

RESEARCH ARTICLE

## Attitude, Knowledge and Practice Towards Oral Hygiene Among Dental Students and Associated Groups of Institution During COVID-19

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### Abstract

**Objective:** The improvement of both one's oral and general health depends in large part on one's knowledge of oral health. The primary goal of the Indian dental health profession is to increase knowledge and public awareness of oral hygiene practices. The goal of the study is to understand how dentistry students and related individuals feel about maintaining their oral health in the current COVID environment. **Methodology:** A total of 460 dental students and 46 associated groups of VDC participated in this cross-sectional survey. The mean age was 21 years, with 91 men (19.3%) and 369 women (80.7%). Questionnaire of 12 were prepared by the author on attitude, knowledge & practice regarding oral health & COVID-19 and distributed to obtain information from the participants through Google forms. **Results:** Both the student body and the institute's affiliated groups have a responsible approach regarding oral health and understand its significance during pandemics. Associate members (75%) and first- and fourth-year students (90%), respectively, had the lowest and greatest percentages of respondents to the poll. Statistical significance for the questions on importance of oral hygiene and the requirement for awareness programs were seen with p values 0.007 and 0.028 respectively. There was no statistical significance for knowledge and practice related responses. A level of significance set at 0.005. **Conclusion:** All of the students and affiliated groups were made to feel safer, healthier, and more responsible thanks to the institution's stringent infection control procedures and orientation programmes about the value of dental hygiene during COVID-19.

### Keywords

Associate Groups, Covid-19, Dental Students, Oral Hygiene.

## INTRODUCTION

According to the World Health Organization (WHO), oral health is an important indicator of

overall health, well-being and quality of life. It covers a range of diseases and conditions, including tooth decay, periodontal (gum) disease, tooth loss, oral cancer, dental trauma, noma, and

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birth defects such as cleft lip and palate (WHO, 2022). Oral health is an important part of systemic health (Küçükyıldız and İşiner Kaya, 2018), and many studies show that there is a relationship between oral diseases and systemic chronic diseases (Bui et al., 2019).

Additionally, Sampson et al. He stated that improving oral hygiene in Covid 19 patients can reduce the risk of developing Covid 19 complications. Knowledge, beliefs, values, attitudes, skills, finances, materials, time, family members, friends, co-workers, opinion leaders, and even healthcare professionals themselves are among the factors that can influence all of these health behaviors (Park's, 2021). One of the ways to determine the importance and perspective people attach to oral health is to evaluate their knowledge, attitudes and behaviors.

Periodontal disease is one among the other oral diseases affecting the large population groups all over the world. Prevalence of periodontal disease in India is at steady rise due to poor oral health awareness among the people (Avasthi et al., 2022; Kukreja et al., 2021).

Dental issues are currently one of the largest issues in both industrialised and underdeveloped nations. Oral hygiene is the practise of maintaining a tidy, clean oral cavity, which will aid in preventing the development of microbial plaque on the teeth and subsequently aid in preventing the onset and advancement of any disease. In order to maintain personal oral hygiene and oral health, one needs be aware of oral hygiene practises (Raza et al., 2020; Bharath et al., 2022)

Although there have been studies on the relationship between dental and medical students' oral health, there have been very few studies on dental students' awareness of this relationship and the linked group of persons employed by the school. (Alawia et al., 2021; Almulhim et al., 2021). For dental health professionals, the current COVID-19 scenario and the necessity of oral hygiene awareness and practise are their top concerns. During this pandemic, it is also important to raise awareness and understanding among the affiliated group members of the institution (Batra et al., 2021)

This study is therefore initiated in VDC with a prime focus to determine the attitude, knowledge, and awareness levels during COVID 19 pandemic among the dental students and

associated groups working in VDC, Bhimavaram, West Godavari District, Andhra Pradesh, India.

## MATERIALS AND METHODS

Between January 2022 and June 2022, an observational study was conducted in the Department of Periodontics and Implantology at Vishnu Dental College. The Institutional Review Board approved it on 20-9-2021 with reference number VDC/RP/2021/81. The research was carried out by following the Helsinki Declaration of 1975, as updated in 2013. This cross-sectional observation study investigated the importance of infection control protocols and orientation programs followed at the institution level based on the World Health Organization and Dental Council of India guidelines and assessed the attitude, knowledge, and practice of oral hygiene among the dental students and associated members in the present COVID situation.

The study's goals are to: a) understand the dental students' attitudes, knowledge, practice, and maintenance of oral health in the current COVID situation; and b) understand the associated group members of the dental institution's attitudes, knowledge, practice and maintenance of oral health in the current COVID situation. c) To assess the impact of institution-level infection control procedures and education campaigns regarding the value of oral hygiene during COVID-19.

### **Demographic Data**

A total of 460 dental students and 46 associated groups of VDC participated in this cross-sectional survey. The mean age was 21 years, with 91 men (19.3%) and 369 women (80.7%). Questionnaire prepared and distributed to obtain information from the participants through Google forms. 12 questions on attitude, knowledge and awareness regarding oral health during COVID-19 were prepared and responses for the same were recorded.

### **Inclusion criteria**

1. All the BDS & PG students those who had taken admission into VDC will be included in the study.
2. All the associated groups like Receptionists, nurses, assistants and those who are working for VDC will be included in the study.

**Exclusion criteria**

1. All the non-dental professional students in Vishnu Campus

2. The students and associated groups from VDC who are not willing to participate.

**RESULTS**

The parameters assessed were the type of stricter infection control protocols followed and type of orientation programs conducted about the importance of oral hygiene programmed during COVID-19 at the institution level and how far these measures helped all the students and

associated groups in the institute to be safer, healthier and responsible during COVID pandemic will be assessed. Out of 506 participants, 1st, 2nd, 3rd, and 4th BDS students responded were 18%, 17%, 16%, and 18% respectively. The interns and associated group members (Receptionists, Nurses, Office staff and Assistants) were 16% and 15%. Out of 506 participants, 80.7% were female and 19.3% were males. (Table. 1)

**Table 1.** Demographic characteristics of participants

Characteristics	Students N(%)	Associated groups N(%)
Age	21±2	35±7
<b>Gender</b>		
Male	91 (19.3%)	9 (19.6%)
Female	369 (80.7%)	37 (80.4%)
<b>Education</b>		
1 BDS	100 (21.7%)	Receptionists 10 (21.7%)
2 BDS	86 (18.7%)	Nurses 16 (34.8%)
3 BDS	91 (19.8%)	Office staff 6 (13.04%)
4 BDS	92 (20%)	Assistants 14 (30.43%)
Interns	91 (19.8%)	
<b>Infected with Covid-19 disease</b>		
Yes	162 (35%)	28 (60%)
No	298 (65%)	18 (40%)

**Responses related to the attitude**

99% of participants agreed that maintaining good dental hygiene is just as important as taking other precautions in daily life. When questioned about the types of daily oral hygiene practises? For the purpose of maintaining of oral hygiene throughout the critical moments of COVID, 21.8% (111) individuals used only a toothbrush, 35.9% (183) people used a toothbrush and mouth wash, 5.7% (29) participants used a toothbrush and floss, and 36.7% (187) participants combined a toothbrush, mouth wash, and floss.

When asked about their opinion on oral hygiene maintenance at present COVID-19 situation? 93.3% (476) participants responded that maintaining oral hygiene is as important as maintaining general health. 48.8% (249) participants contacted dental surgeon or dental health care professional for appropriate information on maintaining oral hygiene especially in this situation. Whereas 51.1% (261) responded that they had not contacted any health

professionals on maintaining oral hygiene. When asked about the need to educate people about oral hygiene measures to follow during the times of pandemic, 99.2% (506) participants responded that they all need to educate about the types of measures to be followed during COVID critical times. (Table. 2)

**Responses related to the knowledge**

Out of 506 participants, 98% of individuals responded that there is a necessary need to change tooth brush after recovery from COVID-19. When asked about the scarcity of oral hygiene equipment in the present COVID-19 situation: 43.3% (221) reported the unavailability of oral hygiene equipment during critical times of COVID. Both the dental students and associate personnel of dental institute were aware of the symptoms associated with COVID-19 infection. Among the symptoms, most of them said that they knew fever, cough, sore throat and diarrhea and running nose in descending order will be will be associated with COVID-19 infection.(Table. 2)

**Responses related to the oral hygiene practice**

Out of 506 participants, 99% of individuals were aware of the fact that poor dental health is linked to many serious diseases and conditions. The measures followed by the dental students and associated persons to prevent transmission from known or suspected COVID-19 patients were: frequent hand cleaning (480), quarantine and social distancing (467), wearing face mask (455.5), routine cleaning and disinfecting surfaces (442.5), protective clothing (430), and avoiding unnecessary transporting (420). (Table. 2)

When asked about the type of dental problem they faced during the present pandemic situation: most of the participants responded the following problems in decreasing order: 16.1% (82) complained about the cavities, 6.5% (33) faced gum problems, 4.1% (21) complained of tooth pain, 2.9% (15) complained of bad breath. Others in few percentages also complained of repair in braces, sensitivity, food accumulation and impaction. 66.7% (340) participants had not faced

any dental problems among both students and supporting staff groups.88.2% of individuals felt that online awareness programs are required for maintaining oral hygiene in the current position (Table. 2).

The Nurses, receptionist, office staff and assistant’s attitude, knowledge and awareness were high among nurses and least among assistants in decreasing order. Out of 460 students, 162 were infected with COVID-19 and 298 were not infected. Whereas out of 46 associated groups, 28 were infected and 18 were not infected during COVID-19 health crisis (Table. 1) Among interns, 4th, 3rd, 2nd, and 1st year dental students, interns, 4th and 3rd year students attitude, knowledge and awareness towards oral hygiene during COVID-19 were high compared to 2nd and 1st year students (Table. 2) Among the students and associated groups, the students attitude, knowledge and awareness towards oral hygiene during COVID-19 were high when compared to the associated groups (Table. 2).

**Table 2.** Responses related to the attitude, knowledge and awareness towards oral hygiene during COVID-19.

Groups	Response	Attitude			Knowledge			Practice		
		Yes (%)	No (%)	May be (%)	Yes (%)	No (%)	May be (%)	Yes (%)	No (%)	May be (%)
Group 1 (BDS)	1 (100)	100 (100%)	0 (0%)	0 (0%)	98 (98%)	2 (2%)	0 (0%)	98 (98%)	2 (2%)	0 (0)
	2 (86)	84 (98%)	2 (2%)	0 (0%)	84 (98%)	2 (2%)	0 (0%)	84 (98%)	2 (2%)	0 (0)
	3 (91)	89 (98%)	2 (2%)	0 (0%)	91 (100%)	0 (0%)	0 (0%)	91 (100%)	0 (0%)	0 (0)
	4 (92)	92 (100%)	0 (0%)	0 (0%)	92 (100%)	0 (0%)	0 (0%)	92 (100%)	0 (0%)	0 (0)
	Interns (91)	91 (100%)	0 (0%)	0 (0%)	91 (100%)	0 (0%)	0 (0%)	91 (100%)	0 (0%)	0 (0)
Group 2	Receptionists (10)	5 (50%)	4 (40%)	1 (10%)	7 (70%)	3 (30%)	0 (0%)	4 (40%)	3 (30%)	3 (30)
	Nurses (16)	11 (69%)	2 (13%)	3 (18%)	12 (74%)	2 (13%)	2 (13%)	14 (87%)	0 (0%)	2 (13)
	Office staff (6)	1 (17%)	3 (50%)	2 (33%)	1 (17%)	2 (33%)	3 (50%)	0 (0%)	3 (50%)	3 (50)
	Assistants (14)	2 (15%)	9 (64%)	3 (21%)	3 (21%)	8 (58%)	3 (21%)	1 (7%)	12 (86%)	1 (7)

\*BDS- Bachelor of Dental Surgery

Gender wise comparison done for attitude, knowledge and practice related responses towards oral hygiene during COVID-19. Responses to all the 12 survey questions were tabulated in Table-3, Table-4 and Table-5.

Conducting educational programmes resulted in a complete awareness of hygiene maintenance

and its relevance to general health among dental students and associated group members. The impact of educational program can well be demonstrated by the number of students and associated groups infected with COVID-19 after the educational programs conducted by the institution.

**Table 3.** Gender wise comparison of attitude towards oral hygiene during COVID-19.

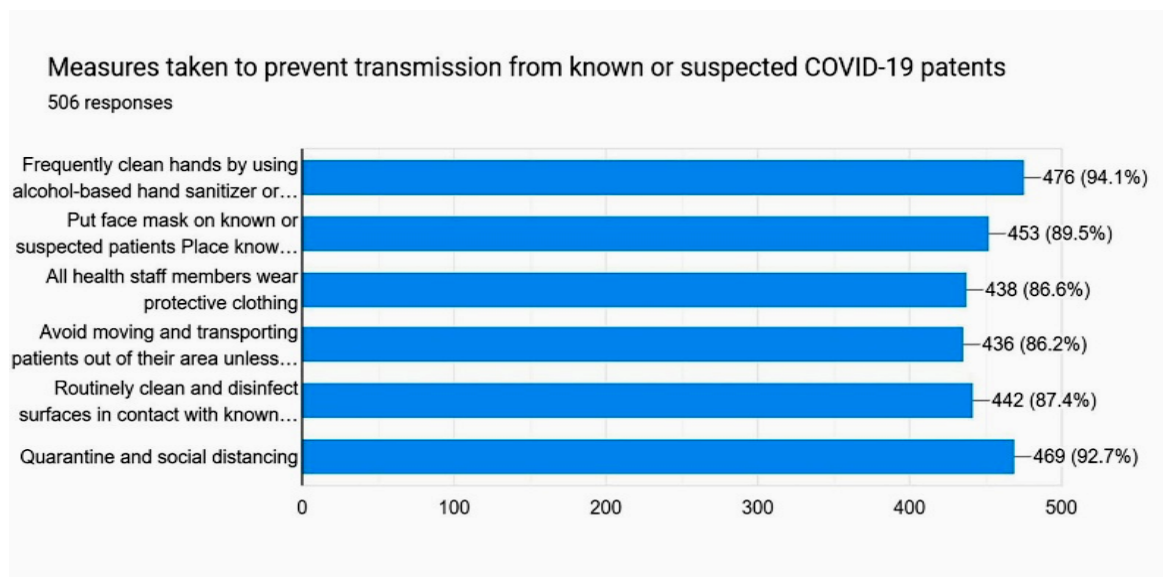
Question	Gender	Responses N( %)	P value
In your opinion, Do you think in the present COVID-19 situation maintaining oral hygiene is as important as general hygiene?	Female (403)	May be- 23 (5.7%) No- 3 (0.7%) Yes- 377 (93.5%)	0.007
	Male (103)	May be- 3 (2.9%) No- 5 (4.9%) Yes- 95 (92.2%)	
In your opinion, Did you contact any dental surgeon or dental health care professional for appropriate information on maintaining oral hygiene especially in this situation?	Female (403)	May be- 32 (7.9%) No- 175 (43.4%) Yes- 196 (48.6%)	0.834
	Male (103)	May be- 10 (9.7%) No- 43 (41.7%) Yes- 50 (48.5%)	
Do you think is it necessary to educate People about oral hygiene?	Female (403)	May be- 1 (0.2%) No- 1 (0.2%) Yes- 401 (99.5%)	0.335
	Male (103)	May be- 1 (1%) No- 1 (1%) Yes- 101 (98.1%)	
Do you feel any scarcity of oral hygiene equipment in the present COVID 19 situation?	Female (403)	May be- 98 (24.3%) No- 135 (33.5%) Yes- 170 (42.2%)	0.064
	Male (103)	May be- 14 (13.6%) No- 40 (38.8%) Yes- 49 (47.6%)	
Do you want to insist on the importance of maintaining oral hygiene to your Friends and family members?	Female (403)	May be- 4 (1%) No- 4 (1%) Yes- 395 (98%)	0.200
	Male (103)	May be- 0 (0%) No- 3 (2.9%) Yes- 100 (97.1%)	
Do you feel that online awareness programmes are required on maintaining oral hygiene measures in the present situation?	Female (403)	May be- 125 (31%) No- 7 (1.7%) Yes- 271 (67.2%)	0.028
	Male (103)	May be- 24 (23.3%) No- 6 (5.8%) Yes- 73 (70.9%)	

**Table 4.** Gender wise comparison of knowledge towards oral hygiene during COVID-19.

Question	Gender	Responses N(%)	P value
In your opinion, do you feel oral hygiene practices are as important as general measures in day-to-day life?	Female (403)	No- 2 (0.5%); May be- 1 (0.2%); Yes- 400 (93.3%)	0.296
	Male (103)	No- 2 (1.9%); May be- 0 (0%); Yes- 101 (98.1%)	
In your opinion, are you aware of the fact that poor dental health is linked to many serious diseases and conditions?	Female (403)	May be- 14 (3.5%) No- 2 (0.5%) Yes- 387 (96%)	0.685
	Male (103)	May be- 5 (4.9%) No- 1 (1%) Yes- 97 (94.2%)	
What is the dental problem you are facing in the present situation?	Female (403)	Cavities- 63 (15.6%) Gum problems- 29 (7.2%) Others- 42 (10.5%)	0.388
	Male (103)	None- 269 (66.7%) Cavities- 19 (18.4%) Gum problems- 9 (8.7%) Others- 5 (6.9%) None- 68 (66%)	

**Table 5.** Gender wise comparison of practice towards oral hygiene during COVID-19.

Question	Gender	Responses (No./%)	P value
In your opinion, What kind of oral hygiene measures do you follow on a daily basis?	Female (403)	Tooth brushing- 86 (21.3%) Tooth brushing & Mouth wash- 154 (38%) Tooth brushing & Flossing- 20 (5%) All of the above- 144 (35.7%)	0.145
	Male (103)	Tooth brushing- 25 (24.3%) Tooth brushing & Mouth wash- 28 (27.2%) Tooth brushing & Flossing- 9 (8.7%) All of the above- 41 (39.8%)	
Do you have a habit of Brushing twice a day?	Female (403)	No- 169 (41.9%) Yes- 234 (58.1%)	0.082
	Male (103)	No- 53 (51.5%) Yes- 50 (48.5%)	
What is the source of information you are using to update about oral hygiene measures in the present situation?	Female (403)	Social media- 75 (18.6%) Google- 117 (29.0%) WHO website- 47 (11.7%) Don't follow- 34 (8.4%) Dentists- 130 (32.3%)	0.061
	Male (103)	Social media- 29 (28.2%) Google- 22 (21.4%) WHO website- 6 (5.8%) Don't follow- 12 (11.7%) Dentists- 34 (33.0%)	



**Figure 1.** Explains the impact of educational programs on attitude, knowledge and practice related responses towards oral hygiene during COVID-19

The number and percentages of students and associated group members infected with COVID-19 even after following the guidelines were 162 (35%) and 28 (60%) respectively.

## DISCUSSION

The present investigation evaluated the attitudes, knowledge, and awareness levels of dentistry students and related individuals towards the COVID-19 epidemic. It was conducted during the early stages of the epidemic. The bulk of participants in this study (80.7%) were female dentists, with men accounting for 19.3% (Bennardo et al., 2020). The approaching COVID-19 pandemic is a once-in-a-lifetime event that will be defined by a deluge of social, economic, and health difficulties. To address the aforementioned issues and develop fair expectations about the disease's future course, impacted communities must have a sufficient awareness of COVID-19 (Jafari et al., 2021).

It is impossible to exaggerate the significance of preventative oral health knowledge, behaviour, and practise. In order to assess preventative oral health knowledge, practise, and behaviour among the residents of Bhimavaram, Andhra Pradesh, during Covid-19, attempts were made in this study (Sezgin et al., 2020). Bipin et al., 2020 did a research to learn about the general population's understanding and practice of oral hygiene, as well as the adult population's oral health maintenance in the current COVID condition. Obtaining dental treatment has been

challenging in the present COVID situation, as the epidemic worsens by the day. At home, cleanliness is essential. About 200 persons in total were invited to participate in the study. Twenty questions on the survey were intended to gauge respondents' attitudes towards and awareness of oral hygiene in the current COVID context. The findings revealed that while [81%] of the research population believed dental care is more important than other medical treatments, [50.8%] of this particular age group felt oral hygiene was just as important as general measures. These findings are consistent with the current research (Maheshwaran et al., 2020).

We were motivated to conduct this study because Nitika et al., 2012 study on dental health awareness, attitude, oral health-related behaviors, and habits among Rajasthan's adult population provided the knowledge we needed to evaluate preventative oral health awareness and oral hygiene practices in patients using the outpatient clinic at Vyas Dental College and Hospital (VDCH), Jodhpur. The study, which involved the random selection of 500 patients between the ages of 15 and 50, discovered the urgent need for extensive educational campaigns to promote excellent oral health and teach knowledge about sound oral hygiene practices (Jain et al., 2012)

Srivastava et al., performed a research to analyze DHCPs' knowledge, attitudes, and practices (KAP) on COVID-19. A total of 318 people freely responded to the poll. The majority of DHCPs had modest expertise (51.6%), a good attitude (92.1%),

and sufficient practice standards (86.5%). They did, however, exhibit a good attitude and an adequate level of practice since they followed rules set by numerous international and national health bodies. The same motivation for following the instructions aided the dental students and associates of this institute in practicing oral hygiene during the COVID-19 epidemic. (Srivastava et al., 2020)

Surprisingly, with the exception of the impoverished socioeconomically deprived people, oral health standards in India are improving. Furthermore, during the COVID-19 pandemic, two-thirds of patients had never seen a dentist.

### Conclusion

During the COVID epidemic, however, all professionals must continue to take preventative measures. When compared to the dental institution's affiliated personnel, conducting educational programmes resulted in a complete awareness of hygiene maintenance and its relevance to general health among dental students.

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### Conflict of interest

The authors declare no conflict of interest. No financial support was received.

### Ethics Statement

The institutional review board approved with reference number VDC/RP/2021/81 dated 20-09-2021. The research was carried out by following the Helsinki Declaration of 1975, as updated in 2013.

### Author Contributions

Study Design, MKP and PKK; Data Collection, KST and GSP; Statistical Analysis, MKP, SGNVS; Data Interpretation, KST and PKK; Manuscript Preparation, MKP, GSP and RKS; Literature Search, SGNVS, RKS, PKK and KST. All authors have read and agreed to the published version of the manuscript.

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