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## Research Article

### KNOWLEDGE, ATTITUDE AND PRACTICES OF EARLY DIAGNOSTIC METHODS FOR DETECTING ORAL CANCER AMONG UNDERGRADUATE DENTAL STUDENTS

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#### ABSTRACT

**Introduction:** Oral cancer is a major health issue in developing countries and a serious cause of morbidity and mortality worldwide. Early diagnosis of oral cancer considerably increases the survival rates. Hence, adequate knowledge about oral cancer detection methods among the undergraduate students is essential in improving the quality of life of patients.

**Aim and Objectives -** To assess knowledge, attitude and practices of early diagnostic methods for detecting oral cancer and to increase awareness of oral cancer amongst final year students and Interns.

**Methodology-**A 15 item Self-administered closed ended questionnaire assessing knowledge, attitude and practices regarding early diagnostic methods was delivered to final year students and Interns willing to participate in study. Data was entered in SPSS (v.21.0) and statistical analysis was done. (p<0.05)

**Results:** Among 116 students (Interns 77 and Final year students 39) who participated, only 12.9% felt up-to-date regarding their current knowledge and almost 87% felt the need to upgrade their knowledge. About 84% have performed diagnostic methods but only 52% have performed more than one methods.

**Conclusion:** The study highlights the need for improved education of undergraduate dental students regarding oral cancer.

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#### INTRODUCTION

Oral cancer is a major health issue faced especially in developing countries and a serious cause of morbidity and mortality worldwide. It is one of the 10 most frequent cancers in the world, with three quarters of the cases occurring in developing countries (Kumar S, 2017). It is the third most common type of cancer which accounts for over 30% of all cancers in the country. Almost 80,000 cases are diagnosed annually. Relatively the mean age of occurrence is around 55 years, in the adult population. Incidence in the paediatric population is comparatively less than 0.35%. Younger individuals are the susceptible sector of the society, with an undue exposure of risk factors such as tobacco. Two-thirds of the oral cancer is prevalent in males whereas there is much variation in females (Prasad L, 2014). The variation in incidence and pattern of the disease can be attributed to the combined effect of ageing of the population, as well as regional differences in the prevalence of disease-specific risk factors (Coelho, 2012).

Oral Cancer is the most significant oral disease which accounts to loss of life. The morbidity and mortality due to Oral Cancer could be reduced by early diagnosis of the disease. When the Oral cancer lesion is detected in the early stages treatment is more likely to be successful (Alonge OK and Narendran S, 2003). Oral cancer is largely preventable and early diagnosis of the malignancy considerably increases the survival rates as the oral cavity is easily accessible for self or clinical examination. It also has one of the lowest average 5-year survival rates that remain unaffected despite recent therapeutic advances, mainly because of late presentation due to delays in the diagnosis (Prasad L, 2014).

Among health care professionals it is expected that the dentists are trained to make a prompt diagnosis of oral cancer lesions in its initial stages during the routine oral cavity examination. Although the oral cavity is a potentially accessible site for examination, up to 50% of oral cancers are undetected until the disease is well advanced, which may be attributed to poor knowledge and technical skills of the dentists towards oral cancer (Prasad L, 2014).

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An early oral cancer can appear as innocuous red or white patches, as an ulcer, or a lump, mimicking many benign lesions that may develop in an area of previously healthy epithelium or from a precancerous lesion. If these lesions are undetected and untreated, they can invade and destroy adjacent structures and spread to lymph nodes in the neck and to distant sites (Carter L and Ogden G, 2007).

Primary prevention of oral cancer includes avoidance of tobacco and alcohol use as well as appropriate intake of fruits and vegetables. Regular dental visits are associated with diagnosis of oral cancer at an earlier stage. Secondary prevention of oral cancer consists of a visual and tactile examination of the oral cavity, the head and the neck, which is essential for early detection (Kumar V and V Suresan, 2012). Previous studies (Kujan O et al, 2006 and Shenoy N et al, 2013) in literature have stated that more emphasis should be laid in imparting knowledge to undergraduate dental students at the grass root level, regarding early detection methods of oral cancer and have shown that the General Dentist Practitioners’ (GDP’s) felt they were not completely trained in recognition of oral cancer at early stages. This raises several questions related to the education and training of undergraduate students in terms of performance. So, there is need to inculcate a positive attitude amongst them towards early diagnosis and prompt treatment to the patients with suspected oral cancer lesions. Also, this would help to improve survival rates and quality of life of patients (Gajendra S and Kumar V, 2006). Hence this study was conducted with the aim to assess knowledge, attitude and practices of early diagnostic methods for detecting oral cancer amongst undergraduate students (final year students and Interns) in a Dental College.

## MATERIAL AND METHODS

The study was conducted after obtaining relevant permissions from the Scientific Advisory Committee and Institutional ethics committee.

A cross-sectional questionnaire study was conducted at Sinhgad Dental College and Hospital, Pune. A convenience sampling approach was used. All Final year students and Interns graduating from Sinhgad dental college participated in the study. Selection criteria was as follows:

- **Inclusion criteria:** Final year students and Interns willing to participate in the study and willing to give written informed consent.
- **Exclusion criteria:** Final year students and Interns not present at the time of study and not willing to participate.

A pre-tested, pre-validated, 15- item Self-administered structured closed ended questionnaire assessing the students’ knowledge, attitude and practices regarding early diagnostic methods of detecting oral cancer was given to those final year students and Interns. A suitable time slot was given for filling up the questionnaire (approximately 10-15 minutes). The completed questionnaire was collected back by a Single investigator.

**Statistical Analysis:** Data obtained was entered in Microsoft Excel 2010. Frequency and descriptive analysis was done by using Statistical package for social sciences (v.21.0). Mean

score and standard deviation of knowledge was derived. Chi-square test of proportion was used.

## RESULTS

About 77 interns and 39 final year students participated in the study contributing to a total sample of 116 students. The Questionnaire recorded 15 items assessing knowledge, attitude and practices regarding early detection methods of oral cancer, out of which 6 items were of knowledge domain (Table 1 and Table 2), 5 items of Attitude domain (Table 4) and 4 items of Practice domain (Table 5)

### Knowledge Domain

The Frequency analysis of the different questions addressed under the knowledge domain is mentioned in Table 1. All the participants (n = 16) responded correctly to the fact that Early detection methods of Oral cancer does improve survival rates and Oral cancer examination (OCE) should be done for any patient with adverse tissue habits. About 84.5% (n=98) participants knew that patient education regarding risk factors is important and over 81% (n=94) were aware that Toluidine Blue staining is the best method for early detection of Oral Cancer. Self-examination for early detection is essential, was thought by almost 57% (n=67) of the participants. Chi-square test of proportion showed statistically significant results (p value <0.05) (Table 1). The mean knowledge score obtained was categorised as 0-2 – “Poor”, 3- “Fair” and 4-6 – “Good” and the frequency for the same is mentioned in the Table 2. The overall mean knowledge score of Interns and final year students was 4.50 ± 0.90, which comes under the category “Good”. (Table 3).

### Attitude Domain

The frequency analysis of attitude responses was done, which showed only 12.9% felt up-to-date regarding their current knowledge and almost 87% felt the need to upgrade their knowledge. About 74.1% stated that they will always refer a patient with oral cancer to a specialist. (Table 4)

### Practice Domain

About 84% (n=98) have performed diagnostic methods but only 52% (n=61) have performed more than one methods (Table 3). About 48% (n = 55) dental students felt that Brush Biopsy is the best method of detection of oral cancer followed by Toluidine blue staining 27% (n =31) and Visual and palpation method 12% (n=13)

**Table 1** Knowledge Domain

Questions	Frequency - n (%)		p value
	Correct Response	Incorrect Response	
1) Early Detection methods of oral cancer improve survival rates.	116(100%)	-	-
2) Oral cancer examinations should be done for any patient with adverse tissue habits at a periodic interval.	116 (100%)	-	-
3) Patient education regarding risk factors of oral cancer is not important.	98 (84%)	18(15%)	<0.05
4) Best method for early detection of oral cancer	94 (81%)	22 (18%)	<0.05
5) Tongue and floor of mouth are the most common sites of oral cancer examination.	31(26%)	85 (74%)	<0.05
6) Detection of early stages of cancer by Self-examination	67 (57%)	49 (43%)	<0.05

**Table 2** Mean Knowledge range and Frequency

Mean Knowledge Range (Category)	Frequency n (%) of Total Correct Responses n =116
0-2 (Poor)	-
3(Fair)	31 (26.7%)
4-6 (Good)	85(73.2%)

**Table 3** Mean Knowledge Score

	Minimum	Maximum	Mean	Standard Deviation
Knowledge score	3	6	4.50	0.909

**Table 4** Attitude Domain

Questions	Frequency – n (%) Total (n = 116)	p value
1)Felt up-to-date about the knowledge of diagnostic methods of oral cancer	Yes, I am up-to-date	15 (12.9%)
	I would like to update my knowledge	91(78%)
	Not sure	10(8.6%)
2)Confidence in identifying clinical appearance of oral cancer	Extremely confident	19 (16.4%)
	Confident	78(67%)
	Not confident	19 (16.4%)
3)Reference to a Specialist	Always refer patient to a specialist	86 (74.1%)
	Refer the patient, if doubtful	30 (25.9%)
4)Need for upgrading current knowledge	Yes	101 (87.1%)
	No	15 (12.9%)

**Table 5** Practice Domain

Questions	Frequency- n (%) Total (n=116)	p value
1) Opportunity to examine patients with premalignant lesions	Yes 116 (100%)	-
2) Performed early diagnostic methods	Yes 98 (84%)	<0.05
	No 18 (16%)	
3) Performed visual palpation and toluidine blue staining	Yes 61 (53%)	<0.05
	No 55 (47%)	
4) Referred to Oral pathologist	Yes 67(58%)	<0.05
	No 49(42%)	

**DISCUSSION**

The study highlights the need for updating the current knowledge of diagnostic methods for detecting oral cancer among undergraduate dental students. Our study found that the undergraduate dental students had a “Good” mean knowledge score (4.5±0.9), which was in consensus with the study conducted by Kumar S(Kumar S, 2017), where the mean knowledge of oral cancer among dentists was 5.4±0.8 (“Good”). Study also stated that there is a need of additional training and continuing educational programs on prevention and early detection of oral cancer. Also, the study conducted by Gajendra S and Kumar (Gajendra S and Kumar, 2006) concluded that Dentists have a mean knowledge score of 4.2+1.2 of oral cancer, but there are gaps in the knowledge of certain risk factors and in the oral cancer examination technique, which was similar to the conclusions of our study. There may be a confounding factor regarding the knowledge as in our study the participants were the undergraduate students. Canto *et al* (Canto *et al*, 2001) in 2001 found that the about 78% of the dentists were knowledgeable about the oral cancer examinations and risk factors, similar to our study, where

almost 85% of the graduating students were confident about the knowledge of oral cancer examinations. This shows that the decadal trend about opinions, knowledge and practices of oral cancer examination and diagnostic methods is progressing with the advancements.

About 79% of our participants felt that they require more knowledge about diagnostic methods of oral cancer and require additional training or information regarding oral cancer. Our findings are comparable to Carter and Odgen (Carter and Odgen, 2007), 90% of subjects felt the need to update knowledge and Fotedar *et al* (Fotedar *et al*, 2015), 94.6% subjects felt the need to update knowledge and in contrast Bhagavathula *et al* (Bhagavathula *et al*, 2015) found only 39% of their subjects think that they require knowledge about oral cancer.

Regarding upgrading the recent information of diagnostic methods of oral cancer, our study participants felt that a series of lectures and seminars would be helpful and encouraging as stated by Sohn W *et al* (Sohn *et al*, 2005), wherein the traditional methods of educational dissemination such as conferences, lectures, journal articles, and mailings were preferred by the respondents over new communication methods such as email, websites, or CD-ROM, among Primary health care providers at Qualified Oral Health care centres. Similarly, Canto *et al* (Canto *et al*, 2001) concluded that almost 81% of the dentist were interested in participating in the Oral cancer continuing education (OCCE), and preferred the same in the form of Lectures/Conferences and seminars.

In our study, positive attitudes regarding the Oral cancer prevention and early detection were noted. Similarly, Alonge *et al* (Alonge *et al*, 2003) observed a positive perception of oral cancer examination in undergraduate students and dentists in Texas-Mexico border who believed their oral cancer knowledge was current and performed oral cancer examination on all patients of 40 years or older. They stated that more emphasis should be placed on the training of oral cancer examination in dental schools, so that future dental graduates could develop good clinical practice habits and knowledge regarding oral cancer prevention and detection. Almost 74.1% participants referred diagnosed oral cancer cases to a Specialist for further attention, which was similarly observed by Warnakulasuriya K (WarnakulasuriyaK, 1999) in dental graduates abroad.

There is current debate on whether the implementation of screening as a separate procedure from the daily routine work of dental healthcare professionals would be an effective measure for the early detection and prevention of oral cancer. The British Dental Association in 2000 encouraged their members to consider opportunistic oral cancer screening as a management strategy in general dental practice. The American Cancer Society (1992) guidelines for oral cancer examination recommended routine screening for cancers of the oral region every three years for persons over 20 years of age and annually for those of 40 years of age and older (Canto *et al*, 2001).

Toluidine blue staining as the best method of detection of oral cancer was felt by 81% participants, followed by Brush Biopsy (27%) and Visual and palpation method (12%). In contrast about 95% of respondents used visual examination for oral cancer screening as this was inexpensive, simple, acceptable

and had high sensitivity and specificity technique as per the study conducted by Jullien *et al* in 1995 (Jullien *et al*, 1995). The reason for these differences may be contributed to the recent advancements and developments happening in medicine, leading to more awareness among the dental undergraduate students.

Kujan *et al* (Kujan *et al*, 2006) conducted a study among General Dentist Practitioners' (GDP's) where 50% of GDP's described their training regarding oral cancer recognition as sufficient whilst 41% of them took the opposite view and the rest had no comment. This raises several questions related to the education and training of undergraduate students in terms of performance. Hence, more emphasis should be given in imparting knowledge to these undergraduate students at an early level.

There is a need to introduce oral cancer education on prevention, early referral and diagnostic methods of oral cancer in focus on younger generation. Primary health care workers should be involved in such education program and they should be encouraged to participate in health education by providing information on oral cancer and preventive methods to citizens nationwide. The role of mass media, particularly television and social networking sites should be stressed as it was found to play a key role in imparting health education and belief changes (Shenoy N *et al*, 2013).

Gaddikeri *et al* (Gaddikeri *et al*, 2017) significantly stated that dental surgeons are the first persons who have opportunity to determine oral cancers at early stage even in asymptomatic patients before it reaches advanced stages and spreads to other sites. It is the responsibility of dental institutions to focus the curriculum so that students should have an adequate knowledge about oral cancer. Even though postgraduate students are taught in detail about oral cancer, it is vital for undergraduate students to attain sufficient knowledge regarding current concepts and latest research activities of this commonest malignant disease.

## CONCLUSION

The current study concluded that overall knowledge about early diagnostic methods of detecting oral cancer among Final Year Students and Interns was Good, but the need to update the recent knowledge was felt. There is a need for providing continuing dental education programs to enhance the prevention and early diagnosis of oral cancer. Smaller sample size, response bias and subjective method of assessing practices were some of the limitations of the study. More studies that focus primarily on the newer diagnostic methods and a long term interventional studies would be more effective in finding about the change in the knowledge and instilling a positive attitude towards early diagnosis of oral cancer.

A need of increased public awareness and increased knowledge of undergraduate dental students to improve cancer survival rates. Hence governments should take initiative measures to revise the curriculum of dental students so that everyone should possess adequate knowledge about oral cancer (Sohn W *et al*, 2005).

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## Conflict of Interest

There was no conflict of interest.

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