

**Knowledge and perceptions about Covid-19 among the undergraduate and postgraduate dental students in east Godavari district: A cross-sectional survey**

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**Citation of this Article:** Dr. Santhi Priya Bhupathi, Dr. Boppana Naveen Kumar, Dr. Vinnakota Narayana Rao, Dr. Palapati. Akhil, Dr. Gandham. Anvesh, Dr. Injeti. Sandhya Rani, “Knowledge and perceptions about Covid-19 among the undergraduate and postgraduate dental students in east Godavari district: A cross-sectional survey”, IJDSIR- November - 2021, Vol. – 4, Issue - 6, P. No. 368 – 376.

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**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

**Abstract**

**Background:** Coronavirus disease has become a global public health concern due to its potentially fatal effects. Dental students should gain a thorough understanding of this disease, as the aerosols produced during dental procedures and the dental equipment pose a high risk of transmission of Coronavirus disease 2019 (COVID-19).

**Objectives:** This study aims to assess the knowledge and perception about COVID-19 among the undergraduate and postgraduate dental students in East Godavari District.

**Methods:** A cross-sectional study was conducted among 750 dental students which included undergraduates,

interns, and postgraduates in East Godavari District. Data was collected using a pretested questionnaire distributed electronically through google forms. The data collected was entered and analyzed using SPSS Version 23. Chi-square test was used to evaluate the level of association among categorical variables with a significance level of  $p < 0.05$ .

**Results:** Approximately 80% of the participants completed the survey. Among them, 46.9% of final year BDS students, 35.4% of the interns and 17.7% of the post graduate students correctly identified novel coronavirus (COVID-19), and only 142 (40%) final year BDS students, 153(43.1%) intern students and 60 (16.9%)

postgraduate dental students know about the incubation period of COVID-19. Among the study subjects, 48 (32.9%) of the final year BDS students, 75 (51.4%) interns and 23 (15.8%) believed that wearing a surgical mask is an effective defense against COVID-19. A proportion of 54 (32.7%) final year BDS students, 80 (48.5%) interns, 31 (18.8%) responded that vaccines are not effective in preventing the spread of COVID-19.

**Conclusion:** The study concludes that the knowledge and perceptions about COVID-19 among dental students in East Godavari District were adequate.

**Keywords:** COVID-19, Infection, Dental students, transmission

### Introduction

Coronaviruses (CoV) are a broad family of viruses that are known to cause serious and sometimes fatal pulmonary diseases such as Severe Acute Respiratory Syndrome (SARS-) and Middle East Respiratory Syndrome (MERS-)<sup>1</sup>. In 2002–03, SARS-CoV first identified as pneumonia in Guangdong, China, which later turned into life-threatening respiratory failure.<sup>1</sup> In late December 2019, a cluster of patients were admitted to hospitals in Wuhan with a primary diagnosis of pneumonia of an unknown etiology. These patients were linked to a seafood and wet animal wholesale market in Wuhan, Hubei Province, China.<sup>2</sup> Coronavirus disease caused by SARS COV2 represents the causative agent of a potentially fatal disease which is of global public health concern. Based on the large number of infected people that were exposed to the wet animal market in Wuhan City, it is suggested that COVID – 19 is most likely of zoonotic origin i.e., transfer of infection from animals to human.<sup>3</sup> According to the International Committee on Taxonomy of Viruses (ICTV), SARS-CoV-2 is of the same species as SARS-CoV, but of a different strain. Therefore, given the name COVID-19 by the World

Health Organization (WHO). Human-to-human transmission could also occur through direct contact and respiratory droplets<sup>4,5</sup>. The proportion of people infected has rapidly increased since the WHO report on the 31st of March, 2020. The incubation period of COVID-19 is 1–14 days.<sup>5,6</sup> The majority of clinical manifestations (80%) are mild and may include various symptoms, such as fever, dry cough, shortness of breath, and fatigue. More severe presentations of COVID-19 are the development of sputum production, headache, hemoptysis, diarrhea, and vomiting<sup>1</sup>. The initial symptoms would appear as fever, cough, shortness of breath, trouble breathing, pain or pressure in the chest, fatigue, myalgia or arthralgia, confusion, bluish lips or face<sup>7,8</sup>.

Standard recommendations to prevent infection spread include maintaining hand hygiene, covering mouth and nose when coughing or sneezing, avoid close contact with anyone showing symptoms of respiratory illness as well as to prevent unprotected contact with farm or wild animals.<sup>10,11</sup> Considering the overall frequency of the global transmission of the disease, dental professionals are at the greatest risk of getting infected because they are exposed to body fluids like blood, saliva, and multifarious aerosol/ droplets during dental procedures. Studies have shown that direct contact with oral fluids, mucus membrane, contaminated surfaces/instruments, or inhalation of aerosol/droplets from infected individuals during dental procedures favours the transmission of this disease. Following this, dental students in training should be more aware of this critical situation and understand all standards of practice (SOPs).

Students must possess a basic knowledge about the novel Coronavirus and clear the myths about COVID-19. There is dearth of literature assessing the knowledge of dental students on COVID 19 disease.so, our study was planned with an aim to assess the knowledge and perceptions

about covid-19 among the undergraduate and postgraduate students in the East Godavari district.

### **Methodology**

**Study Setting And Study Design:** A cross-sectional study was conducted electronically using a “Google form” to obtain responses from the undergraduate, interns, and postgraduate dental students in East Godavari District during September and October 2020.

**Study Participants:** This study included 750 dental students, including final BDS, interns, and postgraduates from three dental colleges in East Godavari District.

**Ethical Considerations:** Ethical clearance was obtained from the Institutional Review Board of the college. We maintained the confidentiality of all study participants by making their information anonymous and requested them to respond to all questions.

### **Data Collection**

The data was collected through pretested questionnaire. The questions were formulated using reference material and information leaflets on COVID-19 developed by WHO and Center for Disease Control (CDC), USA. The questionnaire consisted of 31 close ended questions. It covered data on participant’s age, gender, educational qualification, and 28 knowledge-perception assessment questions were included (source of information -1 item, knowledge about COVID-19- 8 items, precautions and risk prevention - 5 items, and perceptions of COVID-19 - 14 items.

### **Data Analysis**

The responses generated from google sheets were coded and entered in Microsoft excel sheet. Descriptive statistics were applied to calculate proportions and frequencies. The chi-square test was used to investigate the level of association among study variables. A p-value of less than 0.05 was considered statistically significant.

Statistical analysis was performed using SPSS software for Windows version 23.0.

### **Results**

Out of 750 participants, 601 participants have participated and completed the questionnaire with a response rate of 80.0%. The majority of the students participated in this survey were undergraduate interns (n=249, 41.4%) and final year dental students (n= 248, 41.3%) followed by postgraduate dental students (n=104, 17.3%) (**Table 1**)

### **Sources of information**

Participants were also inquired about the source of valid and reliable information about COVID-19. The main source of information was social media (Facebook, WhatsApp, Instagram) followed by television (final years n = 112, (43%), interns n=104 (40.0%) The remaining participants reported that they got the information through print media (magazines, newspapers) and other sources. Few students obtained information from their college resources such as newsletters, posters, and guest lectures.

### **Knowledge about novel coronavirus**

Table 2 illustrates the knowledge about novel Coronavirus among the students Among the study participants, 46.9% of final year BDS students, 35.4% of the interns and 17.7% of the post graduate students correctly identified novel coronavirus (COVID-19), and only 142 (40%) final year BDS students, 153(43.1%) intern students and 60(16.9%) postgraduate dental students know about the incubation period of COVID-19. Among the study participants, 108 (41.5%) of the final BDS, 110 (42.3%) of the intern students and 42 (16.2%) postgraduate dental students knew that the old and very young people are more prone to COVID-19. Majority of the final year students, i.e., 204 (43%) responded correctly regarding the mode of transmission of COVID-19 followed by 191 (40.5%) intern students and 77(16.3%) postgraduate students. About 168 (46.3%) of

final year BDS students, 142(39.1%) of interns and 53 (14.6%) correctly identified that RT-PCR (Reverse Transcriptase Polymerase Chain Reaction) and Immuno fluorescent antigen detection assay are the diagnostic tests for COVID-19.

#### **Association of educational background and knowledge about COVID-19**

A high significant difference of COVID-19 was observed in the responses of the students between different years of study identifying the novel coronavirus, people prone to COVID-19, modes of transmission and diagnostic tests of COVID-19. Most of the students responded correctly were final year BDS and intern students. They were of the view that COVID-19 patients can remain asymptomatic over time ( $p < 0.01$ ). While considering the transmission route, the post-graduate dental students were found more conscious ( $p < 0.01$ ) about the transmission mode and the spread of infection.

#### **Perception about novel coronavirus**

Approximately 48(32.9%) of the final year BDS students, 75 (51.4%) interns and 23 (15.8%) believed that wearing a surgical mask is an effective defense against COVID-19, and 173 (42.1%) of final year undergraduate students, 162 (39.4%) interns and 76 (18.5%) post graduate students were not sure. A proportion of 154 (37.7%) final year BDS students, 184 (45.1%) interns and 70 (17.2%) post graduate students incorrectly believe it is not safe to receive packages from areas affected by the disease. Nearly half of the final year BDS students, i.e.,113 (49.6%) believe that vaccines are sufficient to prevent COVID-19 transmission whereas 54 (32.7%) final year BDS students, 80 (48.5%) interns, 31 (18.8%) rightly stated that vaccines are not effective in preventing the spread of COVID-19 in the present situation. Among the study subjects, 222 (39.9%) final year BDS students, 240 (43.2%) interns and 94 (16.9%) postgraduate dental

students had sufficient knowledge that proper hand washing before and after seeing each patient with soap and water reduce the risk of COVID-19 spread as well as many cross-infections. A total of 160 (37.9%) of the final year BDS, 192 (45.5%) interns and 70 (16.6%) responded that a thermal scanner could help to detect fever in a person infected with COVID-19. Among the study participants, (39.9%) final year BDS students, 240 (43.2%) interns and 95 (17.4%) postgraduate dental students among the study participants responded that all dental patients awaiting treatment should wear coverings/masks and 192 (39.9%) final year BDS students, 210 (43.7%) interns and 79 (16.4%) postgraduate students agreed that COVID-19 patients should be treated in a well-ventilated room or in a negative room (**Table 3**)

#### **Discussion**

Focusing the global burden and the mass media attention on the virus, it is important that dental students be aware of the risks and seriousness of COVID-19 infection. The present study has been designed to assess the knowledge and perceptions about covid-19 among the undergraduate and postgraduate students in the East Godavari district. Our study discovered that 43.3% of the students obtained knowledge about COVID-19 from social media. Similarly, a study carried out by Gohel K.H.et al. revealed that the participants' main source of information was social media (final year BDS students  $n = 112$  (43%), interns  $n = 104$  (40.0%), postgraduate dental students  $n = 44$  (16.9%) followed by television (final years  $n = 112$ , (43%), interns  $n=104$  (40.0%). Another survey conducted in Pakistan reported that social media (87.68%) remained the primary source of information among healthcare professionals.<sup>12</sup> Presently, a wide range of information is available on the internet, including unverified biased, deceptive information,

which can easily misguide the public. The focus should be on educating and providing authentic information to the dental students so that the right information could be conveyed to the community. About 46.9% of final year BDS students, 35.4% of the intern students and 17.7% of the post graduate students correctly identified novel coronavirus (COVID-19) and 142 (40%) final year BDS students, 153 (43.1%) intern students and 60(16.9%) postgraduate dental students know about the incubation period of COVID-19 among the study participants gave the correct answer about its incubation period. Information about the incubation period would be useful to identify the suspected cases and provide medical care at an early stage. In this study, 204 (82.2%) final year students, 191 (76.7%) intern students and 77(74.03%) postgraduate students knew about the modes of transmission of COVID-19. The findings were similar to the studies carried out by Bhagavathula et.al., Zhong BL et al., Abdelhafiz AS et al. which stated that 98.85%, 95.9%, and only 39% of respondents correctly recognized the transmission modes of novel Coronavirus.<sup>13,14,15</sup>

While this study highlights COVID-19 knowledge and perception, it also has certain limitations that need to be acknowledged as the student responses were not collected in a clinical setting under the supervision of investigators, but rather were self-assessed by students and secondly, the students from a dental science background were surveyed, so the results cannot be generalized to health care professionals.

### Conclusion

The study concludes that the knowledge and perceptions about COVID-19 among dental students from three dental colleges in East Godavari District were adequate. The current global pandemic situation demands substantial awareness about the clinical presentation, spread,

preventive measures, and management of COVID-19. There is a necessity of improving the presiding level of awareness for better protection and safety measures among dental students with high-risk exposure during this global pandemic situation. The dental colleges should be encouraged to conduct online courses, webinars, and educational campaigns to improve understanding and update dental students about current information on COVID-19.

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### Legend Tables

Table 1: Demographic characteristics of study participants (n = 601)

Characteristics		Participants(n)	Percentage (%)
Gender	Male	187	31.1
	Female	414	68.9
Educational qualification	Final year	248	41.3
	Interns	249	41.4
	Post graduates	104	17.3

Table 2: Knowledge about COVID-19 among study participants (n = 601).

Question		education			Chi-square	p-value
		final year	interns	postgraduate		
source of information	Social media	112 (43%)	104 (40.0%)	44(16.9 %)	12.458	0.052
	Television	88 (45.6%)	69 (35.8%)	36 (18.6%)		
	Print media	17 (42.5%)	16 (40.0%)	7 (17.5%)		
	College/institute	31 (28.7%)	60 (55.6%)	17 (15.7)		
which of the following is novel coronavirus	SARS-COV-2	109 (35.3%)	146 (47.2%)	54 (17.5%)	11.050	0.026 S
	2019 -n COV	33 (50%)	23 (34.8%)	10(15.2%)		
	BOTH	106 (46.9%)	80 (35.4%)	40 (17.7%)		
who are more prone to COVID-19?	the old and young	108 (41.5%)	110(42.3%)	42 (16.2%)	16.456	0.036 S
	people are generally susceptible	47 (46.5%)	32 (31.7%)	22 (21.8%)		
	young adults	6 (85.7%)	0 (0.0%)	1 (14.3%)		
	people with pre-existing diseases	87 (38.3%)	103 (45.4%)	37(16.3%)		
	I don't know	0 (0.0%)	4 (66.7%)	2 (33.3%)		
How does the COVID-19 Spread?	when a person sneezes or cough, droplets	18 (30.5%)	30 (50.8%)	11 (18.6%)	15.237	0.018 S
	inhalation of droplets/touching surfaces	26 (40.6%)	22 (34.4%)	16 (25.0%)		
	distance is less than 1 meter from the infected person	0 (0.0%)	6 (100.0%)	0 (0.0%)		
	all the above are correct	204 (43.2%)	191 (40.5%)	77 (16.3%)		
What are the diagnostic tests of COVID-19?	RT-PCR	73 (33.8%)	99 (45.8%)	44 (20.4%)	12.609	0.013 S
	Immuno fluorescent antigen detection assay	7 (31.8%)	8 (36.4%)	7 (31.8%)		
	BOTH	168 (46.3%)	142 (39.1%)	53 (14.6%)		

S – significant at  $p < 0.05$

Table 3: Perception about COVID-19 among study participants (n = 601).

Question		education			Chi-square	p-value
		final year	interns	postgraduate		
Wearing a surgical mask can protect from COVID-19?	yes	48 (32.9%)	75 (51.4%)	23 (15.8%)	14.313	0.006 HS
	no	27 (61.4%)	12 (27.3%)	5 (11.4%)		
	I don't know	173 (42.1%)	162 (39.4%)	76 (18.5%)		
Do you wear a gown?	always	15 (17.6%)	55 (64.7%)	15(17.6%)	63.427	0.000 HS
	no	109 (61.6%)	36 (20.3%)	32 (18.1%)		
	sometimes	124 (36.6%)	158 (46.6%)	57 (16.8%)		
Do you wear protective eyewear?	Always	80 (40.4%)	90 (45.5%)	28 (14.1%)	22.469	0.000 HS
	no	70 (56.5%)	30 (24.2%)	24 (19.4%)		
	Sometimes	98 (35.1%)	129 (46.2%)	52 (18.6%)		
Do you wear head cover?	Always	48 (35.3%)	67 (49.3%)	11 (15.4%)	19.429	0.001 HS
	no	75 (50.7%)	39 (26.4%)	34 (23.0%)		
	Sometimes	125 (39.4%)	143 (45.1%)	49 (15.5%)		
Receiving a package from areas where a case of covid-19 is reported	Yes	37 (42.0%)	39 (44.3%)	12 (13.6%)	15.592	0.004 HS
	No	154 (37.7%)	184 (45.1%)	70 (17.2%)		
	I don't know	57 (54.3%)	36 (24.8%)	22 (21.0%)		
Do you think vaccines are effective in preventing COVID-19?	yes	113 (49.6%)	87 (38.2%)	28 (12.3%)	15.552	0.004 HS
	no	54 (32.7%)	80 (48.5%)	31 (18.8%)		
	I don't know	81 (38.9%)	82 (39.4%)	45 (21.6%)		
Can an ultraviolet (UV)disinfection lamp kill the new coronavirus?	yes	59 (33.0%)	93 (52.0%)	27 (15.1%)	13.925	0.008 HS
	no	66 (41.8%)	58 (36.7%)	34 (21.5%)		
	I don't know	123 (46.6%)	98 (37.1%)	43 (16.3%)		
Are thermal scanners helpful in detecting fever in the infected people?	yes	160 (37.9%)	192 (45.5%)	70 (16.6%)	10.049	0.040 S
	no	51 (49.0%)	34 (32.7%)	19 (18.3%)		
	I don't know	37 (49.3%)	23 (30.7%)	15 (20.0%)		
proper handwashing before and after seeing each patient with soap and water reduce the risk	yes	222 (39.9%)	240 (43.2%)	94 (16.9%)	19.793	0.001 HS
	no	15 (88.2%)	0 (0.0%)	2 (11.8%)		
	may be	11 (39.3%)	9 (32.1%)	8 (28.6%)		



all dental patients awaiting treatment should wear coverings/masks	yes	215 (39.4%)	236 (43.2%)	95 (17.4%)	13.102	0.011 S
	no	12 (48.0%)	9 (36.0%)	4 (16.0%)		
	may be	21 (48.0%)	4 (36.0%)	5 (16.0%)		
COVID-19 patients should be treated in a well-ventilated room or in a negative room.	yes	192 (39.9%)	210 (43.7%)	79 (16.4%)	20.128	0.000 HS
	no	22 (62.9%)	2 (5.7%)	11 (31.4%)		
	may be	33 (39.8%)	37 (44.6%)	11 (15.7%)		

HS – Highly significant at  $p < 0.001$

S – Significant at  $p < 0.05$