

# Awareness about oral cancer among nonhealth professional students – A cross-sectional study in Bengaluru city

Padma K Bhat<sup>1</sup>, S G Sushma<sup>2</sup>, M Y Jayachandra<sup>3</sup>, C N Aruna<sup>1</sup>, Mamatha Murthy<sup>4</sup>

Departments of <sup>1</sup>Public Health Dentistry and <sup>2</sup>Public Health, Rajarajeswari Dental College and Hospital, <sup>4</sup>Department of Public Health Dentistry, General Dental Practitioner, Bengaluru, <sup>2</sup>Department of Public Health Dentistry, Sharavathi Dental College and Hospital, Shimoga, Karnataka, India

## Abstract

**Background and Aim:** Oral cancer is one of the most life-threatening conditions, early diagnosis of which greatly increases the probability of cure and survival rates. Knowledge regarding risk factors and early signs among the nonhealth professionals which help in early detection prevention and of the disease. Therefore, the aim of this study is to assess the awareness about tobacco use among nonhealth professional students in Bangalore city.

**Methodology:** A cross-sectional descriptive questionnaire study was conducted to assess the knowledge and awareness about oral cancer among 800 nonhealth professional students in Bengaluru city. A self-administered questionnaire containing 26 questions pertaining to awareness, signs, symptoms and risk factors of tobacco use was administered to the students.

**Results:** The results revealed that the majority of the students (55.5%) were aware about oral cancer but have less knowledge in terms of its signs and symptoms of oral cancer. The main source for information pertaining to oral cancer was obtained from mass media, i.e., TV, radio and social media (21.5%).

**Conclusion:** The study reveals that there is a need for education and raise awareness about oral cancer among nonhealth professional students.

**Keywords:** Awareness, knowledge, nonhealth professional students, oral cancer, tobacco

**Address for correspondence:** Dr. Padma K Bhat, Department of Public Health Dentistry, Rajarajeswari Dental College and Hospital, Bengaluru - 560 074, Karnataka, India.

E-mail: padma549@gmail.com

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## INTRODUCTION

Oral cancer is a global health problem with an increasing incidence and mortality rate and also has one of the lowest survival rates that remain unaffected despite recent therapeutic advances.<sup>[1]</sup> Oral cancer is the fifth-most common cancer and is the cause of 130,000 deaths worldwide annually.<sup>[2]</sup>

Cancer is one of the major threats to public health in the developed world and increasing in the developing world.<sup>[3]</sup>

Unfortunately, most oral cancers are diagnosed in advanced stages, requiring aggressive treatment and associated morbidity, resulting in higher mortality rates than when diagnosed early.<sup>[3]</sup> In India, the extremely popular use of the smokeless tobacco product renders its population and especially its youth to a greater risk of developing premalignant conditions resulting in an increased incidence of oral cancer in younger patients.<sup>[4]</sup> General awareness of oral cancer's predisposing risk factors such as

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smoking, alcohol, smokeless tobacco products and human papillomavirus infections, and its signs and symptoms can lead to avoid them; so it is very necessary to evaluate the level of awareness.<sup>[4,5]</sup> Early detection of cancer permits a more conservative and therapeutic approach with a shorter recovery and a more favorable prognosis.

However, many benign mouth disorders may appear similar to oral cancer, the public to seek attention early. Raising awareness empowers people to present early. Current evidence suggests that this is in part due to poor public awareness of the disease itself and the associated signs and symptoms of oral cancer and premalignant lesions. This lack of awareness and information could result in the incapacity of patients with oral cancer to seek appropriate treatment.<sup>[6,7]</sup>

Literature revealed that studies on nonhealth professional students regarding awareness of oral cancer were sparse. Therefore, this study was taken with the aim to assess the awareness among the nonhealth professional students in Bengaluru about the risk factors, symptoms, prevention and treatment of oral cancer.

## METHODOLOGY

A cross-sectional descriptive questionnaire study was conducted to assess the knowledge and awareness about oral cancer among undergraduate students studying in other than science stream degree colleges in Bengaluru city. The scientific and ethical clearance was obtained from the institutional review, scientific and ethical committee.

The questionnaire was adopted from Babiker *et al.*<sup>[8]</sup> It is a structured, self-administered questionnaire consisted of 26 questions; the questionnaire consists of questions on Demographics (3 items), Knowledge about risk factors (06 items), Signs and symptoms of oral cancer (9 items) and Risk factors and habits (8 items).

Once the final version of the questionnaire was established, pilot study was done on a sample of 30 participants to get a sense of the kind of response expected and to evaluate validity and reliability of the study questionnaire as well as any other potential issues.

The participants of the pilot study were not included in the main study since this phase was meant to refine the interviewing technique and optimize the accuracy of data collection.

List of colleges affiliated to Bengaluru University was obtained from the website [www.bangaloreuniversity.ac.in](http://www.bangaloreuniversity.ac.in).

The sampling frame comprises the colleges affiliated to Bangalore University and listed under Bangalore Urban District. Stratified random sampling was used, Bangalore was stratified into North and South to select eight colleges that is, 4 from each North and South Zone. Simple random sampling was used to select 100 students each college who met the eligibility criteria was included in the study. The colleges thus included had streams related to BCA, B.Com, BBM, BA. In each of the selected colleges, 25 students were selected from each of Arts, Commerce, Management and Computer degree courses were included so that a total of 200 students from each stream will be included in the study.

The survey was conducted in colleges offering above nonhealth professional courses during regular class sessions using an anonymous, self-administered questionnaire for data collection. The participants were told about the aim of the study undertaken and asked to sign a consent form if they were willing to participate in the study.

After the questionnaire was completed, the participants were briefly educated through powerpoint presentation about the signs, symptoms and risk factors of oral cancer if they had any queries, which were subsequently answered.

## RESULTS

A total of 800 nonhealth professional students were included in the study. Out of the total, 200 students were from BA, 200 students were from B.com, 200 students were from BBM and 200 from BCA.

Of the total participants, 416 (52%) were male and 384 (48%) were female.

A total of 241 students from 1<sup>st</sup> year, 257 students from 2<sup>nd</sup> year and 302 students from 3<sup>rd</sup> year from all the courses participated in the study.

Majority of the BCA (55.5%) students had heard about oral cancer as compared to BA (48%), B.com (43%), BBM (41%), respectively. General media like television (TV) and radio was the chief source of information about oral cancer for the students.

More than half (53.5%) of the B.com students had knowledge about oral cancer treatment when compared to art, management and computer students.

More than 1/4<sup>th</sup> of the students in all the courses said oral cancer is not contagious nearly half of the students had no knowledge about the contagiousity of oral cancer. More than half of the students in all the branches had not

underwent oral cancer examination. Nearly 2/3<sup>rd</sup> of the BBM (71%) students were in agreement that oral cancer examination should be mandatory and more than half of the participants in other streams were also in agreement of the same. When asked about the signs of oral cancer More than 2/5<sup>th</sup> of the population in all the branches BA 46.5%, B.com 42.5%, BBM 45.5% and BCA (49.0%) thinks that burning sensation in the mouth is a sign of oral cancer. Majority of the BBM (38%) students think numbness of the tongue or other area of the mouth is a sign of oral cancer, nearly one half of BA (48.0%) students think difficulty in chewing or swallowing is a sign of oral cancer. Majority of the BCA (51.5%) students think difficulty in abnormal swelling as a sign of oral cancer. Nearly half of the students from all streams did not know whether soreness in the mouth that bleed easily and doesn't heal, undue falling of teeth as a sign of oral cancer. Majority of the BCA (48.5%) student think lump or thickening in the neck sign of oral cancer when compared to other course students. On questioning as to the awareness of risk factors for oral cancer only one-fourth of the population among all branches acknowledged alcohol as a risk factor for cancer and nearly 43% in BBM and BCA of the students were not aware of alcohol as risk factor. Half of the study participants in all streams (BCOM 50.0%, BBM 47.5% BCA 56.0%) except BA (39%) did not know sunlight was a risk factor for oral cancer. Majority of the BCA 52.5%, BBM 44%, BCOM 45% and BA 44% of students do not know whether chronic trauma from tooth is a risk factor. Nearly more than half of the students in all the streams didnot know whether hot and spicy food is a risk factor of oral cancer. BCA 46%, BBM 47%, B.com 45.5% and BA 43% of the students were not aware whether family history of oral cancer is a risk factor of oral cancer [Table 1].

There was a statistically significant association on comparing the mean knowledge score among the groups.

## DISCUSSION

In the changing era, most of the youth are exposed to get oral cancer because of the lifestyle they lead. The most common risk factors associated with oral cancer in India are tobacco and alcohol which are consumed in various forms. Oral cancer, in most of the cases is a preventable disease and youth 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 there in. Relatively little attention has been given in educating the youth about the risk factors, signs and symptoms of oral cancer. There should be raising

awareness and educating the youths on signs, symptoms and risk factors of oral cancer, which leads in early clinical presentation.

This study was conducted in Bangalore among undergraduate students of B.com, BBM, BCA and BA degree courses and the results indicated that overall (55.5%) awareness on the signs, symptoms of oral cancer is good, but there is a relatively deficiency in the awareness about the risk factor of oral cancer. This calls the need for educating the youth about the control of the risk factors of oral cancer.

In the present study, most of the participants were male 416 (52%) and 384 (48%) were female. A total of 48% of the participants had heard about oral cancer in contrast with the study conducted by Srikanth Reddy *et al.*<sup>[3]</sup> about 60% of the study population had heard about oral cancer and 19.9% had a lot of information about oral cancer. This could be due to the lack of information given to the youth and not everyone may think it is necessary to get awareness about oral cancer.

In the present study, majority of the participants (21.5%) had got information about oral cancer from mass media (TV, radio) followed by Internet (social media), newspaper, magazine, direct contact and other people, which is in accordance with the study by Babiker *et al.*<sup>[8]</sup> in which considerable portion of the sample received information from the mass media. Awareness and knowledge of oral cancer and its risk factor was poor among the study population, indicating a need to implement TV, newspaper, radio advertisement poster, booklets or leaflets explaining the signs, symptoms and risk factors of oral cancer in the present decade, due to accessibility to Internet, mass media helps in the delivery of information to all the age groups of the population.

According to the present study 53.5% of participant had knowledge about the treatment of oral cancer in contrast with the study by Ariyawardana and Vithanaarachchi<sup>[9]</sup> revealed that 5.9% of the population was not aware of the possibilities of treatment and 5.4% believed that there is no treatment available for oral cancer. The increase in the awareness about the risk factor of oral cancer can be attributed to the awareness campaign about oral cancer by the National tobacco control program which has made the consumption of tobacco protection act amended in the year 2012 for compilation of advertisement regarding the tobacco use, its harmful effect and treatment of cancer in films and TV programs which must have created awareness about signs and symptoms of oral cancer treatment among the students.<sup>[10]</sup>

**Table 1: Responses to awareness about risk factors of oral cancer**

Questions	Course (%)				P
	BA	BCOM	BBM	BCA	
Have you heard of oral cancer?					
Yes	48	43	41	55.5	0.06
No	21.5	22.5	29	20.5	
Don't know	30.5	34.5	30	24.5	
Have you ever gone to oral cancer examination (screening)?					
Yes	18	12.5	19.5	9.5	0.02*
No	62	68.5	63	62.5	
Don't know	20	19	17.5	28	
Do you think burning sensation in mouth is a sign of oral cancer?					
Yes	46.5	42.5	45.5	49.0	0.49
No	20.0	18.0	16.5	21.0	
Don't know	33.5	39.5	38.5	30.0	
Do you think numbness of the tongue or other area of the mouth is a sign of oral cancer?					
Yes	28	33.0	38	25	0.10
No	29.5	26.0	24	26	
Don't know	42.5	41.0	38	49	
Do you think difficulty in chewing or swallowing is a sign of oral cancer?					
Yes	31.5	39.0	36.0	35.5	0.03*
No	20.5	23.5	23.5	23.0	
Don't know	48.0	37.5	41.0	41.5	
Do you think abnormal swelling in mouth is a sign of oral cancer?					
Yes	42.5	49.5	46.5	51.5	0.09*
No	26.5	16.5	18.5	15.0	
Don't know	31.0	34.0	35.5	33.5	
Do you think soreness in the mouth that bleed easily and doesn't heal is a sign of oral cancer?					
Yes	28.5	24.0	29.0	21.5	0.23
No	24.5	33.5	27.0	27.5	
Don't know	47.5	42.5	44.0	51.0	
Do you think white or red patch on the gum is a sign of oral cancer?					
Yes	45.0	43.0	43.5	50.5	0.02*
No	26.5	21.5	19.0	12.5	
Don't know	28.5	35.5	35.5	37.5	
Do you think lump or thickening in the neck is a sign of oral cancer?					
Yes	44	46	47	48	0.34
No	20	13	20	15	
Don't know	36	41	33	36	
Do you think smokeless tobacco is a risk factor					
Yes	50	54	53.5	50.5	0.9
No	18	14.5	15.5	19.5	
Don't know	31	31.5	31	30.5	
Do you think smoking (cigarette) is a risk factor					
Yes	62	64.5	68.5	69	0.005*
No	17.5	11.0	8.5	5.0	
Don't know	20.5	24.5	23	26.5	
Do you think alcohol is a risk factor?					
Yes	30.0	19	25	25.5	0.09*
No	35	42.5	32	32.5	
Don't know	35	38.5	43	42	
Do you think exposure to sunlight is a risk factor					
Yes	23	19	18.5	7.5	0.003*
No	33	36	37.5	40	
Don't know	44	45	44	52.5	
Do you think chronic trauma from tooth is a risk factor					
Yes	23.5	6	17	2	0.00*
No	36	45	34.5	45.5	
Don't know	40.5	49	48.5	52.5	
Do you think hot and spicy food is a risk factor					
Yes	21	13	19.5	11	9.8
No	36	41.5	33.5	43	
Don't know	43	45.5	47	46	
Do you think human papilloma virus is a risk factor					
Yes	10.5	2	11.5	0.0	0.00*
No	28	39.0	32.0	33.5	
Don't know	61.5	59.0	56.5	66.5	

\*Statistically significant



Our study 68% of the participants had never underwent oral cancer screening in contrast with the study Monteiro *et al.*<sup>[11]</sup> a disheartened 98.5% of the individual were never submitted to a consultation or had knowledge of been screened for oral cancer whereas in a study conducted by Cruz *et al.*<sup>[12]</sup> they found a significant difference in both the awareness of the existence of an oral cancer examination and having a history of oral cancer examinations among the group. This is a drawback of our health care system that fails to organize oral cancer screening camps and create awareness among the population.

In the current study, 71% of the participants agreed that oral cancer screening should be mandatory in accordance with the study conducted by Patton *et al.*<sup>[13]</sup> The American Cancer Society currently recommends that a cancer-related check-up, including a case finding the examination of the oral region, occur during a general periodic health examination for men and women aged 20 years and older.<sup>[14]</sup> Oral cancer screening might increase awareness about signs, symptoms and risk factors of oral cancer among the population.

In the present study, about 49.0% of the participants had knowledge that burning sensation in the mouth is a sign of oral cancer and about 49% of the participants do not know numbness of the tongue or other area of the mouth is a sign of oral cancer and 39% of the participants think the difficulty in chewing or swallowing is a sign of oral cancer. The study conducted by Wolff *et al.*<sup>[15]</sup> said swelling anywhere in the oral cavity, difficulty or pain in swallowing, numbness of the tongue, teeth, or lips is a sign of oral cavity.

In the current study 51.0% of the participants think that nonhealing ulcer in the mouth that bleeds easily is a sign of oral cancer, which is in accordance with the study done by Vanishree *et al.*<sup>[16]</sup> where 46.4% of the participants agreed that sores or lesions in the mouth due to sharp teeth or continues irritation which do not heal within 2–3 weeks may be one of the early sign of oral cancer.

According to the present study, 49.5% of the participants did not know falling or loosing of teeth is a sign of oral cancer in contrast with the study by Agrawal *et al.*<sup>[4]</sup> showed 23.3% knew loosening of one or more teeth for no reason is a risk factor were the least identified symptoms. This may be due to the sedentary lifestyle, smoking habits in the youth and family history of oral cancer.

In the current study, half of the participants (50.5%) had knowledge that white or red patch on the gum is a sign of

oral cancer in contrast with the study conducted by Villa *et al.*<sup>[17]</sup> showed that the majority (94%) of the individuals are knowledgeable regarding clinical signs associated with oral cancer such as red/white patches. Similarly in the study conducted by Devadiga and Prasad<sup>[18]</sup> approximately 60% of the participants were unsure if the presence of white or red lesion were early signs of oral cancer. This could be due to lack of knowledge and inadequate information given to the public regarding the signs and symptoms of oral cancer In the present study 44% of the participants had knowledge that pain in the jaw is a sign of oral cancer and 41% of the participants do not know the difficulty in chewing or swallowing is a sign of oral.

According to this study, 48.5% of the participants think lump or thickening in the neck is a sign of oral cancer, which is in accordance with the study done by Monteiro *et al.*<sup>[19]</sup> showed the presence of nonhealing wounds or lumps was widely identified as one of the first signs of oral cancer. According to a study conducted by Pakfetrat *et al.*<sup>[2]</sup> most respondents (71.3%) were unaware that a painless swelling in the neck could be a sign of oral cancer. This could be due to the awareness that they get through mass media and by seeing the pictorial presentation on the tobacco products.

In the present study, majority of the student (69%) of the participants had knowledge that smoking (cigarette) tobacco is a risk factor of oral cancer, which was in line with the study conducted by Pakfetrat *et al.*<sup>[2]</sup> where only a mere 1/10<sup>th</sup> of the population (15.9%) were aware that smoking is a risk factor and study conducted by Elango *et al.*<sup>[20]</sup> was in line with our study results, i.e., 77.0% of the subjects identified smoking as a cause of oral cancer. Unfortunately, most educational programs focus on the association between smoking and lung cancer, a little attention is paid to other consequences of prolonged tobacco use. Pictorial warnings present on smoking and smokeless tobacco products may be one of the reasons to create awareness among the youths about the risk of smoking and smokeless tobacco. According to this study, 54.0% of the participants had knowledge that smokeless tobacco is a risk factor of oral cancer in contrast with the study by Vanishree *et al.*<sup>[16]</sup> a total of 85% of the subjects knew that tobacco use along with pan is associated with oral cancer and the misconception rate was quite high in the participants in which 28.5% of the subjects thought that betel quid chewing strengthens the gum.

In the current study, 43.0% of the participants did not know that alcohol is a risk factor of oral cancer, which is in contrast with the study by Patton *et al.*<sup>[13]</sup> and Pakfetrat

*et al.*<sup>[2]</sup> 15% and 6.6% of the participants knew that regular alcohol consumption increases the risk of oral cancer, respectively. Even with increased knowledge and awareness of oral cancer and their risk factors, most of the subjects had one or more habits because of their lifestyle. The carcinogenicity of alcohol beverages and tobacco smoke has been established from the evidence presented in Western reports.<sup>[21]</sup>

In the present study, 56.0% of the participants do not know that exposure to sunlight is a risk factor of oral cancer was not in line with the study Kinikar *et al.*<sup>[1]</sup> 17.9% of the participants knew excessive sunlight to be a risk factor of oral cancer. According to a study by Patton *et al.*<sup>[13]</sup> 36% of the correctly responded that excessive sunlight definitely increase the chance of getting lip cancer.

Diet is an attributable risk factor for cancer. Hot and spicy food acts as a risk factor along with tobacco as a cancer causing agent. In our study, majority of the participants (52.5%) of the participants do not know that hot and spicy food is a risk factor of oral cancer in contrast with the study conducted by Vanishree *et al.*<sup>[16]</sup> 59.4% of the participants had knowledge that frequent eating of hot and spicy food increase a person's chance of getting mouth cancer. According to a study conducted by Patton *et al.*<sup>[13]</sup> 32% of the participants do not know that hot and spicy food increase the risk of oral cancer.

According to the present study, 47.0% of the participants do not know that family history of oral cancer is a risk factor of oral cancer and 66.6% of the participants do not know that the human papillomavirus is a risk factor of oral cancer.

Between 2009 and 2016, India has made progress in reducing the prevalence of the use of both smoked and smokeless forms of tobacco. Promotion of tobacco use has declined, and anti-tobacco messages on tobacco packs are more visible, prompting more tobacco users to think of quitting and have created awareness among the people about tobacco use. Efforts to increase awareness about tobacco use have increased, but successful implementation remains low. Advertising about oral cancer, its signs, symptoms and risk factors in different media, harmful effects of tobacco, promotion as part of sporting events or in any other form should be included.<sup>[22]</sup>

This study indicates that most of the students had knowledge about the risk factors of oral cancer like but predominant risk factors such as diet, alcohol, exposure to sunlight, human papilloma viral infection, genetic

association they were unaware. Mass media like TV/radio was the main source of information. Focusing on youth oral cancer education and examination will have a larger impact on countries future mortality rates for oral cancer. Oral cancer prevention and early detection, as well as related health provider education, are significant public health concerns that require increased and sustained attention in health care.

## CONCLUSION

The study highlights the general lack of awareness about signs, symptoms of oral cancer among the nonhealth professional students in Bangalore. Almost all of the participants had never undergone oral cancer screening nor had knowledge of the same. These findings can be used to develop, monitor and implement a comprehensive oral cancer education and promotion programme.

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## Conflicts of interest

There are no conflicts of interest.

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