

An alarming lack of public awareness towards oral cancer

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Objective To determine public awareness and knowledge of oral cancer in Great Britain.

Design The respondents were selected according to a systematic probability sample designed to be representative of all adults in Great Britain (GB). The overall design was similar to previous omnibus surveys carried out by National Opinion Poll (NOP). The survey was carried out in ten regions of GB in September 1995 and was commissioned by the Health Education Authority (HEA).

Subjects and methods A random sample of 1,894 members of the public over the age of 16 years were asked in face-to-face interviews their knowledge relating to cancer, with particular reference to oral cancer, its causes and those at high risk and general attitudes to cancer.

Results Oral cancer was one of the least heard of cancers by the public with only 56% of the participants being aware, whereas 96% had heard of skin cancer, 97% lung cancer and 86% cervical cancer. There was a 76% awareness of the link between smoking and oral cancer but only 19% were aware of its association with alcohol misuse. Whereas 94% agreed that early detection can improve the treatment outcome, a disheartening 43% believed that whether a person developed a cancer or not was a matter of chance and therefore was unavoidable.

Conclusions This survey highlights a general lack of awareness among the public about mouth cancer and a lack of knowledge about its causation especially the excess risk associated with alcohol.

Recommendations There is a clear need to inform and educate the public in matters relating to the known risk factors associated with oral cancer. A media campaign informing the public about oral cancer is clearly required. The need for the reduction in the incidence of oral cancer should be included in 'Our healthier nation' targets. An overall health promotion strategy to reduce cancers should include oral cancer as a priority. In addition the European Code against Cancer which aims to improve prevention, the early detection of oral cancer and the necessity for fast track referral should be made more widely known. Recognition of oral cancer in local strategies for oral health should be encouraged.

Each year there are over 2,500 cases of oral cancer (cancers of the lip, tongue and other parts of mouth and oropharynx) in the UK. About 50% will die of or with the disease.^{1,2} More than 80% of cancers in these sites occur in people more than 45 years of age.¹ However, there is evidence of an increasing incidence of, and mortality from, tongue

cancer in younger age groups in a number of Western European countries including the UK.³ Oral cancer occurs more commonly in men possibly because of differences in the risk habits.⁴

The vast majority of malignant neoplasms in the mouth are squamous cell carcinomas. For these cancers the major aetiological factors are tobacco and excess alcohol use.⁴ The disease is largely preventable.⁵ Earlier diagnosis greatly increases a patient's chances of survival as the mouth is very accessible for a clinical or even self examination. However, there is poor public awareness of the signs and symptoms of oral malignant and premalignant lesions.⁶ Although it is at least half as common as cervical cancer in England and Wales,⁷ very little is spoken or written about it in the lay literature. A poor compliance to attend for oral cancer screening following invitation (25.7%) has been linked to probable lack of public awareness of this disease.⁸ As far as we are aware the level of public awareness of risk factors or early symptoms in Great Britain is not known. Reported here are the results of a National Opinion Poll (NOP) commissioned in 1995 by the Health Education Authority (HEA) to enquire into the public's attitudes and awareness on the subject of oral cancer.

Materials and methods

To assess public awareness of oral cancer, particularly its association with tobacco and alcohol use, NOP Consumer Market Research carried out a national survey of adults over the age of 16 years.⁹ This survey was part of a larger random omnibus survey which NOP conducts on a yearly basis. All NOP research is considered and approved by the appropriate ethics committees. The research methodology was fully tested based on extensive field experience from former surveys. The respondents were selected according to a systematic probability sample representative of all adults in Great Britain. A detailed and elaborate sampling technique is used by NOP to ensure a representative sample is achieved. The sample was selected from 180 sampling points evenly distributed across the following ten regions: South West England, South East England, London, East Anglia, Wales, Midlands, Yorkshire, Lancashire, North East England, and Scotland. The stratified random sampling design consisted of three stages. Initially names were drawn at random from electoral registers. The resulting samples of electors were then supplemented by a random sample of non-electors drawn from the households of the selected electors. Finally a weighting process was undertaken to ensure that the final sample was representative of known population. A detailed description of the sampling method used is outlined in a NOP sampling manual.¹⁰ A letter explaining details of research was first sent to each household. Informed consent was obtained prior to interview. Face-to-face interviews were conducted in the respondents' homes by fully trained and experienced market research interviewers. The Health Education Authority (HEA) was responsible for developing and testing out the questions prior to the full survey. All interviewing used the latest Computer Assisted Personal Interviewing Techniques. To assess the reliability of interview data completed interviews were subjected to a 10% field check by a process of re-interviews.

The interviews consisted of nine questions presented on showcards. Respondents were asked three questions on their awareness of oral

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compared with other cancers, its causes and what might constitute a high risk group; five questions assessed respondents smoking and drinking habits; and one question focused upon general attitudes to cancer. The questionnaire used is available on request from the authors.

The data were analysed according to socio-demographic, geographic and own smoking/alcohol use. For comparison of categorical variables between groups, the chi-squared test was used. If the effects of sociodemographic variables were minimal, the findings for all persons are presented. Alternatively, if differences are cited between subgroups with varying characteristics, they attain both statistical and social significance, in terms of critical health knowledge, unless otherwise noted.

Results

A total of 1,894 subjects participated in the survey which amounts to a 94.7% response rate. Table 1 shows the demographic aspects of the respondents. The first showcard asked 'Which, if any, of these types of cancer would you say you have heard of?' The results are given in Table 2. There were no gender differences in the knowledge of the existence of oral cancer. The greatest awareness was among adults in the age group 35-64 years (61-64%), those in the youngest group (16-24 years) being significantly less aware (43% ; $\chi^2 = 24.57$; $df = 1$; $P < 0.0001$). The knowledgeable proportion also fell in the oldest group. Those in socio-economic groups 1 and 2 had the highest knowledge (69%). People from Scotland, East Anglia and Wales had higher awareness, with more than 60% having heard of oral cancer, but the regional differences observed were not statistically significant ($\chi^2 = 15.34$; $df = 9$; $P = 0.08$) (Table 3). When the answers to this question were structured against the subjects own alcohol and smoking habits there was a tendency towards increased awareness of the disease among smokers and those who drank alcohol daily (Table 4). Total abstainers were the least aware group (38%), being significantly different from the rest ($\chi^2 = 45.71$; $df = 1$; $P < 0.0001$).

The second showcard asked 'Thinking now just about oral cancer, here is a list of things which may or may not be linked with oral cancer. Could you tell me which if any of these you think may be linked to oral cancer?' There was a high awareness (76%) of the smoking link, but only a low (19%) awareness of the link with alcohol. There was a 27% link with car exhaust fumes and even a 13% link with dental fillings. Social classes 1 and 2 had a higher awareness of risk factors at 87% for smoking ($\chi^2 = 5.48$; $df = 3$; $P < 0.0001$) and 25% for drinking alcohol ($\chi^2 = 8.13$; $df = 3$; $P = 0.04$), being significantly higher than all other social class groups. When cross tabulated by age the 25-34 year age group had the highest knowledge at 82% and 24%, for respectively, smoking and alcohol.

The third question asked 'Which of the following groups of people are most likely to have a greater chance of developing the disease?' While 75% answered 'Heavy smokers', only 22% responded 'People who

Table 2 Percentage of respondents aware of cancer in different anatomic sites of the body

Lung cancer	97
Skin cancer	96
Cervical cancer	86
Prostate cancer	78
Cancer of the colon	62
Oral cancer	56
Cancer of the pelvis	38

Table 3 Regional differences in awareness of oral cancer

	Respondents	Aware (n)	Aware (%)
Scotland	211	116	62
North East England	115	51	50
Lancashire	226	122	57
Yorkshire	231	99	54
Midlands	263	174	55
Wales	177	90	61
East Anglia	112	92	62
London	366	188	50
South East England	142	103	58
South West England	57	33	59

drink heavily'. Social classes 1 and 2, with 87% and 27%, respectively, and the age range 25-34 years with 81% and 23%, respectively, were the highest score of all the groups. Thirty per cent of the total sample surveyed thought that people aged 50 years and older were most prone ($\chi^2 = 17.86$; $df = 5$; $P = 0.003$)

For the statement 'Early detection of some cancers can improve the chances of successfully treating them' the sample were asked whether they agreed or disagreed. Forty-five per cent agreed strongly and 49% agreed slightly. There were significant variations by age and social class with at least half of those in age groups 25-54 agreeing strongly ($\chi^2 = 21.96$; $df = 5$; $P = 0.0005$) compared with other age groups and 56% of social classes 1 and 2, agreeing strongly ($\chi^2 = 24.40$; $df = 3$; $P < 0.0001$) compared with other classes.

To the statement posed, 'Who develops cancer and who doesn't is a matter of chance, so there's nothing anybody can do to avoid it?' 43% agreed strongly or slightly, while 45% disagreed slightly or strongly. Fifty-one per cent of the oldest age group (65+) agreed strongly, significantly more than other age groups as did the social classes 4 and 5 at 55%.

The final statement was 'Some people can make changes in the way they live to reduce their risk of developing cancer', 82% agreed to some extent as opposed to only 11% who disagreed. In the age group 35-44, 86% agreed and in the socio-economic groups 1 and 2, 92% showed agreement.

Discussion

The high response rate (95%) achieved reflects the high profile of NOP surveys conducted in Great Britain, the approach of contacting clients by letter prior to the interview and conducting interviews at residences as prearranged. Owing to the elaborate sampling technique using electoral registers and the high response rate the results derived can be generalised to the residents of Great Britain. This survey highlights the general lack of awareness about mouth cancer and its causation. Little more than half were aware of mouth cancer compared with more than 85% being aware of cancer afflicting other body organs/sites. The level of public awareness reported here is similar to a study on Londoners by Bhatti *et al.*¹¹ which showed that little more than two-thirds of respondents knew about mouth cancer. Residents of London and North East England were least aware of oral cancer (50%) but Scots and Welsh had a higher awareness (61-62%) compared with other regions. The Health Education Board in Scotland and Pecen Gwybodeth in Wales have been active in initiatives towards preventing oral cancer.¹²

Table 1 Socio-demographic data of survey subjects (n = 1,894)

		Number	Per cent
Gender	Male	926	49
	Female	968	51
Age	16-24	291	15
	25-34	383	20
	35-44	320	17
	45-54	293	15
	55-64	241	13
	65+	367	19
Class -	I/II	325	17
	III non-manual	520	27
	III manual	422	22
	IV/V	627	33
Marital status:	married	1152	61
	single	444	23
	widow/divorced/separated	298	16

Table 4 Knowledge on oral cancer and risk factors categorised by own smoking and drinking status

Smoking status	Current smoker (%)		Non smoker (%)			
Reported status	30	70				
Awareness of oral cancer	58	55				
Aware of smoking being a risk factor	77	75				
Aware of alcohol being a risk factor	23	18				

Alcohol use	Almost every day	Several times a week	Once a week	Less frequent	None
	%	%	%	%	%
Reported use	11	32	16	24	17
Aware of oral cancer	69	63	57	53	38
Aware of smoking being a risk factor	79	82	73	76	68
Aware of alcohol being a risk factor	21	24	17	15	19

There is a clear need to inform and educate the public in matters relating to the known risk factors. Whereas the danger of smoking was recognised by many people, the association between alcohol and oral cancer was known to only a few.¹³ Health education campaigns appear to have been successful in that the majority of the population — non smokers as well as smokers — now perceive the habit of smoking to be harmful to health. The British Social Attitude Survey conducted in 1990, exploring health beliefs, reported that being a non-smoker is seen by far the most important factor in improving general health.¹⁴ The Drinkwise Campaign is claimed to have achieved success in making a large percentage of the population aware of the number of units considered safe (21 for the male and 14 for the female),¹⁵ but appears to have failed to identify the link with oral cancer. Horowitz *et al.*¹⁶ recorded equally disappointing but remarkably similar results in the US where tobacco use was the only risk factor correctly identified by most adults. In a pilot study on the Polish public's knowledge 95% identified tobacco in any form as a risk factor and only 25% indicated alcohol.¹⁷ These findings contrast markedly with a recent Spanish study by Rebollo-Palencia *et al.* in which 69% of the subjects knew of the positive association between excess alcohol and cancer.¹⁸ In a study of alcohol and substance misuse in South London by Harris *et al.* it was found that well over 90% of alcohol misusers were also smokers of tobacco.¹⁹ This combination is known to increase the odds ratio for oral cancer up to 44 times compared with non smokers and occasional drinkers.²⁰ Information to the public on synergism of tobacco and alcohol in causation of oral and pharyngeal cancer is highly desirable. With such well known risk factors as alcohol and tobacco (carrying an attributable risk close to 75–95%), it is possible to prevent a large number of oral cancers. Raising public awareness could contribute to achieving a significant reduction in its incidence.

Several questionnaire-based surveys of UK dentists have shown consistently that few dentists routinely inquire about the smoking and drinking habits of their patients and even when they enquire they rarely include such information in patient's clinic records.^{21–24} Sensible drinking, cessation of tobacco and inclusion of fresh fruits and vegetables in the diet are the cornerstones of cancer prevention. Dentists are in a strong position to motivate their clients on tobacco cessation and alcohol moderation. A recent demonstration programme on smoking cessation has described an intervention model that can be adopted by UK dentists for control of oral cancer.²⁵

Cancer fatalism often plays a pivotal role in people either not accepting professional advice on avenues for prevention or arriving too late for therapy. Cancer fatalism needs prompt identification^{26,27} and there is a duty of healthcare providers to offer information on how early therapy saves lives. Forty-three per cent of the public surveyed was of the opinion that whether an individual develops cancer is a matter of chance. A fatalistic attitude to health might be a critical obstacle to changing lifestyles²⁸ and in this study associations with old age and social class were evident in 'fatalism'. Education of the public, particularly young people,²⁹ may help to change the common attitude that cancer affliction is a matter of chance. There is now suffi-

cient scientific evidence to conclude that cancer of the mouth and pharynx is largely related to life style.⁴ Only 11 per cent of the present sample disagreed that people can make changes to their life style to reduce the risk of developing cancer. This positive approach needs to be harnessed by providing the basic factual information about oral cancer, thereafter allowing people to make their choices which are more likely to be healthier ones.

The determinants that contribute to patient and professional delay in diagnosis for oral cancer are documented.³⁰ The earlier detection of oral cancer by opportunistic screening should afford patients greater survival times, and more certainly less radical treatment.³¹ In April 1998, the Report of the Scientific Committee on Tobacco and Health recommended mandatory training of primary dental care professionals in the detection of oral cancers and consideration of re-introduction of the free dental examination in the General Dental Services of the NHS.³² Although there is a great deal of professional



Fig. 1 Professional educational material available for UK dentists and other professionals on the subject of oral cancer



Fig. 2 Public education leaflet on oral cancer produced by Cancer Research Campaign (CRC)

educational material about (fig. 1) we lack suitable material for public use. Recently the Cancer Research Campaign has produced a public education leaflet (fig. 2). A leaflet by The British Dental Health Foundation was circulated in 1991. Their availability at large and in particular to where most needed is questionable. Most patients with oral symptoms that are likely to be suspicious of mouth cancer are likely to consult their medical practitioner¹¹ but the professional information on oral cancer so far has been mostly delegated toward the dental profession.³³ Recent publications in the *British Medical Journal* on oral cancer and about risk factors that are often unrecognised by the medical profession would provide a useful resource to fill this gap.^{34,35}

Media presentations through magazine and newspaper articles, while reaching only certain sections of the population, will at least target some of those people not seeking regular medical/dental care. A further recourse is through television, where AIDS and drug messages seem to have found their goal. On three occasions when a professional body such as The Royal College of Physicians targeted the public by issuing a declaration warning about adverse effects of tobacco, considerable gains were noted in subsequent periods where the smoking rates fell significantly.³⁶ Several media based campaigns have been conducted in the USA and Australia. Mass media advertisements and unpaid publicity on ill health associated with smoking appear to have contributed to provoking adult cessation.³⁷ The media also play a role in effecting policy changes towards smoking control.³⁸ Professional lobbying for this aim through national dental organisations is timely. Concise information needed by the professionals on the subject of oral cancer is available in two fact sheets published by the British Dental Association and the Cancer Research Campaign.^{39,40}

The present study revealed several aspects of public uncertainty and ignorances with regard to the causation of oral cancer which need to be emphasised in future public education programmes, particularly using mass media. Future programmes attempting to educate the public, such as the European Code against Cancer, need to contain a focus on issues related to oral cancer control.

The following messages are appropriate:

- Do not smoke: avoid smokeless tobacco products
- Moderate alcohol intake: 21 units per week for men, 14 for women
- Avoid excessive exposure to sunlight to prevent lip cancer
- Eat green and yellow fresh fruit and vegetables as a source of β carotene
- White and red patches of oral mucosa are surrogate markers
- Have regular mouth check ups with your dentist
- Seek immediate professional advice on discovering any lumps or ulcers persisting over 2 weeks.

In addition to public education a comprehensive health promotion strategy to reduce smoking and excess alcohol consumption is essential to halt increases in oral cancer trends. The Government White Paper on smoking prevention, published in December 1998 provides a welcome stimulus for effective policy developments.

The results of this survey provide benchmark measures against which changes in attitudes on oral cancer and its causation among the UK public can be measured.

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- 1 Office for National Statistics. *Cancer Statistics: Registrations 1992*. Series MB1; No 25. London: The Stationary Office, 1998.
- 2 Office for National Statistics. *Mortality Statistics: Cancer 1994*. Series DH2; No 21. London: HMSO, 1996.
- 3 La Vecchia C, Tavani A, Franceschi S, Levi F, Corrao G, Negri E. Epidemiology and prevention of oral cancer. *Eur J Cancer (Oral Oncology)* 1997; 33: 302-312.
- 4 Johnson N W, Warnakulasuriya K A A S. Epidemiology and aetiology of oral cancer in the United Kingdom. *Community Dent Health* 1993; 10(Suppl 1): 13-19.
- 5 World Health Organization. Control of oral cancer in developing countries. *Bull World Hlth Org* 1984; 62: 817-830.
- 6 Boyle P, Macfarlane G J, Scully C. Oral cancer: necessity for prevention

- strategies. *Lancet* 1993; 342: 1129.
- 7 Johnson N W, Warnakulasuriya K A A S. Oral cancer: is it more common than cervical? *Br Dent J* 1991; 170: 170-171.
- 8 Jullien J A, Zakrzewska J M, Downer M C, Speight P M. Attendance and compliance at an oral cancer screening programme in general medical practice. *Eur J Cancer (Oral Oncol)* 1995; 31B: 202-206.
- 9 Health Education Authority. *Oral Cancer Project: Final Report*. London: Health Education Authority, 1995.
- 10 NOP Research Group. *Random Omnibus Sampling Manual*. London: NOP Research Group, 1998.
- 11 Bhatti N, Downer M C, Bulman J S. Public knowledge and attitudes on oral cancer: a pilot investigation. *J Inst Health Educ* 1995; 32: 112-117.
- 12 Pecyn Gwybodeth. *Preventing oral cancer in Wales*. Health Promotion Wales: Hybu Iecychyd Cymru, 1993.
- 13 International Agency for Research on Cancer. *IARC Monographs on the evaluation of carcinogenic risks to humans: alcohol drinking*. Lyon: IARC. Monograph 44, 1988, pp165-178.
- 14 Ben-Shlomo Y, Sheiham A, Marmot M. Smoking and health. In Jowell R, Brook L, Taylor B (ed) *British Social Attitudes: The 8th Report*. pp 155-174. London: Social and Community Planning Research (SCPR), 1991.
- 15 Health Education Authority. *That's the limit — a guide to sensible drinking*. London: Health Education Authority, 1992.
- 16 Horowitz A M, Nourjah P and Gift H C. US adult knowledge of risk factors and signs of oral cancers: 1990. *JADA* 1995; 126: 39-45.
- 17 Raczkowska A, Zakrzewska J, Pogorzelska B. Pilot study on Polish public's knowledge and attitudes towards oral cancer. *Oral Dis* 1997; 3 (Sup2): S35.
- 18 Rebollo-Palencia M R, Berlanga-Gonzalez M A, Casado-Alonso Y et al. Knowledge and attitudes related with cancer prevention in a population served at a health centre. *Aten-Primara* 1996; 18: 417-424.
- 19 Harris C K, Warnakulasuriya K A A S, Johnson N W, Gelbier S, Peters T J. Oral health in alcohol misusers. *Community Dent Health* 1996; 13: 199-203.
- 20 Blot W J. Alcohol and cancer. *Cancer Res* 1992; 52(Suppl): 2119s-2123s.
- 21 Chestnut I G, Binnie V I. Smoking cessation counselling; a role for the dental profession? *Br Dent J* 1995; 179: 411-415.
- 22 Cowan C G, Gregg T A and Kee F. Prevention and detection of oral cancer: the views of primary care dentists in Northern Ireland. *Br Dent J* 1995; 179: 338-342.
- 23 John J H, Yudkin P, Murphy M, Ziebland S, Fowler G H. Smoking cessation interventions for dental practices — attitudes and reported practices of dentists in the Oxford region. *Br Dent J* 1997; 183: 359-364.
- 24 Warnakulasuriya K A A S, Johnson N W. Dentists and oral cancer prevention in the UK: opinions, attitudes and practices to screening for mucosal lesions and to counselling on tobacco and alcohol use: Baseline data from 1991. *Oral Dis* 1999; 5: 10-14.
- 25 Smith S E, Warnakulasuriya KAAS, Feyerabend C, Belcher M, Cooper D J, Johnson N W. A smoking cessation programme conducted through dental practices in the UK. *Br Dent J* 1998; 185: 299-303.
- 26 Powe B D. Perceptions of cancer fatalism among African Americans: the influence of education, income and cancer knowledge. *J Natl Black Nurses Assoc* 1994; 7: 41-48.
- 27 Suarez L, Roche R A, Nichols D and Simpson D M. Knowledge, behaviour and fears concerning breast and cervical cancer among low income Mexican-American women. *Am J Prev Med* 1997; 13: 137-142.
- 28 Lewis P A, Charney M, Lambert D, Coombes J. A fatalistic attitude to health among smokers in Cardiff. *Hlth Ed Res* 1989; 4: 361-365.
- 29 Working Party of the Royal College of Physicians. Smoking and young. *J Roy Coll Phys* 1992; 26: 405-406.
- 30 Allison P, Locker D, Feine J S. The role of diagnostic delays in the prognosis of oral cancer: a review of literature. *Eur J Cancer (Oral Oncol)* 1998; 34: 161-170.
- 31 Warnakulasuriya K A A S, Johnson N W. Strengths and weaknesses of screening programmes for oral malignancies and potential malignant lesions. *Eur J Cancer Prev* 1996; 5: 93-98.
- 32 Department of Health. *Report of the Scientific Committee on Tobacco and Health*. p46. London: HMSO, 1998.
- 33 British Dental Association. *Oral Cancer: Guidelines for the early Detection*. Occasional paper No 5, London: BDA, 1998.
- 34 Zakrzewska J M. Oral cancer. *Br Med J* 1999; 318: 1051-1053.
- 35 Trivedy C, Warnakulasuriya S, Peters T J. Areca nuts have deleterious effects. *Br Med J* 1999; 318: 1287.
- 36 Fowler G. Smoking. In Fowler G, Gray M, Anderson P (eds) *Prevention in General Practice*. 2nd ed. pp 106-121. Oxford: Oxford University Press, 1993.
- 37 Pierce J, Macaskill P, Hill D. Long term effectiveness of mass media led anti smoking campaigns in Australia. *Am J Pub Hlth* 1990; 80: 565-569.
- 38 Reid D. How effective is health education via mass communication? *Hlth Educ J* 1996; 55: 332-344.
- 39 British Dental Association. *Fact File; Oral Cancer*. London: BDA, 1995.
- 40 Cancer Research Campaign. Factsheet 14; Oral Cancer. London: CRC, 1993.