

# Assessment of Oral Health Awareness among Non-Clinical Dental Student in Lucknow City Uttar Pradesh: A Cross-Sectional Questionnaire Study

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**Abstract:- Introduction:** .Good Oral health awareness among dental students have a positive influence on attitude and behaviour of their patient pertaining to oral health and reduces oral negligence among the people of the society.

**Aim :** To assess oral health awareness among undergraduate Dental Student in Lucknow city Uttar Pradesh .

**Materials and methods :** A total of 200 dental students in their preclinical year were selected for the study. Out of which 100 students were selected from BDS 1<sup>st</sup> year and 100 students were selected from BDS 2<sup>nd</sup> year . A closed ended questionnaire on oral health awareness which was prepared online was used to collect data. SPSS(Statistical Package For Social Sciences) Software version 21.0 was used for statistical analysis. Descriptive data was presented in frequency and percentage .Chi square test was used to compare level of oral health awareness and year of study . A p-value <0.005 was considered statistically significant.

**Results:** 72.05% BDS 2<sup>nd</sup> year students responded correctly to all oral health awareness questions and 55.08% BDS 1<sup>st</sup> year students responded correctly to the same . Dental students had less knowledge on oral cancer as only 26% of BDS 1<sup>st</sup> year and 41% of BDS 2<sup>nd</sup> year student were aware that most common site of oral cancer is tongue and 28% of BDS 1<sup>st</sup> year student and 43% of BDS 2<sup>nd</sup> year student were aware that squamous cell carcinoma is the most common form of oral cancer. There was no statistically significant differences between their responses on oral cancer awareness (p>0.005)

**Conclusion:** It is concluded from the present study that BDS 2<sup>nd</sup> year students have good oral health knowledge and more oral health awareness in comparison to BDS 1<sup>st</sup> year students. But both year students possessed poor knowledge and awareness on oral cancer .

**Keywords:-** Oral Health Awareness, Knowledge, Dental students .

## I. INTRODUCTION

Oral health is defined as an oral status that is devoid of any diseases which is responsible for normal function of mouth .[1] In 2016, the Federal Dental International (FDI) Dental World Federation redefined the oral health as multifaceted that includes various functions such as ability to smell, touch, taste, chew, swallow, smile, speak, reflects a

lot of emotions by various facial expressions without producing discomfort, pain, and disease of the craniofacial region. [2,3] Oral diseases reflect poor oral health and negligence and poor oral health can have an adverse impact on overall quality of life. [4] Oral diseases alter the ability to eat and drink, swallow, maintain proper nutrition, smile, and communication . Oral problems are commonly seen among general population hence it is considered as a major “public health problem.” [4] With a population of 1.3 billion, India has more people than Europe, more than Africa and more than the entire Western Hemi-sphere. [5] India is a country of diverse ethnic groups belonging to different geographical areas with variations in their cultural beliefs and perceptions . Majority of them reside in rural areas and they are the most unaware group in relation to oral health awareness. Various oral diseases occur due to oral negligence and due lack of adequate awareness and knowledge. India has 310 dental colleges which are distributed in an uneven number. [6] A few states like Karnataka are having more number of dental colleges in comparison to some other states like Bihar, Gujarat, etc. [7]. India’s dentist to population ratio is 1:10,000 in urban areas and one dentist per 1.5 lakh people in the rural areas which suggests an insufficient ratio. [8] There is a disparity between the demand of oral health professionals and availability of dental professionals to provide treatment . According to the World Health Organization ideal Dentist-population ratio is 1:7500. [6] There is a strong evidence suggesting that the oral health knowledge and awareness of dental students differs among bds 1<sup>st</sup> year and bds 2<sup>nd</sup> year students .bds 1<sup>st</sup> years students are mainly taught medical subjects and only some portion of dental subjects in comparison to bds 2<sup>nd</sup> year students where major curriculum involves dental subjects ,that is one of the major reason for the difference in their level of oral health awareness. The oral health attitude, level and behaviour of dental students vary in different countries and cultures. [9] Rural areas are facing large shortage of dentist. By virtue of profession , dentists play a major role in oral health promotion and making patients, family, and society aware of preventive measures that can prevent the oral disease at initial stage before the disease has occurred and treatment modalities available for oral diseases. Therefore it is important that dentist should inculcate among themselves sufficient oral health knowledge since this is a diverse and advancing field hence updating knowledge is necessary to fulfil the need of the population. [10] Thus the aim of the study was to assess oral health awareness among undergraduate Dental Student in Lucknow city Uttar Pradesh .

## II. METHODOLOGY

The present cross – sectional study was done to assess oral health awareness among B.D.S 1<sup>st</sup> year and 2<sup>nd</sup> year students of Babu Banarasi Das College of Dental Sciences Lucknow. All the students of BDS 1<sup>st</sup> year and BDS 2<sup>nd</sup> year were included in the study. A total of 200 students ,100 students from BDS 1<sup>ST</sup> Year and 100 students from BDS 2<sup>nd</sup> year Babu Banarasi Das College of Dental Sciences, BBDU , Lucknow were included in the study. List of BDS 1<sup>ST</sup> AND 2<sup>nd</sup> year Dental Students , their email-id, whatsapp number was obtained from the Administrative office of Babu Banarasi Das College of Dental Sciences, BBDU, Lucknow .A questionnaire survey was conducted among BDS 1<sup>st</sup> and BDS 2<sup>nd</sup> Year Dental students of Babu Banarasi Das College of Dental Sciences Lucknow. Relevant Demographic Details along with questions on oral health awareness were included in the study. A 20 variable , structured, self - administered , closed ended questionnaire was prepared in electronic media to assess the oral health awareness among BDS 1<sup>ST</sup> and 2<sup>nd</sup> Year dental students. Questionnaire related to oral health awareness was prepared in electronic media. A link to access and fill the questionnaire was generated and was shared with the dental students through various social media communication . The questionnaire consisted of 2 parts. The first part consisted of filling of general information such as age ,gender and year of study .The second part consisted of 20 questionnaire related to oral health awareness, out of which five questions were related to dental caries awareness ,five were related to periodontal disease awareness ,five were related to oral cancer awareness and five were related to malocclusion awareness. A pilot study was conducted among 40 dental students to check the feasibility of the study and to access the relevance and content validity of the questionnaire . Cronbach analysis was done to check the reliability of the questionnaire. The value of Cronbach was calculated as 0.70. All the students who participated voluntarily and submitted the complete forms were included in the study. Students not willing to participate in the study or submitted incomplete questionnaire were excluded from the study .Ethical clearance was obtained from Institutional Ethical Committee of Babu Banarasi Das College of Dental Sciences , BBDU, Lucknow .Verbal consent was obtained from all the subjects participating in the study.

### ➤ Statistical Analysis

The results are presented in frequency and percentage .The Chi square test was used to compare the categorical variable that is level of oral health awareness and year of study. All the analysis was done in SPSS 20.0 version(Chicago , Inc ,USA).

## III. RESULTS

A total of 200(100%) subjects participated in the study .Out of which 100 subjects were from BDS 1<sup>st</sup> year and 100 subjects were from BDS 2<sup>nd</sup> year.. In BDS 1<sup>st</sup> year 17(17%) were males and more than half of the subjects 83(83%) were females . In BDS 2<sup>nd</sup> year out of 100 study subjects , 16(16%) were males and more than half of the study subjects 83(83%) were females. Out of which maximum no of males 9(9%) and females 53(53%) were >20 years of age . ( Figure 1) 66% of BDS 1<sup>st</sup> year students and 87% of Bds 2<sup>nd</sup> year agreed that Fluorides has anticaries action, there was statistically significant difference between their response of BDS 1<sup>st</sup> year and BDS2<sup>nd</sup> year students (p <0.05). (Figure 1) . 26% of BDS 1<sup>st</sup> year students agreed that *most common site of oral cancer is tongue* , 62 % disagreed to it. 12 % were unaware about it , 41 % of BDS 2<sup>nd</sup> year agreed to it , 50% disagreed to it and 9% were unaware about it. There was statistically significant difference between BDS 1<sup>st</sup> year and BDS 2<sup>nd</sup> year students response (p value= **0.024**) in context to this question . 28% of BDS 1<sup>st</sup> year students and 43 % of Bds 2<sup>nd</sup> year student agreed to that *Squamous cell carcinoma is the most common form of oral cancer* There was statistically significant difference between their response (p value= **0.026**) . 61% of BDS 1<sup>st</sup> year students 80% of Bds 2<sup>nd</sup> year agreed to that *Malocclusion leads to loss of aesthetic and functional harmony* . There was statistically significant difference between response (p value= **0.003**) . 55% of BDS 1<sup>st</sup> year students and 77% of BDS 2<sup>nd</sup> year students disagreed to that *Malocclusion is a self- correcting anomaly hence requires no treatment*. There was statistically significant difference between their response (p value= **0.001**) . 55% of BDS 1<sup>st</sup> year and 76% of BDS 2<sup>nd</sup> year students disagreed to that *Malocclusion get transmitted from mother to foetus*. There was statistically significant difference between their response (p value= **0.003**). 65% of BDS 1<sup>st</sup> year and 75% of BDS 2<sup>nd</sup> year students disagreed that to that *Surgical treatment is the only treatment option for malocclusion*. There was no statistically significant difference between their response (p value= **0.122**) . (Table 1 , Figure 2)

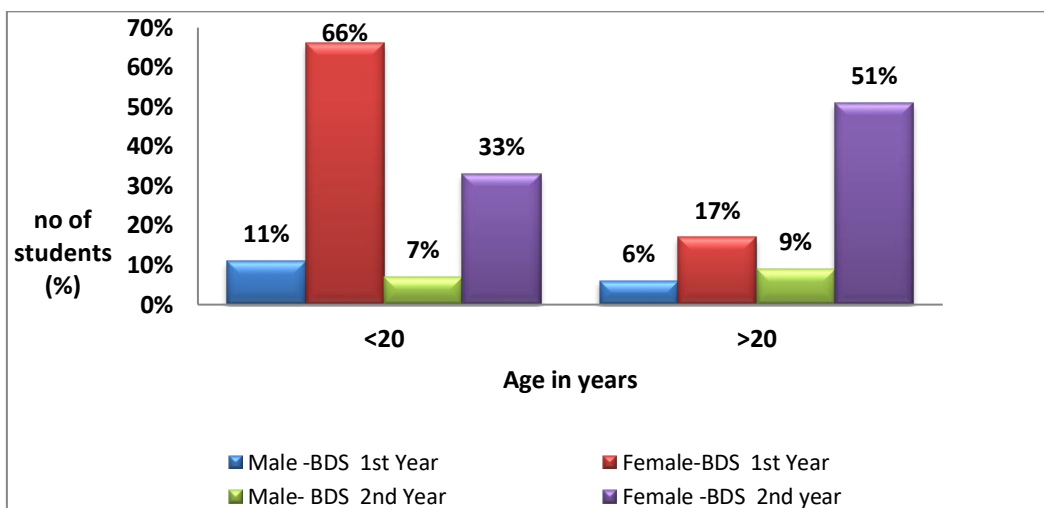


Fig 1 : Distribution of Study Participants according to age , gender and year of study

Table 1: Response of study population to various questions to assess oral health awareness according to year of study

Questions	BDS 1 <sup>st</sup> year				BDS 2 <sup>nd</sup> Year						Chi square value		p-value	
	Response				Response									
	Agree		Disagree		Don't Know		Agree		Disagree		Don't Know			
	no	%	No	%	no	%	No	%	No	%	No	%		
Q1.Dental Caries is a contagious disease	22	22	74	74	4	4	14	14	82	82	4	4	1.864	0.172
Q2.Frequent intake of sugar containing food in between meals is more cariogenic than amount of sugar consumed.	75	75	19	19	6	6	80	80	17	17	3	3	0.7168	0.397
Q3.Fluorides has anticaries action	66	66	29	29	5	5	87	87	8	8	5	5	12.2653	0.001
Q4. Sealant is effective in prevention of pit and fissure caries in newly erupted molars.	40	40	57	57	3	3	47	47	49	49	4	4	0.9968	0.318
Q5.Dental caries is a complex disease but can be prevented by adopting healthy oral health behaviour.	57	57	37	37	6	6	65	65	30	30	5	5	1.3451	0.246
Q 6.Periodontitis leads to loss of tooth	66	66	28	28	6	6	70	70	27	28	3	3	0.3676	0.544
Q7.Periodontal disease have plaque as major etiological factor	68	68	29	29	3	3	79	79	19	19	2	2	3.1061	0.078

<i>Q8.Periodontitis is always associated with old age</i>	29	29	68	68	3	3	13	13	83	83	4	4	6.0819	0.013
													0.01366	
<i>Q 9.In Periodontitis brushing of teeth should be avoided</i>	39	39	58	58	3	3	17	17	80	80	3	3	11.3137	0.000
<i>Q 10.periodontal disease leads to loosening of gums</i>	57	57	38	38	5	5	77	77	20	20	3	3	9.0456	0.002
													0.002633	
<i>Q11.Oral cancer occurs only in older people</i>	37	37	57	57	6	6	13	13	84	84	3	3	17.5261	0.001
													0.00002834	
<i>Q12 Tobacco is the only risk factor for oral cancer</i>	22	22	69	69	9	9	23	23	67	67	10	10	0.0919	0.761
													0.7618	
<i>Q 13. Early diagnosis of oral cancer improves oral recovery</i>	61	61	31	31	8	8	82	82	10	10	8	8	10.8208	0.001
													0.001004	
<i>Q 14.Most common site of oral cancer is tongue.</i>	26	26	62	62	12	12	41	41	50	50	9	9	5.0499	0.024
							50		9	9			0.02463	
<i>Q 15Squamous cell carcinoma is the most common form of oral cancer</i>	28	28	61	61	11	11	43	43	49	49	8	8	4.9132	0.026
							49	49	49				0.02665	
<i>Q 16Malocclusion leads to loss of aesthetic and functional harmony</i>	61	61	27	27	11	11	80	80	8	8	12	12	8.6789	0.003
							8						0.003219	
							12							

<i>Q 17.Malocclusion is a self-correcting anomaly hence requires no treatment</i>	36	36	55	55	9	9	12	12	77	77	11	11	10.784	0.001
							77	77					0.0010	
							11	11					24	
<i>Q 18.Malocclusion get transmitted from mother to foetus</i>	38	38	55	55	7	7	18	18	76	76	6	6	8.7912	0.003
							76	76						
							6	6						
<i>Q 19.Surgical treatment is the only treatment option for malocclusion</i>	22	22	65	65	13	13	16	16	75	75	9	9	2.3809	0.122
							75	75					0.1228	
							9	9						
<i>Q 20.Malaligned teeth are difficult to clean leading to poor oral hygiene</i>	65	65	23	23	12	12	66	66	23	23	11	11	0.0221	0.881
							23	23					0.8818	
							11	11						

P<0.005= statistically significant

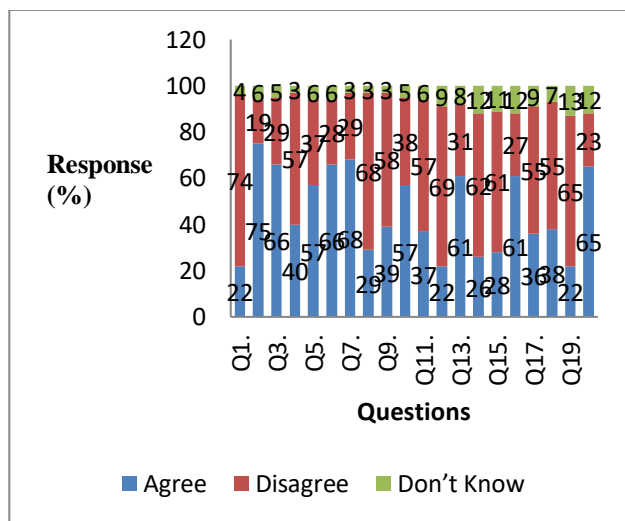


Fig 2 : Response of BDS 1<sup>st</sup> year students to various questions to assess oral health awareness according to year of study

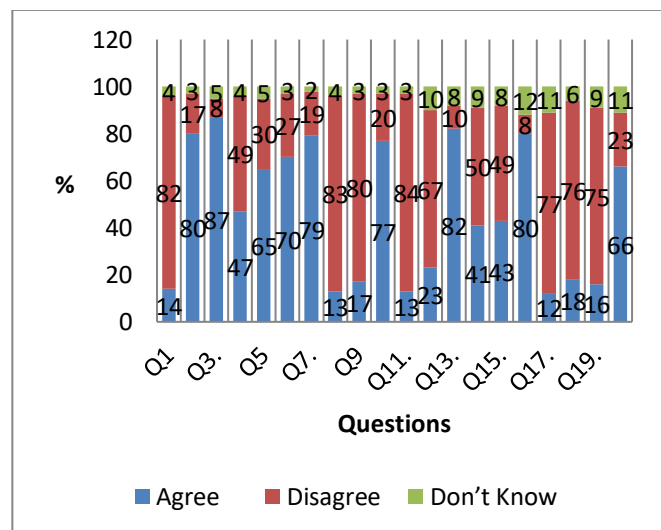


Fig 3 : Response of Bds 2<sup>nd</sup> year students to various questions to assess oral health awareness according to year of study

#### IV. DISCUSSION

It is important for a oral health professional to acquire information at grass root level pertaining to oral health, along with adequate knowledge about preventive procedures and to promote self-preventive behaviour among their patients .<sup>[9]</sup> .74% students from BDS 1<sup>st</sup> year considered that dental caries is a non -contagious disease and 82% students from BDS 2<sup>nd</sup> year considered the same . .75% of BDS 1<sup>st</sup> year students believed that frequent intake of sugar containing food in between meals is more cariogenic than amount of sugar consumed and 80% students from BDS 2<sup>nd</sup> year also considered it as an important factor in caries causation in comparison to amount of sugar consumed .. The findings of the present study was similar to the study conducted by Nilchian, F et al<sup>[14]</sup> . 66% of students from BDS 1<sup>st</sup> years and 87% from BDS 2<sup>nd</sup> year were aware about the anticaries action of Fluoride. The finding of the study is similar to the study conducted by Ola B. Al-Batayneh et al<sup>[15]</sup> . 91.1% of students who believed that fluoride was beneficial to teeth maximum. 40% students in BDS 1<sup>st</sup> year believed that sealant is effective in prevention of pit and fissure caries in newly erupted molars , 47% of BDS 2<sup>nd</sup> year students considered the same . Yerrapothu RM et al conducted a study in which 75.1 percent of dental students thought sealants were effective against caries.<sup>[16]</sup> which was higher than the current study's findings.57% of BDS 1<sup>st</sup> year students believed that dental caries can be prevented by adopting healthy oral health behaviour though it is a complex disease, 66% of BDS 2<sup>nd</sup> year believed the same , . This is similar to the findings of the study conducted by Nassar HM et al<sup>[17]</sup> .66% of BDS 1<sup>st</sup> year students agreed that Periodontitis leads to loss of tooth and 70% of BDS 2<sup>nd</sup> year students considered the same . . In a study conducted by Alzammam N et al (58.9%) of dental students were aware that periodontitis is a disease of supporting tooth structure and leads to loss of tooth which was lesser in comparison to the findings of the present study .<sup>[18]</sup> 68% of BDS 1<sup>st</sup> year considered plaque as major etiological factor in periodontal disease and 79% of BDS 2<sup>nd</sup> year agreed to this. The findings of the present study is similar to the the study conducted by Al-Zareae BK et al .<sup>[19]</sup> 58% of BDS 1<sup>st</sup> year and 80 % of BDS 2<sup>nd</sup> year student disagreed that in periodontitis brushing of teeth should be avoided . The findings of the study were similar to the study conducted by Penmetsa GS et al<sup>[20]</sup> 57% of BDS 1<sup>st</sup> year students believed that periodontal disease leads to loosening of gums and 77% of BDS 2<sup>nd</sup> year students agreed to it .. The findings are similar to the study conducted by Susmitha E et al.<sup>[21]</sup> 68% of BDS 1<sup>st</sup> year believed that Periodontitis is not always associated with old age and 83% of BDS 2<sup>nd</sup> year considered the same . The findings of the study was similar to the study conducted by Bader K. Al-Zareae et al<sup>[19]</sup> and Susmitha E et al<sup>[21]</sup> 57 % of BDS 1<sup>st</sup> year student considered that oral cancer can affect anyone with no age predilection and hence is not a disease of old age and 84 % of BDS 2<sup>nd</sup> year students considered the same. The findings of the study is similar to the study conducted by Rawal M et al 67% of the dental students had an opinion that the risk of oral cancer increases with age.<sup>[22]</sup> In BDS 2<sup>nd</sup> year basic theoretical aspects on oral cancer is taught in subjects like oral pathology which is taught both

in BDS 2<sup>nd</sup> and BDS 3<sup>rd</sup> year leading to greater knowledge and awareness on oral cancer among BDS 2<sup>nd</sup> year students in comparison to BDS 1<sup>st</sup> year students .The findings of the study was similar to the study conducted by Keser G et al .<sup>[23]</sup> , Only 26% of BDS 1<sup>st</sup> year students agreed that most common site of oral cancer is tongue and 41 % of BDS 2<sup>nd</sup> year students agreed to it . Both BDS 1<sup>st</sup> year students and BDS 2<sup>nd</sup> year students lack knowledge pertaining to the most common site of oral cancer as more than 50% responded incorrectly .. There was no statistically significant difference between their responses( $p=0.024$ ).The oral cavity is exposed to inhaled and consumed carcinogens progressively , hence it is the most common site for the development of malignancy in head and neck region . The most common site of origin of malignant transformation of the oral cavity is the anterior two thirds of the tongue. <sup>[24]</sup> In a similar study conducted by Shilpa G et al in which 86.7 dental students were aware that most common site of oral cancer is tongue which was greater in comparison to the present study .<sup>[25]</sup>28% of BDS 1<sup>st</sup> year students agreed that Squamous cell carcinoma is the most common form of oral cancer and 43% of BDS 2<sup>nd</sup> year students considered the same. There was no statistically significant difference between their responses( $p=0.026$ ). Squamous cell carcinoma (OSCC) is the most common form of oral carcinoma, occurring up to 80-90% of all neoplasms of the oral cavity.<sup>[26]</sup>There was no statistically significant difference between their responses( $p=0.026$ ) .The level of awareness among dental students on squamous cell carcinoma as the most common form of oral cancer was less in comparison to a similar study done by Gomes SV et al in which 38.25% of BDS 1<sup>st</sup> year student and 55.56% of BDS 2<sup>nd</sup> year students were aware that squamous cell carcinoma (OSCC) is the most common form of oral carcinoma.<sup>[26]</sup>In response to question on malocclusion , 61% of BDS 1<sup>st</sup> year students agreed that malocclusion leads to loss of aesthetic and functional harmony and 80% of BDS 2<sup>nd</sup> year students agreed to the same. The findings of the study is similar to the study conducted by Jadav C et al.<sup>[27]</sup>55% of BDS 1<sup>st</sup> year students disagreed that malocclusion is a self- correcting anomaly and considered it requires proper treatment and 77% of BDS 2<sup>nd</sup> students believed the same. The findings of the study is similar to the study conducted by Geethika Babu et al .<sup>[28]</sup>

#### V. CONCLUSION

Oral health is a reflection of an individual's overall health because many systemic diseases manifest in the oral cavity first. As a result, maintaining oral hygiene is an important part of daily life making knowledge of oral tissues essential for everyone.BDS1<sup>st</sup> year and BDS 2<sup>nd</sup> year dental students possessed adequate oral health knowledge and awareness as more than 50% students responded correctly to different oral health awareness questions covering different oral diseases. But BDS 2<sup>nd</sup> year students have good knowledge in comparison to BDS 1<sup>st</sup> year students , as 72.05% BDS 2<sup>nd</sup> year students responded correctly to all oral health awareness questions and 55.08% Bds 1<sup>st</sup> year students responded correctly to the same .On Question related to most common site of oral cancer is tongue , only 26% of Bds 1<sup>st</sup> year and 41% of Bds 2<sup>nd</sup> year student were aware about it.

Only 28% of Bds 1<sup>st</sup> year student and 43% of Bds 2<sup>nd</sup> year student were aware that squamous cell carcinoma is the most common form of oral cancer. In comparison to other oral diseases BDS 1<sup>st</sup> year and BDS 2<sup>nd</sup> year have less knowledge on oral cancer.

### LIMITATIONS OF THE STUDY

- Convenience sampling technique was used for selecting the study participants which can create bias .
- For social acceptability that being a dental students they should possess good oral health awareness could have led to variation in their self- perceived perception and response .
- As self -administered questionnaire was used . to assess oral health awareness this could lead to bias result.

### RECOMMENDATION

It is recommended that CDE(Continuing Dental Education) programs , seminars , guest lectures on topics related to oral diseases at regular intervals should be for undergraduate dental students to sharpen and update their knowledge which should be supplemented by power point presentations and clinical demonstrations for better understanding.

### REFERENCES

- [1]. Kumar H, Behura SS, Ramachandra S, Nishat R, Dash KC, Mohiddin G. Oral health knowledge, attitude, and practices among dental and medical students in eastern India - a comparative study. *J Int Soc Prev Community Dent*. 2017;7(1):58–63.
- [2]. Glick M, Williams DM, Kleinman DV, Vujicic M, Watt RG, Weyant RJ. A new definition for oral health developed by the FDI world dental federation opens the door to a universal definition of oral health. *J Public Health Dent*. 2017;77(1):
- [3]. Baiju RM, Peter E, Varghese NO, Sivaram R. Oral health and quality of life: current concepts. *J Clin Diagn Res*. 2017;11(6).
- [4]. Sujatha BK, Yavagal PC, Gomez MS. Assessment of oral health awareness among undergraduate Medical Students in Davangere city: A cross-sectional survey. *J Indian Assoc Public Health Dent* 2014;12:43-6.
- [5]. Huab C, Sharma OP. India's population reality: reconciling change and tradition. Available at [http://www.prb.org/pdf06/61.3IndiasPopulationReality\\_Eng.pdf](http://www.prb.org/pdf06/61.3IndiasPopulationReality_Eng.pdf). (Last accessed on March 4, 2020)
- [6]. Dagli N, Dagli R. Increasing Unemployment among Indian Dental Graduates - High Time to Control Dental Manpower. *J Int Oral Health*. 2015 Mar; 7(3): i-ii.
- [7]. Jain H, Agarwal A. Current scenario and crisis facing dental college graduates in India. *J Clin Diagn Res*. 2012;3824:1892
- [8]. Vundavalli S. Dental manp power planning in India: current scenario and future projections for the year 2020. *Int Dent J*. 2014; 64(2):62-7.
- [9]. Polychronopoulou A, Kawamura M, Athanasouli T. Oral self-care behaviour among dental school students in Greece. *J Oral Sci* 2002;44:73-8.
- [10]. Singh MS, Tuli AK. A comparative evaluation of oral hygiene practices, oral health status, and behavior between graduate and post-graduate dentists of North India: An epidemiological survey. *J Int Soc Prev Community Dent* 2013;3:19-24.
- [11]. Usman S, Bhat SS, Sargod SS. Oral health knowledge and behavior of clinical medical, dental and paramedical students in Mangalore. *J Oral Health Community Dent* 2007;1:46-8
- [12]. Maatouk F, Maatouk W, Ghedira H, Ben Mimoun S. Effect of 5 years of dental studies on the oral health of Tunisian dental students. *East Mediterr Health J* 2006;12:625-31
- [13]. Davidovic B, Jankovic S, Ivanovic D, Grujicic I. Oral health assessment among dental students. *Serbian Dent J* 2012;59:141-4.
- [14]. Nilchian, F et al. "Evaluation of Isfahan's Dental Students' Awareness about Preventive Dentistry." *Journal of dentistry (Shiraz, Iran)* vol. 15,1 (2014): 1- 5.
- [15]. Al-Batayneh, O.B., et al. (2014) Oral Health Knowledge and Practices among Diverse University Students with Access to Free Dental Care: A Cross-Sectional Study. *Open Journal of Stomatology*, 4, 135-142.
- [16]. Yerrapothu RM, Bhaskaran MK. Knowledge analysis of pit and fissure sealants among the dental students of South India. *J Int Soc Prevent Communit Dent* 2018;8:508-12.
- [17]. Nassar, H.M. Dental Caries Preventive Considerations: Awareness of Undergraduate Dental Students. *Dent .J.* 2020, 8, 31.
- [18]. Alzammam N, Almalki A. Knowledge and awareness of periodontal diseases among Jordanian University students: A cross-sectional study. *J Indian Soc Periodontol*. 2019;23(6):574-579.
- [19]. Zarea BKAL , "Oral Health Knowledge of Periodontal Disease among University Students", *International Journal of Dentistry*, vol. 2013,
- [20]. Penmetsa GS, Singh S, Gadde P, Teja RG, Bhaskar UR. Periodontal health awareness and self-perceived halitosis among various professional students of West Godavari District of Andhra Pradesh. *J Indian Assoc Public Health Dent* 2017;15:378-82
- [21]. Susmitha , Radhika , Kumar A, Assessment of knowledge about periodontal disease among a group of health care professionals in chennai city: a questionnaire study , *Asian Journal of Pharmaceutical and Clinical Research*. 2015 ; 8(6).
- [22]. Rawal M, Malusare PC, PatilSoman B , Awareness and Knowledge of Oral Cancer among Dental Practitioners of Bhopal, India - A Cross- Sectional Study. *Int J Oral Dent Health* 2018 ; 4:056.
- [23]. Keser G, Pekiner FN. Assessing Oral Cancer Awareness Among Dental Students. *J Cancer Educ*. 2019;34(3):512-518.

- [24]. Arrangoiz R, Cordera F, Caba D, Moreno E, de Leon EL, Oral tongue cancer: Literature review and current management. *Cancer Rep Rev* 2018
- [25]. Gunjal S , Gowda D, Pateel S , Lim RZS , Yong LL, Wong HZ , Assessing oral cancer awareness among dental and medical students of a Malaysian private university, *International Dental Journal* 2020 ; 70(1), 62-69.
- [26]. Pires FR, Ramos AB, Oliveira JB, Tavares AS, Luz PS, Santos TC. Oralsquamous cell carcinoma: clinicopathological features from 346 cases from a single oral pathology service during an 8-year period. *JAppl Oral Sci.* 2013; 21(5):460-467.
- [27]. Vasconcelos S , Gomes et al , Knowledge on oral cancer among dentistry students at Federal University of Maranhão , *Rev. odontol.*2015 ; 44(1)
- [28]. Chandulal J et al , Dental student's perception of malocclusion and omparison with layman in Hyderabad, *International Journal of Scientific Research* 2019 ;8(1)
- [29]. Katiyar R, Singh GK, Mehrotra D, Singh A. Surgical-orthodontic treatment of a skeletal class III malocclusion. *Natl J Maxillofac Surg.* 2010;1(2):143-149.
- [30]. Agarwal R. Knowledge, attitude and perception of orthodontic treatment among dental students. **International Journal of Dental Research** 2017 ; 6(1) : 3-5.