

Original Research Article

# Awareness of Undergraduate Dental Students in Govt. Dental College & Hospital, Srinagar, Kashmir, India Towards Early Detection of Oral Cancer

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## ABSTRACT

Oral cancer awareness among future dental practitioners may have an impact on the early detection, referral and prevention of oral cancer. A cross-sectional questionnaire based study was undertaken to assess the knowledge of dental students and interns of Government dental college, Srinagar, India, on oral cancer and its prevention measures. Questionnaire was distributed among a total of 100 undergraduate dental students and interns of the government dental college Srinagar India. Questions relating to knowledge of oral cancer, risk factors, and opinions on oral cancer prevention and practices were posed. Only Fifty two students responded and returned the questionnaire. 96.2% thoroughly examine the oral mucosa of their patients and the most carefully examined oral structure was tongue followed by Labial/buccal mucosa, gingiva, floor of the mouth and then vestibule. 88.5% students screen the oral mucosa if the patients are in high risk categories.

There is a need to strengthen the undergraduate dental curriculum with regards to oral cancer education; particularly regarding its prevention and early detection. Incorporating the use of oral cancer diagnostic aids should be made obligatory.

**Keywords:** oral cancer, Prevention, Smoking, Alcohol.

## INTRODUCTION

Head and neck cancers represent the sixth most common cancer worldwide with approximately 630,000 new patients diagnosed annually resulting in more than 350,000 deaths every year. More than 90% of head and neck cancers are squamous cell carcinomas that arise from the mucosal surfaces of the oral cavity. <sup>[1]</sup> Tongue is the most common site for intraoral cancer in US and European population, whereas buccal mucosa is the common site of Asian population; less commonly affected sites are the floor of the mouth, gingiva and palate. <sup>[2]</sup>

In 90% cases major risk factors for oral cancers are smoking and alcohol, thus is a preventable disease where both have a

synergic effect. In 2007 International Agency for Research on Cancer (IARC) concluded that “there is quite evidence to establish that snuff smoke is carcinogenic, and for example, it causes cancer of the oral cavity and pancreas.” Therefore risk for developing oral carcinomas is 3 times more in smokers as compared with those who do not smoke. <sup>[3]</sup>

Alcohol, as a risk factor can increase permeability of oral mucosa, dissolve lipids components of the epithelium, cause epithelial atrophy and interfere/alter in DNA synthesis and repair; it also has genotoxic and mutagenic effects which causes decreased salivary flow. Moreover, alcohol affects the ability of liver to deal with toxic

carcinogenic compounds, and their chronic use is associated with an impairment of innate and acquired immunity, resulting in increased susceptibility to infections and neoplasms. [4]

The human papilloma virus and ultraviolet radiation (UV) are other potential risk factors for oral cancers. The International Agency for Research on Cancer (IARC) classifies human papilloma virus 16 as a cause for cancers of the oral cavity and pharyngeal tonsils, and HPV18 as possible causes of oral cancer. [5]

The oral cavity is usually easily accessible for examination and thus offers the potential for opportunistic screening for intraoral cancer. For opportunistic screening to be effective, it is vital that primary care clinicians and dental students should be aware of the variety of presentations of malignant and premalignant disease. Treatment at an early stage thus improves prognosis. [6]

It is important that dental students should have good knowledge about oral cancer especially in identifying the individuals at risk, appropriate examination of oral cavities so as to document tissue changes and provide appropriate interventions, thus potentially contributing to the reduction in oral cancer incidence, morbidity and mortality. Dentists are professionally responsible for determining whether patients are at risk of developing oral cancer, as well as for providing a comprehensive oral cancer examination for their patients. [7]

In view of the above mentioned facts, the present study was conducted to assess the knowledge of undergraduate dental students regarding etiology, risk factors, diagnosis, and management of oral cancer.

## **MATERIALS AND METHOD**

A Cross-sectional questionnaire-based study was designed and performed among both male and female 3<sup>rd</sup> year, 4<sup>th</sup> year undergraduate dental students and interns, pursuing BDS in Government dental

college, Srinagar, Kashmir, India. The present study was approved by the concerned head of the department. The study being the questionnaire based study so no consent was taken from the subjects as those who may not be interested in the study would not submit back the questionnaire. However while distributing the questionnaire the aim and objectives of the study were explained to the students. Previously used questionnaire of Hamdy B, et al [8] was used for which a prior permission from the corresponding author was taken. The questionnaire comprised of eight multiple choice questions, four yes or no questions and two open ended questions. The questionnaires were hand-delivered to the students and were collected back the next day. The period of study was from January 2019 to May 2019.

The questionnaire aimed at assessing students' attitude towards regular examination, screening of the oral cavity, knowledge concerning oral cancer risk factors, common sites, clinical signs, and their attitude towards referral of cancer patients, students' satisfaction with a level of oral cancer knowledge gained throughout their academic study.

### **Statistical Analysis**

Data were collected and analyzed using IBM SPSS software version 20 under Windows 7. Descriptive analyses followed by inferential statistics were done using t-test to compare between groups. P value of 0.05 was considered as a cut off point for the level of significance.

## **RESULTS**

Out of a total sample of 100 students, the questionnaires were returned by 52 subjects. Mean age, frequency distribution according to gender and academic year are shown in Table 1.

Students of all groups responded positively to the first question, 'Do you thoroughly examine the oral mucosa of your patients?' (Yes or No), with a percentage of 96.2% and the most carefully examined oral structure was tongue followed by

Labial/buccal mucosa, gingiva, floor of the mouth and then vestibule' (Graph 1). 88.5% students screen the oral mucosa if the patients are in high risk categories. 82.6% and 61.5% consider tobacco and alcohol as risk factor for oral cancer (graph 2). Maximum number of students (69.2%) considered 45-59 years age in which oral cancer is diagnosed more frequently. Tongue and labial/buccal mucosa (65.3% & 32.6%, respectively) were believed is the most common site for oral cancer (graph 3). 53.8% students thought that they are adequately acquainted regarding the clinical appearance of oral cancer. 78.8% students felt that non-responsive 2 weeks-ulcerative lesion in the oral cavity suspects of oral cancer. In Close ended question number 10, 53.8% students felt they do not have enough

information concerning prevention and management of oral cancer and 98% students want to get much knowledge or teaching on oral cancer and potentially malignant lesions, and 57.6% students wish to participate in organized research in order to improve their knowledge of oral cancers. In response to question number 13 regarding the procedure to be adopted for early detection of oral cancer, 55.7% favoured biopsy while 53.8% favoured clinical examination. Regarding the most important part about prevention of oral cancers, 61.5% students believed that avoiding risk factors can prevent oral cancer, while as 53.8% students responded that community education among masses is important for prevention of oral cancer (graph 4).

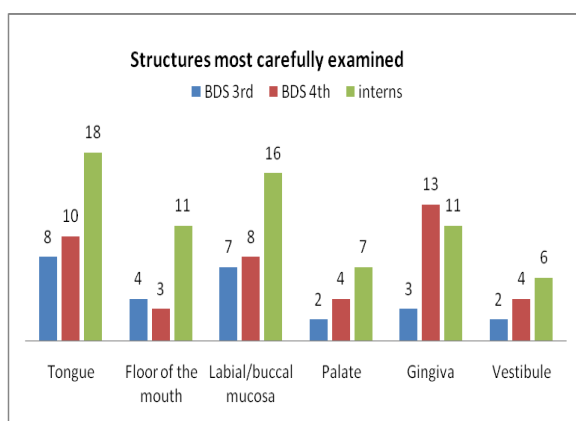
**Table 1: Age and Gender Distribution Of Respondent Students.**

Student Year	Frequency & Percentage	Age Mean ± Std	Gender	
			Male	Female
BDS 3 <sup>rd</sup> year	12(23.08%)	19±0.84	07(58.3%)	05(41.7%)
BDS 4 <sup>th</sup> year	16(30.8%)	20±0.65	10(62.5%)	06(37.5%)
Interns	24(46.12%)	22±0.89	13(54.2%)	11(45.8%)

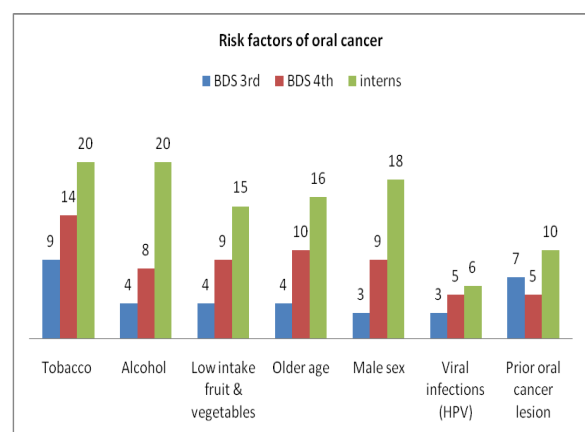
**Table 2: The Questionnaire Questions and Dental Student's Answers**

Questions	Response Rate	P Value	3 <sup>rd</sup> Year (12)	4 <sup>th</sup> Year (16)	Interns (24)	(%)
<b>1. Do you thoroughly examine the oral cavity of your patients?</b>	52	0.001				
Yes			10	16	24	96.2
No			02	00	00	3.8
<b>2. If the answer is yes, which structures are most carefully examined?</b>		0.06				
Tongue			08	10	18	69.2
Floor of the mouth			04	03	11	34.6
Labial/buccal mucosa			07	08	16	59.6
Palate			02	04	07	25
Gingiva			03	13	11	51.9
Vestibule			02	04	06	23.07
<b>3. Do you screen the oral mucosa if the patients are in high risk categories?</b>		0.12				
Yes			06	16	24	88.5
No			06	00	00	11.5
<b>4. What would you consider a risk factor for oral cancer?</b>		0.07				
Use of tobacco			09	14	20	82.6
Use of alcohol			04	08	20	61.5
Low consumption of fruit and vegetables			04	09	15	53.8
Older age			04	10	16	57.6
Male sex			03	09	18	57.6
Viral infections (HPV)			03	05	06	26.9
Prior oral cancer lesion			07	05	10	42.3
<b>5. At which age do you think oral cancer is diagnosed more frequently?</b>		0.08				
30 – 40 years			00	00	01	1.9
45 – 59 years			06	14	16	69.2
60 – 75 years			04	05	0	17.3
Older than 75			00	00	08	15.3
<b>6. What do you believe is the most common site for oral cancer?</b>		0.51				
Tongue			03	13	18	65.3
Floor of the mouth			06	02	04	23.07
Gingiva			03	01	00	7.6
Labial/buccal			03	05	09	32.6
Palate			00	03	03	11.5
Vestibule			00	01	00	1.9

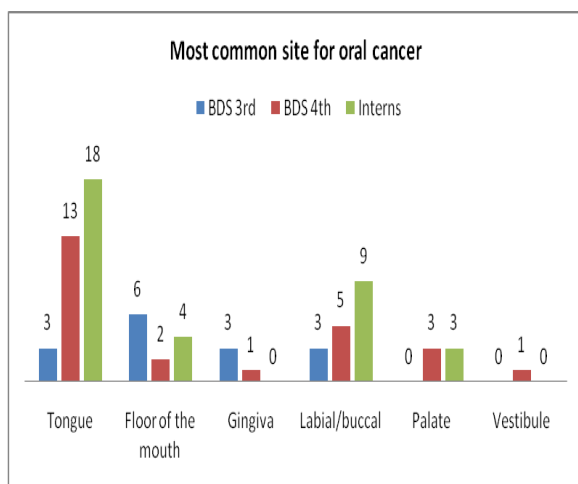
Table 2 to be continued...					
<b>7. As regard the clinical appearance of oral cancer, do you feel?</b>		0.12			
Very well-informed		01	00	00	1.9
Well-informed		02	03	05	19.2
Adequately informed		04	11	13	53.8
Poorly informed		02	00	05	13.4
<b>8. What changes in the mouth would drive you to suspect oral cancer? (You can tick more than one)</b>		0.001			
Ulceration non responsive to therapy of 2 weeks' duration		07	12	22	78.8
Homogeneous leukoplakia		04	02	04	19.2
Non-homogeneous leukoplakia		03	07	13	44.2
Candidal leukoplakia		00	01	02	5.7
Erythroplakia		00	03	11	26.9
Oral lichen planus		02	01	04	13.4
Candidiasis		00	0	01	1.9
Hairy leukoplakia		03	02	00	9.6
Other (define: .....)		00	00	00	0
<b>9. When you are graduated, to whom would you refer a patient when you suspect an oral malignancy?</b>		0.45			
Plastic surgery specialist		00	00	00	0
Otolaryngologist		00	00	01	1.9
Oral & maxillofacial surgeon		00	00	02	3.8
Oral medicine specialist		05	11	18	65.3
Oncology specialist		04	11	09	46.1
General practitioner		00	02	00	3.8
Other dentist		00	00	00	0
<b>10. Do you feel that you have enough information concerning prevention and management of oral cancer?</b>		0.001			
Yes		02	06	16	46.2
No		10	10	08	53.8
<b>11. Would you like to get much knowledge or teaching on oral cancer and potentially malignant lesions?</b>		0.17			
Yes		12	16	23	98
No		00	00	01	2
<b>12. Which format would you prefer?</b>		0.46			
Information package		02	06	07	28.8
Continuous education lectures		09	00	07	30.7
Seminars		03	05	01	17.3
Webinars		02	00	00	3.8
Participation in organized research		03	11	16	57.6
Other (define: .....)		00	00	00	00
<b>13. What do you know about early detection of oral cancer, that is, what does it involve?</b>		0.43			
clinical exam		06	7	15	53.8
Biopsy		07	7	15	55.7
regular checkup		03	6	05	26.9
family history		03	1	02	11.5
Patient education		03	5	03	21.1
Wrong answer		00	00	00	00
<b>14. What is meant by prevention of oral cancer, that is, what does it involve?</b>		0.7			
Community education		04	13	11	53.8
Avoid risk factor		11	06	15	61.5
Regular checkup		03	06	03	23.07
Good oral hygiene		03	00	04	13.46
Wrong answer		00	00	00	00



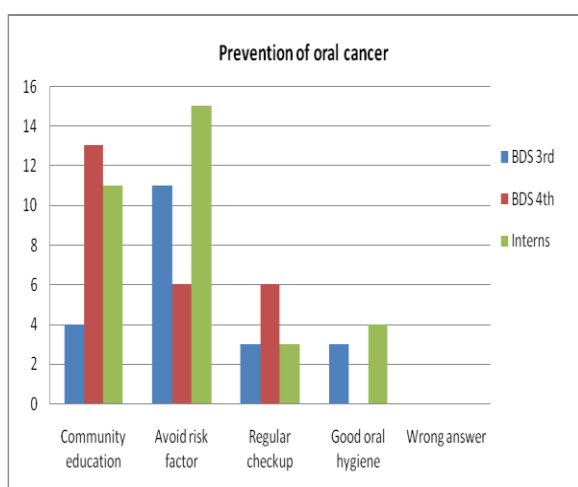
Graph 1: Distribution of answers among dental students regarding structures they Most carefully examine.



Graph 2: Distribution of answers among dental students regarding identifying oral cancer risk factors.



Graph 3: Distribution of answers among dental students regarding oral cancer common sites



Graph 4: Distribution of answers among dental students regarding prevention of oral cancer measures.

## DISCUSSION

Oral cancer is a leading health problem worldwide. General dental practitioners and dental undergraduates play an important role in detection of oral mucosal changes that may lead to malignancy. Their knowledge regarding oral cancer itself and the risk factors associated with the disease need to be adequate. [9]

Our study reports and discusses about dental undergraduate students' knowledge in relation to the early diagnosis, screening and referral of oral cancer patients. It is of utmost importance that undergraduate dental students should have adequate knowledge regarding oral cancer especially its early detection and referral that can save the patient's life if detected and treated in its earlier stages. 88.5%

students responded that they screen the oral mucosa in patients who are in high risk categories which are similar to previous studies done in Malaysia 96.7%, [10] in Carter and Ogden 72.46%, [11] and in India 89.7% [12] Majority of the dental students were able to identify tobacco (82.6%) as risk factors for oral cancer. But, only 61.5% of dental students reported alcohol to be a known risk factor. Similar findings have been reported in the published literature by other studies. [13,14] Therefore, it is imperative to emphasize the role of alcohol, as an established risk factor for oral cancer, in future education and training of undergraduate dental students. A trend towards better identification of the risk factors was noticeable as the students' progress in their academic years.

Earlier Epidemiological research indicates an association between the Human Papillomavirus (HPV) with a subset of oral cancers. Dentists may play a role in primary prevention of HPV-related OC by discussing the HPV vaccine with patients. In our study only 26.9% students responded as HPV as risk factor for oral cancer. [15]

Earlier Case-control studies have suggested that a diet rich in fresh fruit and vegetables protects from the risk of most common epithelial cancers, including those of the digestive tract, and also several non-digestive neoplasms. The relative risks (RR) of digestive tract neoplasms have been observed to be lesser in subjects reporting highest vegetable intake. A protective effect of vegetables was also observed in previous studies for hormone-related neoplasms. With reference to the role of selected antioxidants, beta-carotene, vitamins C and E showed a significant inverse relation with oral and pharyngeal, esophageal and breast cancer risk. [16] In the current study only 53.8% students considered less intake of vegetables as risk factor for oral cancers.

Our results showed that 65.3% of the students successfully identified tongue as the most common site of oral cancer. Furthermore, 78.8% contemplated that chronic oral ulceration, irresponsive to

treatment is of the highest suspect to oral cancer consistent with previous study by Colella et al. <sup>[17]</sup>

Referral to oral medicine specialist (65.3%) was the mostly preferred choice by students when they suspect a patient with oral cancer. This is similar to findings of Carter et al <sup>[11]</sup> who reported that oral medicine was the most frequently selected point of referral.

53.8% students thought that they do not have enough information concerning prevention and management of oral cancer that depicts the interest of students to know more about oral cancers. Hence the dental students should be provided the opportunity to gain adequate knowledge regarding early detection, treatment and management of oral cancer during their formative years so that they practice it throughout their professional life hence contributing towards reduction of this fatal disease load in the community.

## CONCLUSION

With the increase in global incidence of oral cancer, the responsibilities of dental practitioners in the prevention and detection of oral cancer is of utmost importance. The level of awareness and knowledge about oral cancer among undergraduate dental students is quite satisfactory in some levels and need improvement in some level of awareness and thus reforms in the teaching curricula is need of an hour.

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