

# Community survey of knowledge about oral cancer in Babol: effect of an education intervention

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مسح مجتمعي للمعارف حول سرطان الفم في بابول، جمهورية إيران الإسلامية: تأثير تدخل تثقيفي  
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**الخلاصة:** أجريت الدراسة في بابول، جمهورية إيران الإسلامية، واستخدم الباحثون استبياناً (استمارة أسئلة) لجمع المعلومات حول المعارف عن سرطان الفم وعوامل الاختطار المتعلقة به، وتقييم فعالية نشرة معلوماتية تثقيفية عنه. واتضح للباحثين أنه من بين مجموع العينة المجتمعية المدروسة، وعدد أفرادها 400 شخص، لم يكن لدى 76.0٪ منهم أية معرفة عن سرطان الفم. وأن الحرز الوسطي (للمعرفة) قبل التدخل 1.47 (بانحراف معياري مقداره 3.40) من أصل 10. ولم يكن هناك ترابط بين المعارف عن سرطان الفم وبين العمر أو الجنس أو المستوى التعليمي، إلا أن السكّان في المدن كانوا يتمتعون بمعارف أكبر مما لدى سكان الريف. وقد تحسّن الحرز الوسطي للمعرفة تحسناً يعتد به إحصائياً بمقدار 5.92 (بانحراف معياري 3.30) بعد شهر من التدخل لدى 226 من المستجيبين الذين قرأوا النشرة التثقيفية.

**ABSTRACT** A study in Babol, Islamic Republic of Iran, used a questionnaire to gather information on knowledge about oral cancer and its risk factors and to evaluate the efficacy of an educational brochure. From a community sample of 400 people, 76.0% had no knowledge of oral cancer. Mean knowledge score before the education intervention was 1.47 (standard deviation 3.40) out of 10. Knowledge about oral cancer was not associated with age, sex or education level but urban residents had better knowledge than rural residents. Mean knowledge score improved significantly by 5.92 (SD 3.30) at 1 month after the intervention among the 226 respondents who had read the brochure. .

## Enquête communautaire sur les connaissances en matière de cancer de la bouche à Babol : les effets d'une intervention éducative

**RÉSUMÉ** Une étude a été menée à Babol (République islamique d'Iran) sur la base d'un questionnaire visant à recueillir des informations relatives aux connaissances sur le cancer de la bouche et ses facteurs de risque et à évaluer l'efficacité d'une brochure éducative. Sur un échantillon de population de 400 personnes, 76,0 % d'entre elles ne savaient rien sur ce type de cancer. Le score de connaissances moyen avant l'intervention éducative était de 1,47 (écart type : 3,40) sur 10. Les connaissances en matière de cancer de la bouche n'étaient pas associées à l'âge, au sexe ou au niveau d'instruction, mais elles étaient meilleures en zone urbaine qu'en zone rurale. Un mois après l'intervention, le score de connaissances moyen avait augmenté de façon significative de 5,92 points (E.T. : 3,30) chez les 226 personnes interrogées qui avaient lu la brochure.

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## Introduction

Cancer is one of the major threats to public health in the developed world and increasingly in the developing world [1]. According to a 2005 World Health Organization (WHO) report, oropharyngeal cancer is the 11th most common cancer worldwide [2]. The incidence and mortality rates of oropharyngeal cancer are higher in men than women and there is evidence that the cancer is more common in developing than developed countries [3,4]. The rates for oral cancer vary widely. In Asia for example, the age-standardized incidence per 100 000 population ranges from 0.7 in China to 12.6 in India. Differences in incidence between countries reflect distinct risk profiles and the availability or accessibility to health services [2]. High incidence rates can be directly related to risk behaviours such as smoking, use of smokeless tobacco and alcohol consumption [5,6].

In 2005 in the Islamic Republic of Iran, cancer killed approximately 47 000 people, 27 000 of whom were under the age of 70 years [7]. The prevalence of tobacco use is estimated to be 14.2% of the population aged 15–64 years old [8].

WHO focuses on cancers that are amenable to early detection and treatment [9]. In April 2005 at the 10th International Congress of Oral Cancer, the Crete Declaration on Oral Cancer Prevention was issued to strengthen efforts for effective control and prevention [10].

As a first step to designing effective education programmes, it is necessary to obtain basic data from a population about their knowledge of oral cancer. The aim of this study was to assess the knowledge of residents of Babol in Mazandaran province in the north of the Islamic Republic of Iran on oral cancer and its risk factors and evalu-

ate the efficacy of an information brochure as a way of improving knowledge.

## Methods

This was a cross-sectional, descriptive, analytical study carried out in Babol in 2005. From a pilot study of outpatients at the Faculty of Dentistry of Babol University of Medical Sciences, sample size was estimated at 400, with  $\alpha = 0.05$ ,  $\delta = 1.7$  (standard deviation of knowledge of oral cancer in pilot study) and  $d = 0.15$  (mean difference).

Sampling was done through a multi-stage cluster sampling method. There were 20 urban and 20 rural health regions in Babol; 10 regions were selected as clusters. Each cluster was divided into 4 parts (north, south, east and west). In each cluster, 1 part was randomly selected as a block so there were 10 rural and 10 urban blocks. In each block, 20 samples were selected randomly, giving 200 rural and 200 urban participants (over 16 years) in the study.

A questionnaire was designed to collect personal information and assess participants' knowledge about oral cancer, etiology and risk factors: whether it is preventable, in which age and sex it is most common, whether it is related to oral hygiene, tobacco use or chronic infection, the early signs of oral cancer and whether someone can check for signs themselves. The questionnaire included 10 questions scored 1 or 0, giving a maximum knowledge score of 10.

For the education intervention an information brochure on oral cancer facts was designed which was compatible with the questionnaire. The validity of the questionnaire and information brochure were checked through textbooks [11,12] and by the professors of oral pathology and oral medicine at the Faculty of Dentistry and the

reliability was estimated. Cronbach alpha coefficient was 0.62.

A group of 20 dental students were chosen and trained as field staff. These students visited the residents in their homes, gave them a complete explanation about the project, obtained informed consent and filled out the questionnaire through interview and finally gave them the information brochure. For illiterate participants they asked one of the literate members of their family to read the brochure to them. After 1 month, the same students visited the same people in their homes, and filled out the questionnaire again.

Knowledge is presented as the frequency of correct answers to each item before and after the intervention and the mean and standard deviation (SD) knowledge score out of 10. The data were analysed using SPSS software, version 12.0 for Windows, by Mann–Whitney and Kruskal–Wallis tests. Significance was established at  $P < 0.05$ .

## Results

### Pre-intervention

In the first stage of the study, 400 people filled out the questionnaire. The demographic data of respondents is shown in Table 1. Three-quarters of the respondents (76.0%) had no knowledge about oral cancer or its causes and symptoms. In those who had some knowledge, the sources of information were mass media for 55 (13.8%), dentists for 5 (1.3%), friends for 32 (8.0%) and friends and mass media for 4 (1.0%). When asked about visiting a dentist to be examined for oral cancer, 334 respondents answered this question, with only 62 (18.6%) giving a positive response.

Before the education intervention the overall mean score of knowledge of oral cancer was 1.47 [standard deviation (SD) 3.40] out of 10. Table 1 shows the mean score of knowledge by sex, education level, place of residence and age group. The mean

Table 1 Mean knowledge scores about oral cancer before the intervention for the whole sample ( $n = 400$ )

Variable	No. of respondents	%	Mean (SD) knowledge score before intervention	P-value
<i>Age (years)</i>				
16–36	152	38.0	1.29 (3.80)	0.323
37–56	87	19.5	1.61 (4.40)	
57–86	170	42.5	1.80 (6.40)	
<i>Sex</i>				
Male	168	42.0	1.29 (3.80)	0.315
Female	232	58.0	1.68 (3.60)	
<i>Education</i>				
Illiterate	11	2.8	2.18 (8.20)	0.147
High school	315	78.8	1.36 (2.80)	
University	74	18.5	2.09 (7.20)	
<i>Residence</i>				
Urban	200	50.0	2.18 (4.40)	< 0.001
Rural	200	50.0	0.86 (2.60)	

SD = standard deviation.

knowledge score was significantly higher in urban than in rural residents ( $P < 0.001$ ).

There were 44 (11.0%) smokers, 21 (5.3%) ever users of alcoholic beverages and 137 (34.3%) who had sun exposure at work. These were considered high-risk subjects. The mean knowledge score before education in high-risk respondents was lower than in low-risk respondents [1.15 (SD 3.60) versus 1.78 (SD 3.80)] ( $P = 0.022$ ).

### Post-intervention

In the second stage, 174 of 400 respondents were excluded because they had not read the information brochure or were unwilling to cooperate. The remaining 226 respondents answered the knowledge questionnaire again. Their demographic data are shown in Table 2.

In this subgroup the frequency of correct answers to each question rose after the educational intervention (Table 3). The proportion who knew that oral cancer can be prevented rose from 19.0% to

75.2%, and that it is related to tobacco use from 22.6% to 77.9%. The proportion who knew that self-examination can be done for oral cancer increased from 9.3% to 54.9%, with knowledge of 3 early signs of oral cancer rising from 4.9% to 22.1%.

The increase in knowledge for respondents who had read the brochure was calculated by subtracting the score of the first questionnaire from the second one. The overall mean knowledge score after reading the brochure increased for this subgroup by 5.92 (SD 3.30) out of 10 ( $P < 0.001$ , Wilcoxon test). The increase in mean knowledge score was significantly greater in rural than urban residents, increasing by 5.7 (SD 4.20) versus 3.05 (SD 6.00) ( $P < 0.001$ , Mann-Whitney test) (Table 2).

In the second stage 25 respondents (11.1%) were smokers, 13 (5.8%) were ever users of alcohol and 81 (35.8%) had sun exposure at work. The mean knowledge scores increased more in these high-risk than in the low-risk participants, 5.16 (SD

Table 2 Difference in mean knowledge score about oral cancer before and after the intervention for respondents who had read the brochure ( $n = 226$ )

Variable	No. of respondents	%	Mean (SD) difference in knowledge score	P-value
<i>Age (years)</i>				
16–36	142	62.8	4.52 (4.95)	0.974
37–56	65	28.8	4.41 (7.05)	
57–86	19	8.4	3.94 (16.95)	
<i>Sex</i>				
Male	95	42.0	4.29 (6.15)	0.583
Female	131	58.0	4.54 (5.10)	
<i>Education</i>				
Illiterate	5	2.2	1.40 (22.50)	0.185
High school	164	72.6	4.52 (4.20)	
University	57	25.2	4.47 (9.30)	
<i>Residence</i>				
Urban	111	49.1	3.05 (6.00)	< 0.001
Rural	115	50.9	5.78 (4.20)	

SD = standard deviation.

Table 3 Frequency of correct answers to questionnaire items before and after the intervention for respondents who had read the brochure (n = 226)

Item	No. correct answers			
	Before intervention		After intervention	
	No.	%	No.	%
Oral cancer can be prevented	43	19.0	170	75.2
Sex in which oral cancer is more common	18	8.0	129	57.1
Age at which oral cancer is more common	18	8.0	78	33.5
Oral cancer is related to oral hygiene	50	22.1	173	76.5
Oral cancer is related to tobacco use	51	22.6	176	77.9
Chronic infection can cause oral cancer	48	21.2	162	71.7
Examination for oral cancer can be performed by oneself	21	9.3	123	54.9
Early signs of oral cancer				
1 correct	16	8.0	62	27.4
2 correct	18	8.0	62	27.4
3 correct	11	4.9	50	22.1

5.40) versus 3.89 (SD 5.40) ( $P = 0.038$ , Mann-Whitney test).

## Discussion

This was the first community study about knowledge of oral cancer in the north of the Islamic Republic of Iran. Most of the respondents (76.0%) had no knowledge about oral cancer or its risk factors. Some of the known risk factors for oral cancer are modifiable, which emphasizes the need for increasing awareness among the general public and policy-makers as a first step in the prevention and control of oral cancer [13]. In most Asian countries including the Islamic Republic of Iran, there are no organized oral cancer screening and education programmes. Such programmes can improve the population's knowledge about risk factors and screening. A randomized trial of oral visual screening in India showed a significant reduction (21%) in mortality from oral cancer compared with a control group [14]. In developed and industrialized countries, public knowledge about oral cancer is inadequate even among health

care providers and professionals [15–22]. In our study, before the educational intervention, the only factor studied that affected respondents' knowledge about oral cancer was their place of residence, with urban residents having significantly better knowledge than rural residents, which may be due to their easier access to health care providers and better public education.

Tobacco and alcohol use appear to be the most important risk factors in oropharyngeal carcinogenesis [23,24]. The number of smokers is increasing in the developing world [10]. South Asia is a major producer and exporter of tobacco and over one-third of tobacco consumed in the region is smokeless [25]. In a study in Shiraz in the Islamic Republic of Iran reported in 2001 the prevalence of cigarette smoking was 26.0% in men and 3.6% in women [26] and there is some evidence that tobacco use is increasing [8]. In the present study, the knowledge of respondents with high-risk behaviours was lower than those with lower risk before the educational intervention, but it improved significantly post-intervention. So providing educational programmes may

reduce the risk factors and motivate the high-risk population to change their habits.

There were some limitations in this study. The design of the information brochures could be improved, with more attractive graphics. A large proportion of participants was excluded from the post-intervention study because they had not read the brochure or were not willing to cooperate, so this method of education may not be the most effective and suitable in the community. Nevertheless, the information brochure improved the knowledge of those who read it. While the use of such brochures can be

recommended to some extent, other education techniques need to be investigated.

In conclusion, the knowledge of people about oral cancer in north of Islamic Republic of Iran is poor and requires more planning in health policy.

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