcohol use. About one-third (32.8%) asked about the types and amounts of alcohol consumed. Around 40% of the GDP respondents asked about paan chewing (betel) habits. Only 10.5% of the GDPs ascertained information about sun exposure (Table 2). The dental specialists were asked to rank the risk factors for oral cancer starting with the most important as 1 and the least important as 8 (Figure 1). Over 90% believed that 'tobacco habits' are the most important risk factor (ranks 1 and 2) with alcohol consumption as second.

Of the respondents, 92% carried out a systematic oral examination to exclude oral cancer at the initial appointment for every patient over 40 years old. A slightly smaller number (81.4% of the respondents) did this for patients between 18 and 40 years old. Moreover around 95% of all respondents felt that carrying out this type of practice was not a waste of time.

Table 1 Characteristics of General Dental Practitioners (GDPs) and dental specialists who responded to a mail survey related to oral cancer

	Dental specialists, n (%)	*GDPs, n* (%)	*Overall, n* (%)
Total number of respondents	195 (100)	143 (100)	338 (100)
Type of practice			
Full time	167 (85.6)	112 (78.3)	279 (82.5)
Part time	28 (14.4)	31 (21.7)	59 (17.5)
Date of graduation			
Before 1960	1 (5)	–	1 (3)
1960–1969	43 (22)	7 (4.9)	50 (14.8)
1970–1979	70 (35.9)	34 (23.8)	104 (30.8)
1980–1989	59 (30.3)	54 (37)	113 (33.5)
1990–2002	18 (9.3)	48 (33.6)	66 (19.5)
Interval since last attending education course on oral cancer			
Within past 12 months	102 (52.3)	29 (26.3)	131 (38.8)
More than 12 months and <24 months	35 (17.9)	41 (28.7)	76 (22.5)
Past 2–5 years	42 (21.5)	52 (36.4)	94 (27.8)
>5 years	13 (6.6)	11 (7.7)	24 (7.1)
Have never taken a course	3 (1.5)	10 (7)	13 (3.9)

Some groups of percentages do not sum to 100% because of rounding.

Table 2 Percentages of general dental practitioners assessing selected items as part of a patient's medical history

Risk factors	*Assessment results Yes, n* (%)
Patient's history of cancer	106 (74.2)
Family history of cancer	30 (21)
Patient's present use of tobacco products	125 (87.4)
Patient's past use of tobacco products	67 (46.9)
Type and amount of tobacco used	79 (55.2)
Patient's present use of alcohol	84 (58.8)
Patient's past use of alcohol	34 (23.8)
Type and amount of alcohol used	47 (32.8)
Type of diet	36 (25.2)
Sun exposure	15 (10.5)
Paan chewing/betel chewing	57 (39.8)

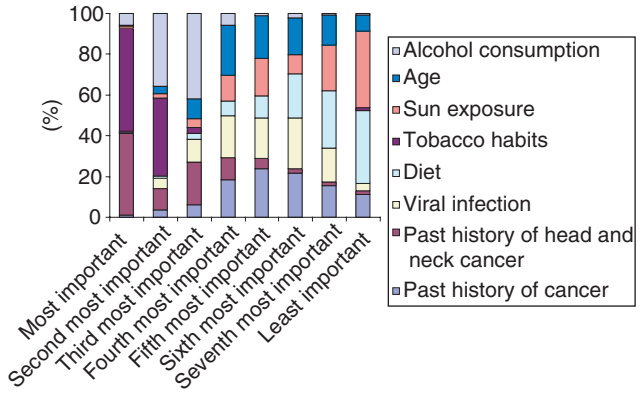

Figure 1 The percentages of dental specialists ranking selected risk factors for oral cancer according to degree of importance

Preventive procedures for oral cancer

Overall, 59.2% replied that they provided counselling advice on the risks of tobacco and alcohol habits for every patient who smoked or had an excessive alcohol intake. A significantly higher percentage of dental specialists provided such counselling compared with GDPs (72.3% *vs* 41.2%, $P < 0.05$).

Only 15.1% of all respondents provided education about self-examination of the soft tissues and lips. However a significantly higher percentage of dental specialists (23%) provided education on self-examination of the soft tissues and lips than GDPs (4.2%) ($P < 0.05$).

Trends in the incidence of oral cancer

The dental specialists were invited to identify if they had observed any trends in the incidence of oral cancer in relation to age and gender through their practice in the NHS hospitals. Of the dental specialists, 64.6% believed that there is a trend related to age; 88.9% of these suggesting the trend being towards younger rather than older groups. Furthermore, 53.3% of the specialists agreed from their experience that there is a trend in gender shift towards an increase in females over males during the last 5 years.

General Dental Practitioners' referrals

The GDPs were asked to whom they send their referrals regarding suspicious oral cancerous and precancerous lesions. Sixty-five per cent of GDP respondents stated that they sent their referrals to oral & maxillofacial surgeons, 20 (14%) sent referrals to oral surgeons and 28 (19.5%) to oral medicine specialists. Only one GDP (0.7%) referred to an ENT specialist and another GDP sent referrals to a dermatologist.

Effectiveness of national population-based oral cancer screening programmes

Both GDP and dental specialist groups were asked if they thought that a national population-based oral cancer screening programme similar to that used for cervical cancer would be effective in decreasing either the mortality or the morbidity of oral cancer. Over 40% of all respondents reported that they believed that national population-based oral cancer screening programmes would impact on both parameters. A quarter of the respondents commented that they did not know whether there is evidence that these programmes are effective or not regarding the mortality and morbidity of oral cancer (Table 3).

However, these overall figures concealed major and statistically significant differences between the two subject groups. Slightly over 50% of the GDPs believed that national-based oral cancer screening programmes are effective in decreasing both mortality and morbidity of oral cancer (Table 3). In contrast, a much lower percentage of dental specialists thought that such programmes are effective in either reducing mortality (35.4%) or morbidity (44.1%). In fact nearly half of the dental specialists (48.2%) thought that these types of programmes are not effective in improving the rate of oral cancer mortality.

Oral cancer screening practice

When asked: 'Have any patients asked you to screen their mouth for oral cancer?' 60.9% responded 'yes'. The positive response was larger in the dental specialists group (64.6%) than the GDP group (56%). When asked to identify which current methods they use for oral cancer 'screening', nearly 94.1% responded that they used visual examination. Toluidine blue was used by

Table 3 The opinions of both dental specialists and General Dental Practitioners (GDPs) with regard to effectiveness of national oral cancer screening programmes

	Decreasing mortality, n (%)	*Decreasing morbidity, n* (%)
GDPs		
Yes	75 (52.4)	75 (52.4)
No	13 (9)	12 (8.4)
I don't know	55 (38.5)	56 (39.2)
Dental specialists		
Yes	69 (35.4)	86 (44.1)
No	94 (48.2)	75 (38.5)
I don't know	32 (16.4)	34 (17.4)
Total		
Yes	144 (42.6)	161 (47.6)
No	107 (31.7)	87 (25.7)
I don't know	87 (25.7)	90 (26.6)

Some groups of percentages do not sum to 100% because of rounding.

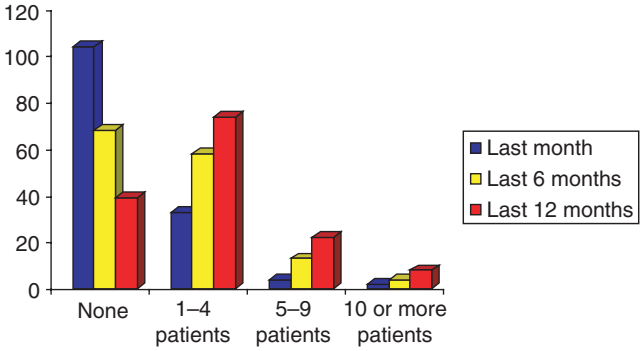

Figure 2 The number of patients referred by General Dental Practitioners to dental specialists during the previous year

14.2% of all participants. More than 96% of all replying stated that they had not used either brush biopsy or fluorescence imaging as methods for oral cancer screening. GDPs were asked to estimate how many patients on average they had referred as a result of positive screening results over time (Figure 2). Only a few GDPs (4.2%) had referred more than 10 patients to specialists regarding suspicious lesions during the last 12 months. Their workload was not ascertained.

Oral cancer screening effectiveness in the early detection and prevention of oral cancer

One of the main objectives of this survey was to assess opinions about the effectiveness of 'screening' methods in the early detection and prevention of oral cancer. 89.9% of the respondents strongly believed that visual screening is effective. However much lower effectiveness was reported for adjuvant methods: toluidine blue (25.4%), brush biopsy (20.7%) and fluorescence imaging (15.4%) (Table 4).

Dentists' opinion about their education on oral cancer screening in terms of recognizing oral cancer

We asked the GDPs to rate their undergraduate training in oral cancer as either 'sufficient', 'insufficient' or 'I have no idea'. Fifty-one per cent described their training as sufficient, 40.5% reported their training as insufficient. Only 7% had no idea about their training. Notably 52.3% of the dental specialists had attended an educational course for oral cancer within the last 12 months compared with 26.3% of the GDPs in the same period.

Table 4 The opinions of both dental specialists and General Dental Practitioners (GDPs) with regard to effectiveness of different methods of oral cancer screening

	Visual screening, n (%)	*Toluidine blue, n* (%)	*Fluorescence imaging, n* (%)	*Brush biopsy, n* (%)
GDPs				
Yes	121 (84.6)	41 (28.7)	24 (16.8)	29 (20.3)
No	6 (4.2)	25 (17.5)	6 (4.2)	6 (4.2)
I don't know	16 (11.2)	76 (53.1)	111 (77.7)	105 (73.4)
Dental Specialists				
Yes	183 (93.9)	45 (23)	28 (14.4)	41 (21)
No	6 (3.1)	97 (49.7)	38 (19.5)	38 (19.5)
I don't know	5 (2.6)	45 (23)	121 (62)	109 (55.9)
Total				
Yes	304 (89.9)	86 (25.4)	52 (15.4)	70 (20.7)
No	12 (3.6)	122 (36.1)	44 (13)	44 (13)
I don't know	21 (6.2)	121 (35.8)	232 (68.6)	214 (63.3)

Some groups of percentages do not sum to 100% because of rounding.

Discussion

Understanding opinions, attitudes and practices of dental healthcare professionals is vital in order to assess their effectiveness in the prevention and early detection of oral cancer, thus helping to reduce its mortality and morbidity (Horowitz *et al*, 1996).

There is current debate on whether the implementation of screening as a separate procedure from the daily routine work of dental healthcare professionals would be an effective measure for the early detection and prevention of oral cancer. The British Dental Association in 2000 encouraged their members to consider opportunistic oral cancer screening as a management strategy in general dental practice. The American Cancer Society (1992) guidelines for oral cancer examination recommended routine screening for cancers of the oral region every 3 years for persons over 20 years of age and annually for those of 40 years of age and older. The Canadian Task Force for Preventive Health concluded that screening for patients at high risk should be performed annually (Hawkins *et al*, 1999).

The final response rate to our survey was 66.9% distributed as 71.5% for GDPs and 63.9% for dental specialists and consultants. Other surveys (Warnakulasuriya and Johnson, 1999; Yellowitz *et al*, 2000) had a lower response rate (16%, 50% respectively). Although the sample size was small (505), systematic random selection was used to avoid potential bias. In addition, it is possible that those who considered the study to be professionally relevant may have been more likely to respond.

To date MEDLINE searches have found no surveys that compared the opinions and attitudes of dental specialists and GDPs towards oral cancer screening.

The higher percentage of dental specialists who had attended an educational course on oral cancer than the GDPs may reflect the different nature of their work. It is likely that dental specialists are more interested in updating their knowledge about oral cancer in order to provide high quality knowledge based service.

The vast majority of GDPs who participated assessed their patients' present use of tobacco and alcohol as well as their history of cancer. For other oral cancer risk factors, the GDPs' assessment was relatively minimal. This missing information could be used to provide a better assessment of risk in a particular patient or it may be vital for effective application of preventive measures.

The dental specialist's rating for the risk factors of oral cancer showed that tobacco and alcohol habits as well as a patient's past history of head and neck cancer were rated descendingly as the most important risk factors. This suggests their knowledge is consistent with

the current understanding of the aetiology of oral cancer (La Vecchia *et al*, 1997; Llewellyn *et al*, 2001).

Similar to other surveys (Warnakulasuriya and Johnson, 1999; Yellowitz *et al*, 2000), the combined percentages of GDPs and dental specialists who undertake systematic oral examination to exclude oral cancer at the initial appointment for every patient either between 18 and 40 years old or over 40 years old were 81.4% and 92% respectively, with only minor variation between the two groups. Interestingly, over 95% of the all respondents believed that such activities were not a waste of time. It may thus be concluded that dental healthcare professionals are convinced that these procedures are imperative for the early detection of oral cancer.

Significantly more dental specialists than GDPs provided preventive measures, such as counselling advice for every patient who smokes or who has excessive alcohol intake. This finding suggests a gap in preventive provision by GDPs.

Two-thirds of dental specialists observed trends towards younger patients with oral cancer. This observation is consistent with a number of recent epidemiological studies (Mackenzie *et al*, 2000; Shiboski *et al*, 2000; Robinson and Macfarlane, 2003).

The GDPs believed positively that nationally based oral cancer screening programmes are effective in improving both mortality and morbidity rates much more frequently than the dental specialists. This may reflect differences in the understanding of the natural history of the disease and the nature of the study and work of the two groups. However in total over 40% of all respondents believed positively in these programmes, suggesting quite wide support for their implementation.

Oral cancer awareness of patients appears high, as over 60% of all respondents replied that their patients asked them to screen their mouth for oral cancer.

As expected, over 95% of all respondents used a visual examination for oral cancer screening because this technique is inexpensive, simple, acceptable and has high sensitivity and specificity (Speight *et al*, 1993; Jullien *et al*, 1995). Most respondents (89.9%) strongly believed that visual screening is effective in the early detection and prevention of oral cancer.

Despite the reports by major dental bodies (Johnson *et al*, 1998; BDA, 2000) encouraging dental health providers to use toluidine blue as an adjunct method for screening, few respondents (14.2%) used toluidine blue. This low percentage may reflect issues such as reliability, cost and a lack of robust evidence for its effectiveness.

Almost 50% of the dental specialists did not believe that toluidine blue is effective for the early detection of oral cancer. In contrast only 17.5% of the GDPs believed that this technique is not effective. This huge difference is perhaps a direct response by dental specialists to the reported high number of false positive results from toluidine blue application (Martin *et al*, 1998).

The two other methods, fluorescence imaging and brush biopsy, were rarely used by either GDPs or dental specialists ($<3\%$). The reasons might be that these methods are recent and there are insufficient reports in terms of specificity and sensitivity either to support these techniques or not. Thus the vast majority of respondents replied that they do not know whether these methods are effective or not.

Only 50% of GDPs described their training regarding oral cancer recognition as sufficient whilst 41% of them took the opposite view and the rest had no comment. This raises a number of questions related to the education and training of undergraduate students in terms of performance.

Conclusions

The results revealed a deficiency in the awareness and knowledge of GDPs in relation to their assessment of their patient's risk factors for oral cancer. Also it was clear that they are less attracted than specialists to current educational courses for oral cancer. Moreover 41% of GDPs described their undergraduate training in the recognition of oral cancer as insufficient. All these factors raise concerns about the need for correcting these deficiencies by encouraging GDPs to attend postgraduate courses on oral cancer. In addition, more attention should be given in undergraduate training and education on using preventive approaches. The need for knowledgeable, well-trained GDPs is crucial in the prevention and early detection of oral cancer (Yellowitz *et al*, 2000; Clovis *et al*, 2002). Our findings suggest changes may be needed in educational interventions when planning training and updating courses for UK GDPs.

This survey showed that most dental health providers in the UK currently perform visual screening of the oral mucosa for their patients. Visual screening is thought to be the key method for screening. There was varied opinion on whether a nationally based screening programme similar to cervical cancer would be effective or not in improving the morbidity and mortality with oral cancer. Our recent Cochrane systematic review on oral cancer screening revealed that there is insufficient evidence to recommend inclusion or exclusion of screening for oral cancer and the existing data need to be supplemented by further randomized controlled trials to provide the highest level of evidence for practice (Kujan *et al*, 2005).

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