

# KNOWLEDGE, ATTITUDE AND DIAGNOSTIC ABILITY REGARDING PRE-CANCEROUS AND CANCEROUS ORAL LESIONS AMONG DENTAL AND MEDICAL STUDENTS AT A MEDICAL COLLEGE IN KATHMANDU

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## ABSTRACT

Oral cancer is one of the most common health dilemmas in several countries of the world. General dental practitioners and medical practitioners play a major role in the recognition of oral mucosal changes that may lead to malignancy. Knowledge, attitude, opinion, skill, and practice of oral cancer among dental and medical students play a pivotal role in cancer prevention, early detection, and management. A comparative study was conducted using pre-structured close ended questionnaires which was aimed to compare the level of adequacy of knowledge, attitude, and diagnostic ability about oral cancer among undergraduate dental and medical students at Nepal Medical College. Out of a total of 210 participants, 54 (35.1%) dental and 100 (64.9%) medical students responded. The result revealed more than 90% of the participants had adequacy in knowledge and attitude and would refer the cases to the specialists. Only 24.1% dental and 65.0% medical students had performed biopsy and cytology. Statistically significant association between adequacy of diagnostic ability and type of study field (p-value <0.001) was found in the study. The overall knowledge and attitude score were found adequate for both medical and dental students, while the diagnostic ability score were inadequate for both the groups. Therefore, this study suggests a need for revision in the curriculum with individual opportunity to interact with oral cancer patients and mandatory continuing education program especially on diagnosis of oral cancer for undergraduate dental and medical students.

## KEYWORDS

Attitude, dental students, diagnostic ability, knowledge, medical students, oral precancerous and cancerous lesion

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## INTRODUCTION

Oral cancer (OC) is an abnormal uncoordinated growth of tissues associated with the consumption of tobacco, alcohol, and areca nut (Betel quid)<sup>1,2</sup> and infection with human papilloma virus (HPV).<sup>3</sup> OC possess a lifelong health burden with pain, discomfort, disfigurement, and death.<sup>4-6</sup> Oral cancer incidence has been found in an increasing trend with a rank as the 6<sup>th</sup> most common cancer<sup>7-11</sup> in the world, 8<sup>th</sup> among all the cancer in males,<sup>12</sup> 12<sup>th</sup> most common cancers in Asia, and top three cancer in some Asian-Pacific countries<sup>13</sup> irrespective of age and gender.<sup>14</sup> South East Asia alone accounts for more than 50% of global oral cancer with the highest mortality-to-incidence ratio.<sup>15</sup> In Nepal, it was found to be second most common cancer in males.<sup>16</sup>

The carcinogenesis of oral cancer involves multiple genetic mutation that activate the oncogenes and inactivate the tumor suppressor genes.<sup>17</sup> The clinico-pathological feature of oral pre-malignancy and malignancy includes persistent lump, chronic non-healing ulcers, leukoplakia, erythroplakia, mixed red and white lesion, elevation, bleeding, ulcer with fissuring, pain or numbness, nodularity, induration and fixation, lymph node enlargement, dysphagia, and weight loss.<sup>10,18</sup>

OC is diagnosed when histopathological examination shows (i) dysplasia extending through the full thickness of the epithelium (severe dysplasia) and with, (ii) extension of the rete pegs into the underlying lamina propria, i.e., invasion across the basement membrane. The presence and degree of epithelial dysplasia are currently the most useful indicator of malignant transformation.<sup>19</sup> Biomarkers can play an important role in eliciting changes undetectable by conventional hematoxylin and eosin (H & E) staining.<sup>18</sup>

Most of the oral cancers are preventable and treatable if diagnosed at their earlier stages.<sup>4</sup> Delay in diagnosis and treatment can impose a strongly negative impact on an individual's physical, physiological, psychological, economic, and social quality of life.<sup>4,20,21</sup>

Knowledge, attitude, opinion, skill, and practice of oral cancer among dental and medical students play a pivotal role in cancer prevention, early detection, and management.<sup>7</sup> The consequences of inadequate knowledge and practice of dental and medical students on oral cancer ultimately results into pessimism, nonconfidence in diagnosis, reluctance in practice and hesitation in referral during

their future clinical practice.<sup>7,10,13,22,23</sup> Present study aimed to compare the level of adequacy of knowledge, attitude and diagnostic ability about oral cancer among undergraduate dental and medical students at Nepal Medical College.

## MATERIALS AND METHOD

Data collection was done by using a proforma with a structured questionnaire including demographic details and the knowledge, attitude, and diagnostic ability of students on oral precancer and cancer. The questionnaire was distributed among final year dental and medical students at Nepal Medical College Teaching Hospital via internet-based platform (Google form). Written / informed consent was obtained through the same form. The last part of the questionnaire also intended to collect suggestion from the participating students

### Scoring:

Out of the 22 questions, each response with "yes" was scored 1 while each "no" was given a score of 0. Therefore, out of the overall maximum score of 22, the independent maximum score of knowledge, attitude and diagnostic ability would be 10, 5 and 7, respectively and a minimum of 0. The total scores of responses were calculated and analyzed by statistical tests for their significance. The scores were assessed as "adequate" when the mean score value was 50% or above and "inadequate" if the score was below 50% both categorically and overall.

## RESULTS

Out of a total of 210 participants, 54 (35.1%) dental and 100 (64.9%) medical students responded the questionnaire with a response rate of 90.0% and 83.3%, respectively. There was a female predominance (64.3%) in both dental (79.6%) and medical (56%) students. The mean age of the participants was  $23.6 \pm 1.29$ .

*Knowledge response:* It was found that all the medical and dental students would advise the patients or community about risk factors for oral cancer. Majority of the dental (96.3%) and medical (97.0%) students would refer a case of suspected oral malignancy to the oral and maxillofacial pathologist. Only 24.1% dental and 22.0% medical students were found confident on their knowledge and skill required to diagnose, treat, and prevent the oral cancer (Table 1).

*Attitude response:* More than 94.0% of both dental and medical respondent would refer

Table 1: Knowledge response

S.N	Questions	Response	
		Medical students n=100 (%)	Dental students n=54 (%)
1.	Red lesion describes the clinical appearance of early lesion of oral cancer.	77 (77.0)	39 (72.2)
2.	White lesion describes the clinical appearance of early lesion of oral cancer.	83 (83.0)	40 (74.1)
3.	Ulcer describes the clinical appearance of early lesion of oral cancer.	70 (70.0)	38 (70.4)
4.	Mass describes the clinical appearance of early lesion of oral cancer.	78 (78.0)	40 (74.1)
5.	Lateral border of tongue is the most common site of oral cancer.	93 (93.0)	49 (90.7)
6.	A case of suspected oral malignancy will be referred to Oral and Maxillofacial pathologist.	97 (97.0)	52 (96.3)
7.	Human Papilloma Virus infection is a risk factor for development of oral cancer.	83 (83.0)	52 (96.3)
8.	Patients or community will be advised about the risk factors for oral cancer.	100 (100.0)	54 (100.0)
9.	Oral cancer awareness campaigns are effective.	88 (88.0)	52 (96.3)
10.	I have sufficient knowledge and skill required for diagnosis, treatment, and prevention of oral cancer.	22 (22.0)	13 (24.1)

suspicious case to the specialist, review patients risk factor during clinical examinations, advise friends and family for routine screening of oral cancer and recommend the treatment for oral cancer. Only 68.5% dental students in comparison to 84.0% of medical students would take oral cancer screening for themselves (Table 2).

*Diagnostic ability response:* It has been found that 92.6% of dental in comparison to 57.0%

of medical students examine patients' oral mucosa during their routine clinical postings. However, a very low percentage of both dental (3.7%) and medical (6.0%) students performed biopsy and cytology (24.1% dental and 65.0% medical) during their study period (Table 3).

The overall knowledge and attitude score were found adequate for both medical and dental students, while the diagnostic ability score were inadequate for both the groups (Fig. 1).

Table 2: Attitude response

S. N	Questions	Response	
		Medical students n=100 (%)	Dental students n=54 (%)
1.	Patient with suspicious oral lesions should be referred to specialist for further evaluation.	95 (95.0)	53 (98.1)
2.	Patients' risk factors should be reviewed during clinical examination.	97 (97.0)	53 (98.1)
3.	Go for screening of oral cancer for own self.	84 (84.0)	37 (68.5)
4.	Routine screening for oral cancer should be advised to friends and family.	94 (94.0)	53 (98.1)
5.	Treatment to patients with oral cancer is recommended.	94 (94.0)	52 (96.3)

**Table 3: Diagnostic ability response**

S. N	Questions	Response	
		Medical students n=100 (%)	Dental students n=54 (%)
1.	Had an opportunity to examine patient with precancerous oral lesion.	10 (10.0)	17 (31.5)
2.	Screen the oral mucosa if the patients are in high-risk categories of oral cancer.	85 (85.0)	45 (83.3)
3.	Examine patient's oral mucosa routinely during our clinical posting.	57 (57.0)	50 (92.6)
4.	Have prepared oral cytological smear in our college.	6 (6.0)	13 (24.1)
5.	Performed oral biopsy during our study period.	6 (6.0)	2 (3.7)
6.	Have seen oral cancerous lesion under microscope.	20 (20.0)	50 (92.6)
7.	Had an opportunity for tissue processing (paraffin block preparation, sectioning, staining for histopathology)	16 (16.0)	8 (14.8)

**Table 4: Association of adequacy of knowledge, attitude, and diagnostic ability with the study field among the study participants**

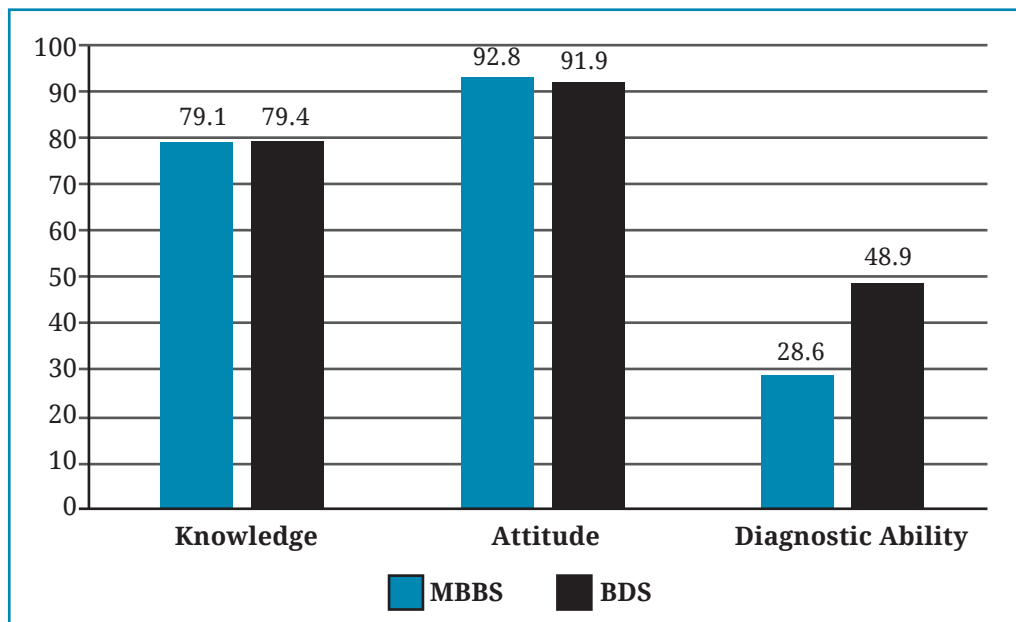
	Knowledge adequacy†		Attitude adequacy†		Diagnostic ability adequacy	
	Yes n (%)	No n (%)	Yes n (%)	No n (%)	Yes n (%)	No n (%)
<b>MBBS (n = 100)</b>	99 (99.0)	1 (1.0)	98 (98.0)	2 (2.0)	10 (10.0)	90 (90.0)
<b>BDS (n = 54)</b>	54 (100.0)	0 (0.0)	54 (100.0)	0 (0.0)	25 (46.3)	29 (53.7)
<b>p-value</b>	>0.99		0.54		<0.001*	

† Fisher's Exact test

Chi square test, p-value < 0.05 statistically significant\* Odds Ratio 7.76 (95% Confidence Interval: 3.36-18)

**Table 5: Correlation between knowledge, attitude, and diagnostic ability scores among MBBS and BDS student**

Variables	MBBS students		BDS students	
	Correlation coefficient (ρ)	p-value	Correlation coefficient	p-value
Knowledge vs attitude score	0.109	0.06	0.109	0.43
Knowledge vs diagnostic ability score	0.072	0.48	0.194	0.16
Attitude vs diagnostic ability score	-0.054	0.59	0.035	0.80



**Fig. 1:** Mean percentage score of knowledge, attitude, and diagnostic ability of oral cancer among dental and medical students

Present study revealed a statistically significant association between adequacy of diagnostic ability and type of study field ( $p$ -value  $<0.001^*$ ) while no statistically significant association was found between both the knowledge adequacy ( $p$ -value  $> 0.99$ ) and attitude adequacy ( $p$ -value = 0.54) compared with the type of study field. The odds of diagnostic ability adequacy was found to be 7.76 times more in dental than in medical student (Table 4).

The spearman correlation test revealed no significant statistical correlation between knowledge and attitude scores, knowledge and diagnostic ability scores and attitude and diagnostic ability score among the medical and dental students (Table 5).

Most of the dental (74.1%) and medical (43.0%) respondents recommended to have a functional laboratory within the department for the required capacity development to be able to diagnose, treat and prevent oral cancer. 25.9% dental and 30.0% medical students suggested mandatory continuing education programs while, 11.1% dental and 27.0% medical students suggested to update university syllabus for capacity development. Less than 2.0% of the dental respondents recommended to focus the classes on clinico-practical aspects, an individual opportunity to interact with oral cancer patients clinically and get a practical demonstration on screening procedures. Similarly, 1.0% of the medical respondent recommended to have more clinical posting in the department of dentistry.

## DISCUSSION

Present study revealed that more than 70.0% of both dental and medical students were found to have knowledge about the clinical appearance of early lesion of oral cancer. This finding is comparatively lower than that of 90% score of dental students found by Gunjal *et al.*<sup>16</sup> It has been found that 90.7% dental and 93.0% medical students mentioned lateral border of tongue as the commonest site of oral cancer which was comparatively higher than that of only 47.7% medical and 86.4% dental students identified tongue as the commonest site for oral cancer.<sup>16</sup> Carter and Ogden<sup>15</sup> found that Oral Medicine and Oral Surgery were the most selected proposed points of referral whereas present study showed 97.0% medical and 96.3% dental students would refer a case of suspected oral malignancy to the Oral and Maxillofacial Pathologists. Human Papilloma Virus infection was identified as a risk factor for development of oral cancer by both dental (96.3%) and medical (83.0%) students in this study, which was like the results of previous studies.<sup>13,24</sup>

A low self-evaluation score on knowledge and skill required for diagnosis, treatment and prevention of oral cancer was found which corroborates with the results of earlier studies, dental students (24.1%) and medical students (22.0%).<sup>14,25,26</sup> This may be due to a lack of adequate exposure to the clinical cases.

Present study revealed an adequate positive attitude of both dental and medical



respondents towards the referral, risk factor review, advocacy for routine examination and recommended treatment of oral cancer, the findings of which is parallel with previous studies.<sup>15,16</sup> The reason of not screening oral cancer for themselves was 32.0% of in dental and 16.0% in medical was obscure, which needs further studies.

In this study, around 95.0% of medical and dental students would advise their friends and family to go for routine screening for oral cancer which was far better than the findings of Gunjal *et al* where 67.9% medical and 35.4% dental students reported never informing their friends and family about the risk factors of oral cancer.<sup>16</sup>

It has been found that dental (92.6%) students were found more regular to examine patient's oral mucosa as compared to medical (57.0%) students routinely during their clinical posting which supports the results of earlier studies.<sup>15,16,26,27</sup>

The comparative limited exposure of medical (10.0%) than dental (31.5%) students to examine patients with precancerous lesion found in this study was similar to Carter and Ogden<sup>15</sup> but against the finding of Subedi and Shrestha.<sup>14</sup> The limited clinical exposure to medical student might be due a limited duration of the posting of medical students in dental department. It has also been recorded that majority of dental students despite their more clinical exposure to the oral cancer patients, do not get chance to deal with the cancer patients completely. This might be due to referral of oral cancer patients to cancer hospital nearby. It can be recommended that an arrangement for clinical postings of both medical and dental students in cancer hospitals should be made to adequately expose the students to oral cancer.

Very few of the study populations have prepared oral cytological smear, performed oral biopsy, and had an opportunity for tissue processing. Yet slightly higher percent of dental students have seen oral cancerous lesion under microscope than the medical students. This could be because opportunities for clinical teaching regarding oral cancer for medical undergraduates may present during clinical attachments in ENT, Plastic surgery, or Clinical oncology while they lack proper clinical postings in the dental OPD.<sup>15</sup> These differences among the dental and medical students might be associated with different teaching styles and prioritizing of afore-mentioned practice.

There was no statistically significant difference in median knowledge and attitude score among

medical and dental students, but a significant difference was found in diagnostic ability score. BDS students had greater diagnostic ability regarding oral cancer than the medical students. Lack of proper clinical exposure, short clinical posting in the dental department and referring the oral cancer patients to the cancer hospitals without consulting properly with the dentists could be the reason behind this.

The recommendations made in this study for development of capacity of dental and medical students including establishment of functional laboratory within the department, mandatory continuing education program, updating of university syllabus, focusing the classes on clinico-practical aspects, individual opportunity to interact with oral cancer patients clinically, getting a practical demonstration on screening procedures and having more clinical posting in the department of dentistry authenticates with earlier studies.<sup>1,14</sup>

In Conclusion, the incidence of oral cancer has been rising world-wide. It is important for both dental as well as medical students who are the future doctors of the nation to have adequate knowledge, attitude, and diagnostic ability of oral cancer. This study showed adequate level of knowledge and attitude of oral cancer on both dental and medical students, but the dental students had higher diagnostic ability of oral cancer than the medical students. Upgrading the syllabus and focusing on clinical postings in dental department were among the few recommended points by the students to develop their capacity in adequate diagnosis of oral cancer.

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