RESEARCH ARTICLE

Oral Cancer Awareness of the General Public in Gorakhpur City, India

Mamta Agrawal[1]*, Sushma Pandey[2], Shikha Jain[3], Shipra Maitin[4]

Abstract

    <u>Objectives</u>: Global cancer statistical data show that India has one of the highest incidence rates of oral cancer worldwide. Early detection is extremely important as it results in lower morbidity and death rates. The present study was undertaken to assess awareness of oral cancer and knowledge of its early signs and risk factors in the general public of the semi-urban Gorakhpur area of Uttar Pradesh (India). It was also intended to educate the same population for early detection by increasing their ability to recognize signs and risk factors. <u>Method:</u> A questionnaire-based household survey was conducted over a period of one month in different parts of Gorakhpur district, a region where tobacco use is apparently very high. A total of 2,093 persons participated in the survey. The collected data were analyzed using SPSS software to assess and associate oral cancer awareness with the prevalence, and abstract risk factors, as well as other confounding variables. <u>Results</u>: The general awareness, knowledge of signs and risk factors of oral cancer were found to be proportionate to the literacy level with the highest rate of awareness being among high school and graduates and lowest among illiterates. It was also observed that on most of these dimensions the younger age groups (<30 years) were significantly more knowledgeable. <u>Conclusion:</u> Overall, the awareness of oral cancer in the high-risk population of Gorakhpur was not satisfactory, pointing to a need for further dissemination of information on this issue and its associated risks. This is especially important for the youngsters, as this may possibly help them keep away from the deleterious habit of tobacco indulgence in any form. If necessary risk factor cessation counselling should be provided.

Keywords: Oral cancer - knowledge and awareness - early detection - early symptoms - risk factors - Gorakhpur, India

Introduction

    Oral cancer accounts for approximately 200,000 deaths annually worldwide and 46,000 deaths occurring particularly in India (Jemal et al., 2010). There is evidence that this cancer is more common in the developing countries in contrast to the developed ones, with the highest oral cavity cancer rates being found in Melanesia, South-Central Asia, and Central and Eastern Europe and the lowest in Africa, Central America, and Eastern Asia for both males and females (Ferlay et al., 2010). Oral cancers, with its widely variable rate of occurrence, has one of the highest incidences in India constituting around 12% of all cancers in men and 8% of all cancers among women. It has been estimated that 83,000 new oral cancer cases occur here each year. Moreover, in India, the extremely popular use of the smokeless tobacco product called gutkha, renders its population and especially its youth to a greater risk of developing oral submucous fibrosis, a premalignant disease resulting in increased incidence of oral cancer in younger patients.

    Risk factors for oral cancers include smoking, alcohol use, smokeless tobacco products, and HPV (human papillomavirus) infections, with smoking and alcohol having synergistic effects. The contribution of each of these risk factors to the oral cancer burden varies across regions. Smokeless tobacco products and betel quid with or without tobacco are the major risk factors for oral cavity cancer in India and other neighboring countries (Jemal et al., 2011). Majority of oral cancers have been observed to arise from long-standing premalignant lesions especially in high incidence areas (Lumerman et al., 1995). Mouth cancer is largely preventable by avoiding known risk factors and national and international guidelines stress the importance of early detection (Llewellyn et al., 2004). Delayed presentation of oral cancer is mainly due to lack of awareness of the public about oral cancer and its associated risk factors which also results in increased treatment morbidity and reduced survival rates. (Warnakalasuriya et al., 1999).

    India is the second largest producer of tobacco and most of the tobacco produced is consumed within the country only, with approximately 274.9 million tobacco users according to recent data (Global Adult Tobacco Survey-GATS, 2010). As per this report more than one-third (35%) of adults in India use tobacco in some form or the other, 163.7 million are users of only smokeless tobacco, 68.9 million only smokers, and 42.3 million users of both smoking and smokeless tobacco. Alarmingly high statistics and delayed presentation of patients at

[1]Purvanchal Institute Of Dental Sciences, [3]Department Of Orthodontics Purvanchal Institute Of Dental Sciences, GIDA, [4]Central Poly Clinic, Gorakhpur, [2]Department Of Psycology, DDU Gorakhpur University, India *For correspondence: mamtaag02@yahoo.co.in

time of primary diagnosis underscores the need for an extensive awareness campaign on the issues related to oral cancer. Such campaigns represent potential opportunities to educate people and also help in implementation of effective education strategies targeting the areas where the public knowledge is found lacking.

Early detection, which comprises screening of asymptomatic populations and increasing awareness of public regarding early signs and symptoms, increases the probability of cure (Petersen, 2009). Little is known about the awareness regarding oral cancer in Indian population. The objective of the present study was to determine the level of awareness of oral cancer, knowledge about early signs and the associated risk factors in the high-risk population of Gorakhpur, a semi-urban area in Uttar Pradesh, India. The results obtained from this survey will assist to implement an effective health education program thereby helping to reduce the incidence rates of oral cancer.

Materials and Methods

In the year 2012, a questionnaire-based survey was performed on the general population of Gorakhpur, one of the high-risk semi urban areas of eastern U.P (India) where the use of smokeless tobacco is very popular.

Sample

The district Gorakhpur was divided into twenty distinct zones and 100 households were randomly selected from each zone and a single subject above 10 years of age was interviewed from each household. Individuals who were diagnosed with oral cancer at any point of their lifetime were excluded from the study.

Measuring tool

The questionnaire comprised 16 closed-ended questions that assessed the subjects' awareness of oral cancer, knowledge of signs/symptoms and risk factors for oral cancer. Socio-demographic information such as age, sex, marital status, occupation, address and educational level was also recorded. Response categories for each of the questions were 'no', 'don't know' and 'yes' and the respondents were expected to tick mark only the most appropriate one. These were coded as 1, 2 and 3 respectively (Except for the question asking if oral cancer is contagious where the scores were 3, 2 and 1 respectively). Responses were scored in accordance with defined rules. Scores were treated for computer analysis (SPSS) in terms of Mean, SD and t test and analysis of variance (ANOVA).

Procedure

The questionnaire and the study procedures were approved by the institutional review board and its ethical committee. A pilot study was conducted which not only helped to discern the sample size but also allowed assessment of the validity, reliability and acceptability of the questionnaire. A group of 20 graduates from the dental college were trained how to administer the questionnaire by face to face interview and assist in case of reading/

language problems or understanding of questions without prompting the answers. After completion the respondents were provided an educational broacher with description of the risk factors, signs and symptoms of oral cancer, and the importance of detecting the disease in its early stages.

Results

The study covered a total of 2093 subjects. Of these, 77.1% were males while 22.9% were females. 40.6% of the subjects were less than 20 years of age and 34.5% had their age between 20-30 years. 63.2% of the total number of subjects were students. With respect to the place of residence, 62.4% were urban while others (37.6%) had a rural background (Table 1). Respondent's level of general awareness, symptoms and risk factor scores were assessed and treated statistically in terms of Mean SD and comparative analysis (as a function of age, sex, education, occupation and dwelling). Results have been interpreted in preceding sections.

General awareness of oral cancer

The general awareness of oral cancer (OC) was assessed via five close ended questions (have you heard of oral cancer, is oral cancer preventable, is it treatable, is it contagious, does risk of OC increase with age). The awareness seemed reasonably good with most of the respondents believing that oral cancer is preventable (74.1%). There were certain misconceptions also, 10.8% believed that oral cancer is contagious and 40.9% of respondents did not associate increasing age with increased possibility of having oral cancer (mean score of 1.9 out of 3) (Table 2).

The general awareness of oral cancer on various dimensions varied significantly across various age groups, with the younger age groups being more aware (<30 year). The age groups above 30 year had significantly less knowledge except for the question asking about association of OC with age for which the 41-50 age group had a mean score of 1.93 (SD 0.75) showing awareness

Table 1. Distribution of Respondents by Socio-Demographic Profile

Socio-demographic profile		No. (n=2093)	%
Age in years	<20	849	40.6
	20-30	722	34.5
	31-40	183	8.7
	41-50	200	9.6
	>50	139	6.6
Sex	Male	1614	77.1
	Female	479	22.9
Education	Illiterate	83	4.0
	Primary	101	4.8
	High School	811	38.7
	Graduate	1098	52.5
Occupation	Student	1323	63.2
	Housewife	95	4.5
	Agriculture	146	7.0
	Service	360	17.2
	Business	169	8.1
Place of residence	Urban	1306	62.4
	Rural	787	37.6

Table 2. Mean Knowledge Scores, SD and % of Correct Responses for Individual Questions for the whole Sample (n=2093)

S. No	Variables	Mean	SD	%
	General Awareness of OC			
1	Have you heard of OC	2.8	0.5	91.2
2	Is prevention of OC possible	2.6	0.7	74.1
3	Is treatment of OC possible	2.5	0.8	64.3
4	Is OC contagious	2.6	0.7	76.0
5	Does risk of OC increase with age	1.9	0.8	31.1
	Knowledge of signs/Symptoms			
6	Growth of abnormal tissue	2.5	0.7	65.4
7	Non-healing wound	2.4	0.8	62.1
8	White or red spot	2.1	0.8	39.8
9	Reduced mouth opening	2.5	0.7	63.3
10	Undue falling of teeth	1.8	0.8	23.2
11	Continuous pain in jaw	2.2	0.8	45.9
	Knowledge of risk factors			
12	Smoking	2.6	0.7	75.4
13	Alcohol	1.9	0.9	33.6
14	Smokeless tobacco	2.8	0.5	89.3
15	Sedentary life style	1.4	0.6	8.9
16	Family history of cancer	1.4	0.7	9.5

Figure 1. Mean Value of General Awareness, Knowledge of Symptoms and Risk Factors of Oral Cancer Across Different Age Groups

Figure 2. Mean Value of General Awareness, Knowledge of Symptoms and Risk Factors of Oral Cancer across Different Education Groups

Figure 3. Mean Value of General Awareness, Knowledge of Symptoms and Risk Factors of Oral Cancer in Male and Female Groups

almost equal to the younger age group (<20 year). The overall mean score responding to the general awareness of oral cancer ranged between 12.79±3.37 (<20 age group) to 11.68±3.64 (41-50 age group) in a total score of 15 (Figure 1).

A significant difference in general awareness (F value) of oral cancer was also seen across all dimensions among various education groups. The general awareness was more in those respondents whose education level was high school or more and was lower among respondents who were illiterate or had only primary education (Figure 2).

Among the different occupational categories a significant difference was observed for all dimensions between the groups, except for the question asking if oral cancer is contagious for which the awareness difference was not significant. The student group showed the highest mean values for most of the questions and had the highest overall mean score (12.75±3.27), whereas the agriculture group the least score (11.17±3.79).

No significant statistical difference was observed between the general awareness of oral cancer among males and females, except for the knowledge of oral cancer being preventable (t=1.52) which was highly significant (p<001). The awareness mean scores for questions asking 'is prevention of OC possible, is treatment possible and is it contagious' were more for females (Figure 3).

The urban population was found to fare better than its rural counterpart both in overall mean score on general awareness as well as mean score of all individual questions. The differences were statistically significant across all dimensions.

Awareness pertaining to signs/symptoms of oral cancer

The questionnaire consisted of six questions assessing knowledge of respondents pertaining to signs/symptoms of oral cancer (abnormal tissue growth inside mouth, non healin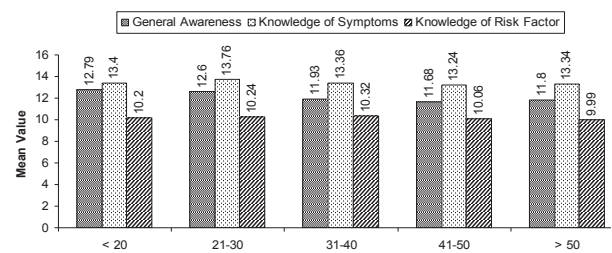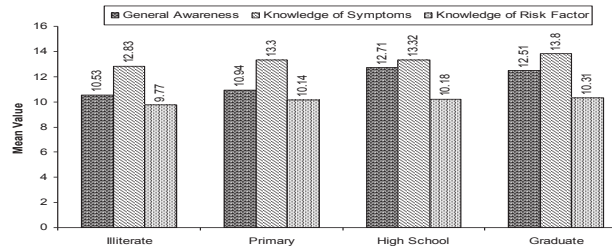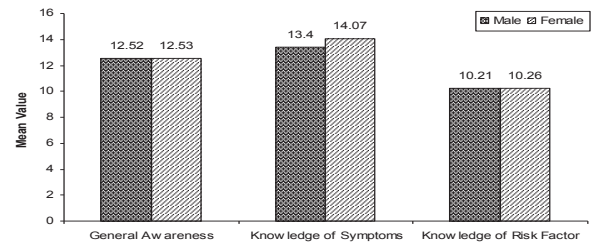g oral ulcers/sores, white or red patches, reduced mouth opening, teeth falling without any reason, continuous pain in mouth) the least mean score among all groups was for the awareness of undue falling of teeth (1.8) out of a score of 3 for correct answers (Table 2). Abnormal tissue growth, non healing oral ulcers/sores and reduced mouth opening were the symptoms recognized most (more than 60% respondents)

Only 39.8% subjects recognized presence of red/white spots and 23.2% knew undue loss of teeth is a risk factor, which were the least identified symptoms. Statistics shows the awareness of signs/ symptoms of oral cancer on most dimensions varied significantly across different age groups. There was significant difference in knowledge within the age groups (F value) across most dimensions. The mean score was again more for the younger age groups for most questions assessing knowledge of signs of oral cancer, except for individual factors as non healing ulcer/ sore and undue falling of teeth for which the 41-50 age group had the highest mean value 2.58 (0.67) and 1.88 (0.72). Each age group, individually and combined, scored a mean above 13.24 in a maximum score of 18 (Figure 1).

The difference was also statistically significant amongst various literacy groups, which had a similar pattern as seen for general awareness of oral cancer; higher mean scored by the high school and graduate group and significantly lesser by the illiterate and primary education

background for most of the questions (Figure 2).

The mean score differed with statistical significance amongst the various occupational groups across most dimensions with different groups showing maximum values for individual questions.

A clear demarcation was observed in the sex-wise knowledge pertaining to symptoms of oral cancer, which was statistically significant across all dimensions, with females having a higher mean score than males. The differences in the mean score between the two groups, on the basis of place of residence, was surprisingly more for the rural segment for knowledge of symptoms as 'abnormal tissue growth in mouth', ' non-healing wound' and 'falling of teeth'. But the overall difference was not significant.

Awareness pertaining to its risk factors

The questionnaire consisted of five questions assessing knowledge of respondents pertaining to risk factors for oral cancer (Smoking, alcohol, smokeless tobacco, sedentary life style, family history of cancer).

While 89.3% and 75.4% of the subjects firmly believed that smokeless tobacco and smoking, respectively are risk factors for oral cancer, very few subjects associated oral cancer with risk factors like 'family history of cancer' (9.5%) and ' sedentary life style' (8.9%) with a mean score of only 1.4 for both questions. Even 'alcohol consumption' was not considered a risk factor by many participants. (33.6%) (Mean 1.9).

The total score difference between various age groups was statistically insignificant, but varied for individual questions regarding risk factors. Smoking, alcohol consumption and smokeless tobacco use was identified more by the younger age groups (<30 years age). Whereas 'Sedentary life style' and 'family history of cancer' was more correctly identified as risk factor by the 41-50 year age group with mean value 1.56 (0.64) and 1.53 (0.66) (Figure 1).

When comparison between different educational groups was done, the commonly known risk factors were more (smoking, smokeless tobacco) correctly identified by the educated groups where as 'illiterate' group was significantly more aware of 'sedentary life style' and 'family history of cancer' being possible risk factors (Figure 2).

The difference between male and female knowledge was not significant across various dimensions except 'sedentary life style, a family history of cancer' where more females identified a positive family history to be a risk factor for oral cancer.

On the other hand the difference between rural and urban population was significant across most dimensions but no single group fared better for all questions. The rural population had better knowledge pertaining to risk factors as smoking and smokeless tobacco.

Discussion

Oral cancer in most of the cases is a preventable disease and mass public education and information may result in reducing the oral cancer burden on the society.

It is quite understandable that knowledge of oral cancer in a given population is directly related to the prognosis of the cases identified therein. This is because that the enhanced awareness on oral cancer in general and specifically in relation to its symptoms and risk factors can possibly lead to early clinical presentation. The lack of knowledge in identifying early signs of oral cancer may result in ignoring early pre-cancerous lesions whereas misconception about risk factors reduces the chance of making intelligent decisions regarding personal habits.

This study was carried out in a high-risk semi-urban population of Gorakhpur and the results clearly indicate that although the overall awareness on the general issues of oral cancer as well its symptoms is good, there is a relative deficiency in the awareness pertaining to risk factors, which is not satisfactory. This calls the need for more such awareness programs in the targeted population specially directed towards the control of the risk factors.

The general awareness regarding oral cancer was observed to be more in the younger age groups (<30 year). It is also noteworthy that for increased level of education, there was increased awareness. The above findings should not be considered contradictory, because the highest level of education assessed in this study were 'at least graduates' and by the time the subjects completed their graduation they were mostly less than 30 years of age. Furthermore, increased awareness of the younger age group can also be attributed to the wide media exposure and different anti tobacco campaigns in recent years. As for the recognition of symptoms and risk factors although the younger age groups had a higher mean value for most of the questions, a high mean score was seen in the 41-50 year age group pertaining to recognition of signs as ' non healing wound' 'falling of teeth' and risk factors as 'sedentary life style and 'family history of cancer'.

It was observed that the knowledge scores across most dimensions among the various education groups was significantly more for those respondents whose education level was high school or more and lower among respondents who were illiterate or had only primary education. These results were consistent as observed in earlier studies (Patton et al., 2004; Elango et al., 2009).

Comparative analysis between various occupational groups did not show any distinctive pattern except for the student group having a significant higher mean score across most dimensions.

As for the difference in knowledge between both the sexes, females fared marginally better for general awareness and recognition of risk factors. For knowledge of signs/ symptoms the difference was significant across most dimensions with the females having higher mean values (Figure 3).

A significant difference was observed between the urban and the rural population with the former scoring significantly better for most dimension of general awareness. No such distinction of knowledge scores was observed for identification of signs and risk factors.

Comparative analysis showed that age, education level, sex and place of residence were independent predictors of the awareness of oral cancer, signs and risk factors.

In areas where the public knowledge about oral cancer

was found lacking in the high-risk community surveyed in this study, brochures containing information on oral cancer, risk factors, detailed harm caused by tobacco use, pan, alcohol, early warning signs of oral cancer were distributed.

It was also suggested to initiate intensive public education program for recognition of early warning signs of oral cancer and facilitate early detection by mouth self-examination through audio-visual aids.

Acknowledgements

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