



THE AGA KHAN UNIVERSITY

eCommons@AKU

---

Section of Dental-Oral Maxillofacial Surgery

Department of Surgery

---

2-2019

## Oral cancer awareness among university students from Karachi, Pakistan

Dnyanesh Limaye

Patrick Ziesenis

Vaidehi Limaye

Mansoor Ahmad

Farah Saeed

*See next page for additional authors*

Follow this and additional works at: [https://ecommons.aku.edu/pakistan\\_fhs\\_mc\\_surg\\_dent\\_oral\\_maxillofac](https://ecommons.aku.edu/pakistan_fhs_mc_surg_dent_oral_maxillofac)



Part of the [Dentistry Commons](#), [Oncology Commons](#), and the [Surgery Commons](#)

---

---

**Authors**

Dnyanesh Limaye, Patrick Ziesenis, Vaidehi Limaye, Mansoor Ahmad, Farah Saeed, Mahboob Alam, Ramla Rizvi, Atul Kapadi, Sushama Sathe, and Gerhard Fortwengel

---

## Original Research Article

# Oral cancer awareness among university students from Karachi, Pakistan

Dnyanesh Limaye<sup>1\*</sup>, Patrick Ziesenis<sup>1</sup>, Vaidehi Limaye<sup>1</sup>, Mansoor Ahmad<sup>2</sup>, Farah Saeed<sup>3</sup>, Mahboob Alam<sup>4</sup>, Ramla Rizvi<sup>5</sup>, Atul Kapadi<sup>6</sup>, Sushama Sathe<sup>6</sup>, Gerhard Fortwengel<sup>1</sup>

<sup>1</sup>Department of Clinical Research, Hochschule Hannover, Hannover, Lower Saxony, Germany

<sup>2</sup>Department of Pharmacy, Nazeer Hussain University, Karachi, Pakistan

<sup>3</sup>Department of Pharmaceutical Sciences, Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan

<sup>4</sup>Department of Medicine, Basic Medical Sciences Institute, Jinnah Post Graduate Medical College, Karachi, Pakistan

<sup>5</sup>Department of Medicine, Liaquat University of Medical Health Sciences, Jamshoro, Pakistan

<sup>6</sup>Department of Health Sciences, Research Institute of Health Sciences and Management, Chetan Dattaji Gaikwad Institute of Management Studies, Savitribai Phule Pune University, Pune, Maharashtra, India

**Received:** 10 December 2018

**Accepted:** 21 December 2018

### \*Correspondence:

Dr. Dnyanesh Limaye,

E-mail: [dnyanesh.limaye@hs-hannover.de](mailto:dnyanesh.limaye@hs-hannover.de)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Oral cancers (OC) are malignant lesions occurring in the oral cavity that include squamous cell carcinomas (SCC), salivary gland and odontogenic neoplasms. Even though it is the eighth most common malignancy globally but in Pakistan it is the second commonest type of cancer. Lack of awareness about ill-effects of preventable risk factors of oral cancer increases the burden of disease due to the associated high cost of treatment, permanent impairment and high mortality. Hence, awareness can be very helpful in prevention, control and early diagnosis of oral cancer.

**Methods:** A cross-sectional study was carried out among university students from Karachi, Pakistan during April to May 2018. Three hundred students were approached to participate in the study of which 277 agreed to participate. Pretested questionnaire was distributed and collected data was analysed using IBM SPSS version 23.

**Results:** There were 125 (45%) males and 152 (55%) females in the study and response rate was 94%. Sixty one percent (154/250) respondents correctly identified smoking, and tobacco chewing as possible causes of oral cancer. Almost one third (74%; 184/250) respondents correctly responded that oral cancer does not spread from person to person through touch or speaking. Sixty six percent (164/250) respondents believed that oral cancer is curable. Mean score of knowledge was higher in females (61%) than males (53%). Significantly higher number of females compared to male participants answered correctly to questions regarding cause of oral cancer, spread of disease and occurrence of oral cancer in AIDS patients.

**Conclusions:** Participants showed poor knowledge about oral cancer. Female participants showed better knowledge compared to male counterparts. Details about oral cancer should be incorporated in the university curriculum and periodic awareness programs should be organized for students.

**Keywords:** Knowledge, Karachi, Oral cancer, Pakistan, Smoking, Tobacco, University students

## INTRODUCTION

Oral cancers (OC) are malignant lesions occurring in the oral cavity that include squamous cell carcinomas (SCC),

salivary gland and odontogenic neoplasms. The majority (84-97%) of OCs are SCCs which arise from pre-existing “potentially malignant” lesions or more often from normal appearing epithelium.<sup>1-4</sup> OC spreads locally

involving perioral structures and metastasizes to local regional lymph nodes. The disfigurement consequential of the disease and treatment permanently affect the quality of life. This chronic disease is a public health problem both in developing as well as developed countries. Oral cancer is one of the widely prevalent cancer types emerging as a growing problem in various regions of the world. Head and neck cancer is the 6<sup>th</sup> most common cancer in the world.<sup>5</sup> The annual estimated incidence is around 275,000 for oral cancer, two-thirds of these cases occurring in developing countries.<sup>6</sup>

Oral cancer is widely prevalent cancer in developing countries and although it is less prevalent in developed western countries but in recent times a change in trend has been observed due to changes in lifestyle.<sup>5,7</sup> There is a wide geographical variation (approximately 20-fold) in the incidence of this cancer. The areas characterized by high incidence rates for oral cancer (excluding lip) are found in the south and southeast Asia (e.g. Sri Lanka, India, Pakistan and Taiwan), parts of western (e.g. France) and eastern Europe (e.g. Hungary, Slovakia and Slovenia), parts of Latin America and the Caribbean (e.g. Brazil, Uruguay and Puerto Rico) and in Pacific regions.<sup>8</sup>

In high-risk countries such as Sri Lanka, India, Pakistan and Bangladesh, oral cancer is the most common cancer in men and may contribute up to 25% of all new cases of cancer. On a visit to a cancer treatment centre in any of these high-risk countries in south Asia, one may find that at least up to a quarter of the patients warded are suffering from oral cancer.<sup>8</sup>

Populations belonging to low socioeconomic status are at increased risk of developing oral cancer due to lack of awareness regarding ill-effects of preventable risk factors of oral cancer like tobacco and alcohol use. The burden of oral cancer is great because of the associated high cost of treatment, permanent impairment and high mortality. Even though it is the eighth most common malignancy globally but in Pakistan it is the second most common cancer as per recent records of an established and well-maintained cancer registry of Shaukat Khanum Memorial Hospital.<sup>9</sup> It accounts for 15% of all new cancer cases in this region in comparison to 3% detected worldwide.<sup>10</sup>

Most cases have been reported in middle and older age groups but in recent years a number of studies have shown earlier age of incidence. More than 90% of cases of oral cancer are squamous cell carcinomas (OSCC).<sup>11</sup> The absence of a national cancer registry in Pakistan complicates the situation further. Thus, there are no national figures or data on incidence or prevalence of different cancers in the country. Various studies which have been published on cancer incidence or prevalence in Pakistan provide regional data that is often variable due to the peculiar ethnic composition of that specific region or area.<sup>12</sup> The health care fraternity, chiefly the dentists, oncologists, ENT specialists and even physicians also have in depth knowledge of oral cancer. However,

general population remains largely unaware about the oral cancer. Often individuals with pre-cancer even notice the alterations such as reduced mouth opening in oral submucous fibrosis (OSMF) but they are not aware about the causes and consequences of these changes. Awareness about causes of oral cancer and its features can be very helpful in prevention, control and early diagnosis of oral cancer. Young students could be educated to create an awareness in the society regarding oral cancer. It may be very helpful in prevention, control and early diagnosis of oral cancer. The objective of this study was therefore to determine the awareness of oral cancer among university students from Karachi, Pakistan, to know the kind of education and awareness strategies that would be applicable to them.

## METHODS

Questionnaire for the present study was designed in English language and based on the previous studies. It consisted of close ended questions. Content and face validity were checked in by a joint committee from Karachi, Pune and Hannover consisting of epidemiologist, pharmacy professors, statistician and a student representative.

Author conducted a pilot study in 20 students from university of Karachi to determine the understanding of the questions by the participants and time required to complete the questionnaire. Based on this pilot study author did some modifications in the questionnaire which helped us in interview process. Pilot study population was not a part of the main study. A descriptive, cross-sectional, questionnaire-based study was carried out among university students from Karachi, Pakistan during the time period of April-May 2018. All volunteer male and female students enrolled in university study programs at Karachi, Pakistan and who understood English and ready to give written informed consent were eligible to participate in the study. The study was approved by the Institutional Ethics Committee of University of Karachi, Pakistan. The participants were assured of the confidentiality and anonymity of the information. The researchers complied with the international ethical guidelines for research.

Three hundred students were contacted by study team member in their classrooms and were given a brief introduction about the research project. Those who desired to participate were explained the purpose and objectives of the study. Based on the eligibility criterion (those who gave a written informed consent and are registered university students from Karachi, Pakistan) 277 students were selected for the present study.

## Procedure

Study participants were face to face interviewed in the student office with prior appointment by a study member from a team of 5 trained Master of Pharmacy Students.

The data was recorded into the predesigned data record form (DRF) by interviewers. Each interview lasted for average of 15 minutes. Collected data from individual DRF was entered into Microsoft excel and was verified by the authors other than interviewers. Data were analyzed by using descriptive statistical methods and a bivariate analysis was conducted. P-value  $\leq 0.05$  was considered as significant. IBM SPSS version 23 was used for statistical analysis.

**RESULTS**

Table 1 represents the participant details regarding gender, education and awareness about oral cancer. It also showed the bivariate analysis to determine if any, the

association between the awareness of oral cancer and the gender of the respondents. Response rate for this study was 94% (277/300). There were total 277 respondents comprising of 125 (45%) males and 152 (55%) females.

The first column of the table shows the input variables to measure the awareness about oral cancer. Second column gives all the expected answers, and next columns represent the gender-wise responses to the questions. Rest of the columns showed bivariate analysis i.e. chi square and p-value. Highest number (81%; 224/377) of participants belonged to bachelor’s degree education category. Ninety percent (250/277) of the participants had heard about oral cancer. This number (250) was taken as the denominator for further calculations.

**Table 1: Demography and knowledge of oral cancer.**

Variable	Base answers	Male	Female	Total	$\chi^2$ value	P-value
Gender		125(45)	152(55)	277	-	-
Education						
BS		105(84)	119(78)	224(81)		
MS		20(16)	12(8)	32(12)	-	-
PhD		0	21(14)	21(7)		
Knowledge of oral Cancer						
Have you heard about oral cancer?	yes	104(83)	146(96)	250(90)	12.8	0.0
What do you think is the cause of oral cancer?	Smoking, tobacco, chewing	49(47)	105(72)	154(61)	15.8	0.0
Do you think oral cancer spreads from person to person through touch or speaking?	no	66(63)	118(81)	184(74)	9.4	0.0
Is it true that sharing clothes and utensils with a cancer patient can cause spread of the disease?	no	51(49)	97(66)	148(59)	7.6	0.0
Do you think oral cancer is mainly seen in the AIDS Patients?	no	55(53)	72(49)	127(51)	0.3	0.6
Do you think oral cancer is curable?	Yes	76(73)	88(60)	164(66)	4.4	0.0
What are the treatment options available for oral cancer?	-	2(3)	3(3)	5(3)	0.1	0.8
Mean score of oral cancer knowledge		53%	61%	58%	1.3	0.25
Have you come across anyone suffering from oral cancer?	yes	39(38)	28(19)	67(27)	10.4	0.0
If yes, what was your reaction when you saw him/her first?	Behaved normal	19(49)	13(46)	32(48)	0.03	0.8
Has any of your family members died or suffering from oral cancer?	Yes	24(23)	17(12)	41(16)	5.8	0.0
As a general public, what should we do to help patients suffering from cancer?	Do not know	8(8)	7(5)	15(6)	0.9	0.3
Do you think this survey has created awareness in you regarding oral cancer?	yes	69(66)	80(55)	149(60)	3.4	0.1

Sixty one percent (154/250) respondents correctly identified smoking, and tobacco chewing as possible causes of oral cancer. Around one third of the (74%, 184/250) respondents correctly responded that oral cancer

does not spread from person to person through touch or speaking. Forty one percent (129/250) respondents believed that sharing clothes and utensils with oral cancer patient can cause the spread of the disease. Fifty one

percent (127/250) respondents believed that oral cancer is mainly seen in AIDS patients. Twenty seven percent (67/250) respondents had come across someone suffering from oral cancer and out of these 68% (32/67) respondents tried to avoid them or got scared. Sixteen percent (41/250) of the respondents had a family member either suffering with oral cancer or had lost a family member due to oral cancer. Sixty six percent (164/250) respondents believed that oral cancer is curable. Only 3% (5/250) respondents correctly identified all the treatment options (surgery, radiotherapy, chemotherapy, immunotherapy, targeted therapy, combination therapy) for oral cancer.

Ninety four percent (15/250) respondents correctly identified (help to get required treatment from hospital, support them and be friendly) responses for helping oral cancer patients. Only 60% (149/250) respondents believed that present survey created awareness regarding oral cancer.

Mean knowledge percentage was higher in females (61%) than males (53%). Bivariate analysis to find gender effect on the awareness about oral cancer showed that significantly higher number of females compared to male participants answered correctly all the questions except questions regarding oral cancer occurrence in AIDS Patients and curability of oral cancer. Significantly higher number of males compared to female participants had come across someone suffering from oral cancer.

## DISCUSSION

The wide prevalence of oral cancer in Pakistan and southeast Asia necessitates adequate awareness about the risk factors, symptoms, and available treatments associated with this illness. This study aimed to provide a general assessment of knowledge of oral cancer among university students from Karachi, Pakistan in order to emphasize areas where some of their background might be lacking and to further address an expansion of university education campaigns on oral cancer for preventive and safety measures. Additionally, this study seeks to shed light on whether an awareness gap exists between male and female university students regarding this malady to assess a difference in exposure to general education on oral cancer between both groups.

The survey which consists of 12 questions addressing knowledge of oral cancer among university students, entails enquiries about what the disease is, contagiousness status, risk factors, curability, as well as student acquaintances with oral cancer patients. Based on Table 1, 90% of respondents had heard of oral cancer, indicating that they have a fair idea of the existence of this disease. Despite this only 61% were aware of smoking and tobacco chewing as common risk factors, which represents knowledge regarding possible causes. This result was in line with the study done among medical students in Peshawar.

This study showed only 58% MBBS students believed that tobacco and alcohol are the main risk factors for oral cancer.<sup>13</sup> On the other hand, these percentages are not consistent with a similar study conducted among undergraduate dental students in Lahore, Pakistan, where around 80% students identified chewing and smoking tobacco as a risk factor for oral cancer.<sup>14</sup>

In terms of the spread of oral cancer among individuals, respondents showed a satisfactory knowledge as 74% answered no to spread of oral cancer spreads from person to person through touch or speaking. Compared to this question, a smaller percentage of respondents, 59%, denied that sharing of utensils and clothes with a cancer patient can make the disease spread. However, only 51% of respondents think that oral cancer was not necessarily seen in AIDS patients. These results are still better than the ones obtained from a study among the Siamese ethnic group in Malaysia in which roughly 67.7% had the misconception that oral cancer is contagious.<sup>15</sup>

Although the mentioned study found that knowledge about oral cancer significantly changes with age and the level of education, the belief that this type of cancer can spread from simple physical contact should not exist among university students.<sup>15</sup> This partly reflects a weakness in differentiating cancers from regular oral infections, and partly represents a poor impact of existing educational campaigns regarding this matter. Despite oral cancer being a non-AIDS defining malignancy, the AIDS patient however has a higher likelihood becoming diagnosed with it.<sup>16</sup> Forty nine percent of the participants believing that oral cancer is mainly seen in the AIDS patients might therefore be attributable to some of the respondents taking into consideration the mentioned likelihood due in part to a weakened immune response.<sup>17</sup>

Only 3% (5/250) respondents correctly identified all the treatment options (surgery, radiotherapy, chemotherapy, immunotherapy, targeted therapy, combination therapy) for oral cancer. This figure was very low as compared to a study done by Shenoy N et al, in Mangalore, India which showed that 41% students were aware of the oral cancer treatment options.<sup>18</sup> This result might have originated because of difference in the study population. As Shenoy N et al, study was done among medical students as compared to non-medical students in the present study.<sup>18</sup> Correct answers were stratified between males and females as shown in Table 2. Based on the results, there were significant difference between the percentage of males and females who answered correctly. Significantly more females answered questions related to knowledge correctly than males. This is in line with the study among medical students in Himachal Pradesh, India by Fotedar V et al, which showed knowledge of females was better than males.<sup>19</sup>

A study to determine prevalence of pan, gutka, betel nut, naswar (moist, powdered tobacco snuff) and cigarette smoking in university students of Karachi, reported that

the prevalence of addiction among males was 52% and 12% among females.<sup>20</sup> This study results implied that oral cancer awareness between male and female university students in Karachi, Pakistan is not equivalent from the gender perspective. It was, therefore, essential that both groups need to have different focus when it comes to leveraging their knowledge about this topic via future educational programs and campaigns.

## CONCLUSION

Present study showed a poor level of awareness regarding oral cancer in the university students in Karachi, Pakistan and therefore highlights the need to improve the education of university students regarding prevention and early detection of oral cancer. Oral cancer is considered a healthcare burden in Pakistan. Its commonality is associated with a failure to diagnose it at an early stage, lack of treatment affordability in patients with low socioeconomic status, and restricted access to trained healthcare providers and clinicians in rural areas. These factors therefore contribute to a delay in regular checkups which consequently amounts to progression of the disease to more advanced stages.

Despite rigorous scientific advances in early cancer detection, visual accessibility of the oral mucosa which facilitates physical detection of oral cancer symptoms, as well as abundant scientific knowledge available on risk factors, survival rate from oral cancer is still at a mere 50%. One of the causative factors might be insufficient spread of information about consequences and risk factors involved.

Moreover, it is essential for educational campaigns to not only inform and educate university students about the burden of oral cancer, but also to motivate a sense of responsibility in them when it comes to eliminating the risk of occurrence of oral cancer through healthier lifestyle alternatives and frequent checkups, given the prevalence of this illness in Pakistan.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

- Bhurgrri Y, Bhurgrri A, Hussainy AS, Usman A, Faridi N, Malik J, et al. Cancer of the oral cavity and pharynx in Karachi-identification of potential risk factors. *Asian Pacific J Cancer Prevention*. 2003;4(2):125-30.
- Sawair FA, Al-Mutwakel A, Al-Eryani K, Al-Surhy A, Maruyama S, Cheng J, et al. High relative frequency of oral squamous cell carcinoma in Yemen: qat and tobacco chewing as its aetiological background. *Inter J Env Health Res*. 2007;17(3):185-95.
- Ariyoshi Y, Shimahara M, Omura K, Yamamoto E, Mizuki H, Chiba H, et al. Epidemiological study of malignant tumors in the oral and maxillofacial region: survey of member institutions of the Japanese Society of Oral and Maxillofacial Surgeons, 2002. *Inter J Clin Oncol*. 2008;13(3):220.
- Kruaysawat W, Aekplakorn W, Chapman RS. Survival time and prognostic factors of oral cancer in Ubon Ratchathani Cancer Center. *J Med Assoc Thailand Chotmaihet Thangphaet*. 2010;93:278-84.
- Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol*. 2009;45:309-16.
- Ferlay J. Cancer incidence, mortality and prevalence worldwide. *GLOBOCAN2002*. 2004.
- Moore SR, Johnson NW, Pierce AM, Wilson DF. The epidemiology of mouth cancer: a review of global incidence. *Oral Dis*. 2000;6(2):65-74.
- IARC. Cancer incidence in five continents, 2010. Available at: <http://www-dep.iarc.fr>. Accessed 27<sup>th</sup> October 2018.
- Cancer Registry and Clinical Data Management (CRCDM)-Shaukat Khanum Memorial Cancer Hospital and Research Center (SKMCHandRC). Report based on cancer cases registered at SKMCHandRC from December 1994 - December 2011, 2012. Available at: <https://shaukatkhanum.org.pk/wp-content/uploads/2018/08/acrr-2017.pdf>. Accessed 20<sup>th</sup> December 2018.
- Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: *GLOBOCAN 2008*. *Inter J Cancer*. 2010;127(12):2893-917.
- Choi S, Myers JN. Molecular pathogenesis of oral squamous cell carcinoma: implications for therapy. *J Dental Res*. 2008;87(1):14-32.
- Idrees R, Fatima S, Abdul-Ghafar J, Raheem A, Ahmad Z. Cancer prevalence in Pakistan: meta-analysis of various published studies to determine variation in cancer figures resulting from marked population heterogeneity in different parts of the country. *World J Surg Oncol*. 2018;16(1):129.
- Rehman S, Khan M. Awareness of oral cancer in undergraduate medical and dental students. *Pakistan Oral Dental J*. 2012;32(3):385-88.
- Kazmi F, Chaudhary MA, Mumtaz M, Bhatti MU, Khawaja N. Oral cancer knowledge and awareness amongst undergraduate dental students of Lahore-pakistan. *Pakistan Oral Dental J*. 2011;31(1):64-7.
- Kassim NK, Adnan MM, Wern CW, Ru LZ, Hanafi MH, Yusoff A. Awareness and knowledge of oral cancer among siamese ethnic group in Tumpat, Kelantan. *Malaysian J Med Sci: MJMS*. 2017;24(4):47.
- Chia-ching JW, Silverberg MJ, Abrams DI. Non-AIDS-defining malignancies in the HIV-infected population. *Current Infectious Dis Rep*. 2014;16(6):406.

17. Coelho KR. Challenges of the oral cancer burden in India. J Cancer Epidemiol. 2012;2012.
18. Shenoy N, Ahmed J, Saranya B, Shenoy AK, Kamath P, Srikant N, et al. Oral cancer awareness among undergraduate medical students of Dakshina Kannada, India. Scholars J Applied Med Sci. 2013;1(5):632-6.
19. Fotedar V, Fotedar S, Gupta M, Manchanda K, Sharma M. Oral cancer knowledge, attitudes and practices: a survey of undergraduate medical students in Himachal Pradesh, India. JCDR. 2015;9(8):XC05.
20. Usman G, Kumar S, Irfan MA, Agha S, Taj A. Prevalence of pan, gutka, betelnut, naswar and cigarette smoking in university students of Karachi. InMed Forum 2015;26(1):41-4.

**Cite this article as:** Limaye D, Ziesenis P, Limaye V, Ahmad M, Saeed F, Alam M, et al. Oral cancer awareness among university students from Karachi, Pakistan. Int J Adv Med 2019;6:40-5.