Knowledge, Attitude and Practices towards COVID-19 among Undergraduate Students in a Medical College of Delhi

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Abstract

Background: Medical students play an important role in the prevention and control of COVID-19 by way of disseminating knowledge regarding COVID-19 among the people. It is affected by their knowledge, attitude and practices about the disease.

Objectives: To assess the knowledge, attitudes, and practices (KAP) towards COVID-19 in undergraduate medical students.

Methodology: A quick online survey was carried out among 316 participants with a self-designed, structured questionnaire in the form of goggle form. Cronbach's alpha of the study instrument was 0.71.

Statistical Analysis: Data were analyzed by SPSS, version 25. Chi-square test, Student's t-test, ANOVA and post hoc analysis were done.

Results: A total of 316 participants completed the survey questionnaire. The mean COVID-19 knowledge scorewas 18.82±2.27 and overall 90% had correct knowledge. Knowledge scores significantly ($p<0.05$) differed across age-groups and semesters. In post hoc analysis, mean knowledge score in 2nd semester students (18.11±2.55) was significantly ($p<0.05$) lower than that of 8th semester (19.56±1.66). Seventy percent respondents agreed that COVID-19 will finally be controlled,77.2% had confidence that India will win the battle against COVID-19, and 90% of the respondents agreed that hand washing with soap water will prevent them from getting the infection. 96.2% participants avoid crowded places, 95.2% participants wore face masks while going outside home and 97.5%frequently washed hands with soap and water.

Conclusion: In this study majority undergraduate students had good knowledge, showed optimistic attitude and appropriate practice towards COVID-19. However, there is need and scope for improving knowledge and practices so that every student adopts preventive and promotive measures against COVID-19.

Keywords: *Attitude, COVID-19, knowledge, lockdown, Practices, undergraduate students.*

Introduction

Coronavirus disease 2019 (COVID- 19) is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and case fatality rate of COVID-19 was 2.3% in China, much lower than those of SARS (9.5%), MERS (34.4%), and H7N9 (39.0%).[1-3]

The World Health Organization (WHO) declared it a public health emergency of international concern on January 30, 2020 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19.[4] On March 11, there were more than 118,000 cases in 114 countries, and 4,291 people had lost their lives globally

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and COVID-19 was declared as a pandemic by WHO.[5] In India, when there were 469 active cases of COVID-19, and 10 deaths Prime Minister ordered 21 days lockdown on 24th march 2020.[6]

The battle against COVID-19 is still continuing in India. People's adherence to these control measures are essential, which is largely affected by their knowledge, attitudes, and practices (KAP) towards COVID-19 in accordance with KAP theory. [7]

In this line the KAP towards COVID-19 of the health care worker is of far more important to make a visible dent in the ongoing pandemic. However, to be precise KAP study of the budding health care professionals (Medical students) are few, which justifies our study by contributing to scientific knowledge in understanding of COVID19 situation. Thus this study was undertaken to assess the knowledge, attitude, and practices (KAP) towards COVID-19 among undergraduate medical students in Maulana Azad Medical College, New Delhi, India.

Methodology

This cross-sectional survey was conducted from April 25 to May 25, 2020, one month after the nationwide lockdown in India (March 24th 2020). It was not feasible to do an interview during this lockdown period; so data was collected online. Using the students data base from institution, one-page questionnaire was posted/reposted to individual students and their groups on WhatsApp as a goggle link. Along with goggle link participant information sheet was also given describing a brief introduction on the background, objective, procedures, voluntary nature of participation, declarations of anonymity, confidentiality, and notes for procedure of filling in the questionnaire. Participants agreed to participate in the study were instructed to complete the questionnaire by clicking the link.

The Institutional Ethics Committee of Maulana Azad Medcal College, New Delhi approved our study protocol and procedures of informed consent before the survey. Participants had to answer a yes/no question to confirm their willingness to participate voluntarily. After confirmation of the consent, the participant was directed to complete the questionnaire.

Study Instrument: The questionnaire consisted of two parts: demographics and KAP. Demographic variables included age, gender, and current semester of MBBS.

According to guidelines for clinical and community management of COVID-19 by the Govt. of India[8] a COVID-19 knowledge questionnaire was developed by the authors. The questionnaire had 21 questions (Table 1): 4 regarding clinical presentations, 7 regarding routes of transmission, and 10 regarding prevention and control of COVID-19. These questions were answered on a true/ false basis with an additional "I don't know" option. A correct answer was assigned 1 point and an incorrect/ don't know was assigned 0 points. The total knowledge score ranged from 0 to 21, with a higher score denoting a better knowledge of COVID-19. The Cronbach's alpha coefficient of the knowledge questionnaire was 0.71 in our sample, indicating acceptable internal consistency. [9]

Attitude towards COVID-19 was assessed by using 3 questions about agreement on the final control of COVID-19, India's confidence in winning the battle against COVID-19 and agreement on frequent hand washing with soap and water from acquiring infection with COVID-19. Responses were recorded on "Agree", "disagree", and "I don't know" options. Respondents' practices were assessed by 3 behaviors in recent day (after start of the pandemic), going to a crowded place, wearing a mask when going out and frequent hand washing with soap and water. Responses were recorded using Yes/No options.

Statistical Analysis: Data analysis was conducted with IBM Statistical Package for Social Sciences (SPSS) Software version 25.0. Frequencies of correct knowledge answers and various attitudes and practices were described. Knowledge score, attitudes and practices of different persons according to demographic characteristics were compared with independent samples t-test, one-way analysis of variance (ANOVA), or Chi-square test as appropriate. Post hoc (Bonferroni) analysis was done to find out the mean difference by multiple comparisons. The statistical significance level was set at $p < 0.05$ (two-sided).

Results

A total of 316 participants completed the survey questionnaire. The Mean age was 20.29±1.59 years, range 18-27 years and 194 (61.4%) participants were male. Most of the respondents 122(38.6%) were studying in the 4th semester and 132(47.2%) were from the age group 19-20 years. Other parameters were given in **table 2**. The correct response to the knowledge questions (21

questions) on the COVID-19 varied from 56.3-99.4%. **(Table 1).**

Knowledge: The mean COVID-19 knowledge score was 18.82±2.27, minimum score obtained was 7 and maximum score was 21, suggesting an overall 90.4% (18.82/21*100) correct rate on this knowledge test. Knowledge scores significantly (P<0.05) differed across age-groups and semesters (**Table 2**). In post hoc analysis mean knowledge score of 2nd semester students (18.11±2.55) was significantly lower than the knowledge score of 8th semester (19.56±1.66).

Attitude: Majority of the respondents agreed that COVID-19 will finally be successfully controlled (69.9%). Rates of reporting "disagree" and "I don't know" were 12.7% and 17.4%, respectively. Majority of the respondents (77.2%) had confidence that India will win the battle against COVID-19, while 8.2% had no such confidence. Ninety percent of the respondents agreed that hand washing with soap water will prevent from getting the infection while, 3.8 percent participants reported "disagree" and 5.4% reported they don't know. The attitude towards the final success in controlling COVID-19 doesn't differ significantly across gender, age group, and semester of the students. Mean knowledge score of the participants did not differ significantly with attitude towards successful control and India's winning against Corona. Whereas, mean knowledge score of the participants differ significantly (p<0.05) across response agree, disagree, and I don't know in case of attitude towards hand washing with soap and water for prevention**. (Table 3).**

Practice: Practice of the participants towards COVID19 is given in the **table 4**. 96.2% participants did not practiced going to crowded places, 95.2% participants were wearing masks when going outside and Majority (97.5%) practiced frequent hand washing with soap and water. The practice during COVID-19 doesn't differ significantly across gender, age group, semesters and knowledge score of the students.

Table 1: Participants response on knowledge questions towards COVID-19 (n=316).

	Aspects of knowledge	**Correct Response**	
		n	**%**
Q1.	The key diagnostic features of COVID-19 are fever, cough, and difficulty in breathing.	299	94.6
Q2.	All persons with COVID-2019 will develop to severe cases.	305	96.5
Q3.	Those who are elderly, have chronic illnesses, are more likely to progress to severe cases.	312	98.7
Q4.	Early symptomatic and supportive care can help most patients recover from the infection.	302	95.6
Q5.	The COVID-19 virus spreads via respiratory droplets of infected individuals.	304	96.2
Q6.	Persons with COVID-2019 cannot infect the virus to others when a fever is not present.	304	96.2
Q7.	The COVID-2019 virus is transmitted through Mosquito bites.	301	95.3
Q8	The COVID-2019 virus transmitted through pet animals.	250	79.1
Q9.	The COVID-2019 virus is transmitted by eating of non-vegetarian foods.	250	79.1
Q10.	Isolation of people who are infected with the COVID-19 virus is effective ways to reduce the spread of the virus.	312	98.7
Q11.	Healthy people who have contact with someone infected with the COVID-19 virus should be quarantine in a proper place. In general, the period is 14 days.	313	99.1
Q12.	To prevent the infection by COVID-19, individuals should avoid going to crowded places such as market and malls.	314	99.4
Q13.	It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus.	291	92.1
Q14.	Frequent hand washing with soap and water; use of alcohol base hand rub are effective ways to prevent from getting infection with COVID-19.	311	98.4
Q15.	The COVID-2019 virus can be killed by taking hot water bath.	240	75.9
Q16.	The COVID-2019 virus can be killed by scanning of skin with UV radiations	178	56.3
Q17.	Corona virus can be prevented by application of charcoal powder on forehead.	284	89.9

	Aspects of knowledge	Correct Response	
		n	%
Q18.	Corona virus can be prevented by application of cow dung on the body	302	95.6
Q19.	Corona virus can be prevented by drinking of cow's urine.	304	96.2
Q20.	Haemophilus Influenza type b (Hib) vaccine can prevent COVID-2019	233	73.7
Q21.	Pneumococcal vaccine can prevent COVID-2019	238	75.3

Table 2: Knowledge score of the participants

Variables	Participants		Knowledge score	Test of significance		
	n	%	Mean±SD	t/F	df	P
Gender						
Male	194	61.4	18.79±2.15	3.487	314	>0.05
Female	122	38.6	18.87±2.45			
Age group (Years)						
18-19	108	43.2	18.37±2.29	4.723	2;313	<0.05
20-21	135	42.7	18.86±2.48			
≥22	73	23.1	19.41±1.62			
Semesters						
II	72	22.8	18.11±2.55	4.437	4;311	<0.05
IV	122	38.6	18.79±2.28			
VI	60	19.0	19.13±2.20			
VII	48	15.2	19.56±1.66			
INTERNS	14	4.4	18.86±1.87			

Table 3: Attitude of the participants

Variables	n	Successful control (Q1 of attitude)			India's winning (Q2 of attitude)			Hand washing in prevention (Q3 of attitude)		
		Agree	Disagree	I don't Know	Agree	Disagree	I don't Know	Agree	Disagree	I don't Know
Gender										
Male	194	129(66.5)	30(15.5)	35(18.0)	146(75.3)	20(10.3)	28(14.4)	174(89.4)	10(5.2)	10(5.2)
Female	122	92(75.4)	10(8.2)	20(16.4)	98(80.3)	6(4.9)	18(14.8)	113(92.6)	2(1.6)	7(5.7)
Age group (Years)										
18-19	108	79(73.1)	11(10.2)	11(16.7)	83(76.9)	10(9.3)	15(13.9)*	97(89.8)	3(2.8)	8(7.4)
20-21	135	99(73.3)	15(11.1)	21(15.6)	114(84.4)	5(3.7)	16(11.9)	124(91.9)	5(3.7)	6(4.4)
≥22	73	43(58.3)	14(19.2)	16(21.9)	47(64.4)	11(15.1)	15(20.5)	66(90.4)	4(5.5)	3(4.1)
Semesters										
II	72	55(76.4)	6(8.3)	11(15.3)	55(76.4)	5(6.9)	12(16.7)	63(87.5)	3(4.2)	6(8.3)
IV	122	82(67.2)	18(14.8)	22(18.0)	93(76.2)	11(9.0)	18(14.8)	108(88.5)	6(4.9)	8(6.6)
VI	60	46(76.7)	4(6.7)	10(16.7)	54(90.0)	2(3.3)	4(6.7)	58(96.7)	0(0.0)	2(3.3)
VII	48	32(66.7)	7(14.6)	9(18.8)	36(75.0)	5(10.4)	7(14.6)	44(91.7)	3(6.3)	1(2.1)

Variables	n	Successful control (Q1 of attitude)			India's winning (Q2 of attitude)			Hand washing in prevention (Q3 of attitude)		
		Agree	Disagree	I don't Know	Agree	Disagree	I don't Know	Agree	Disagree	I don't Know
INTERNS	14	6(42.9)	5(35.7)	3(21.4)	6(42.9)	3(21.4)	5(35.7)	14(100.0)	0(0.0)	0(0.0)
Mean Knowledge Score		18.98±2.16	18.63±2.08	18.31±2.73	18.95±2.15	18.65±2.34	18.22±2.75	18.94±2.07	19.00±2.04	16.59±4.06*

*Differ significantly

Table 4: Practice of the participants

Variables	n	Going to crowded place (Q1 of practice)		Wearing mask (Q2 of practice)		Practicing frequent hand washing (Q3 of practice)	
		Yes	No	Yes	No	Yes	No
Gender							
Male	194	10(5.2)	184(94.8)	185(95.4)	9(4.6)	187(96.4)	7(3.6)
Female	122	2(1.6)	120(98.4)	116(95.1)	6(4.9)	121(99.2)	1(0.8)
Age group (Years)							
18-19	108	4(3.7)	104(96.3)	105(97.2)	3(2.8)	106(98.1)	2(1.9)
20-21	135	3(2.2)	132(97.8)	125(92.6)	10(7.4)	132(97.8)	3(2.2)
≥22	73	5(6.8)	68(93.2)	71(97.3)	2(2.7)	70(95.9)	3(4.1)
Semesters							
II	72	4(5.6)	68(94.4)	69(95.8)	3(4.2)	70(97.2)	2(2.8)
IV	122	3(2.5)	119(97.5)	115(94.3)	7(5.7)	119(97.5)	3(2.5)
VI	60	2(3.3)	58(96.7)	57(95.0)	3(5.0)	60(100.0)	0(0.0)
VII	48	0(0.0)	48(100.0)	47(97.9)	1(2.1)	47(97.9)	1(2.1)
INTERNS	14	3(21.4)	11(78.6)	13(92.9)	1(7.1)	12(85.7)	2(14.3)
Mean Knowledge Score		17.67±3.11	18.87±2.22	18.81±2.25	18.93±2.63	18.82±2.26	18.75±2.76

Discussion

In this study, the mean knowledge score was 18.82±2.27, and overall correct rate was 90.4% on this knowledge test. Similar finding in knowledge test was reported from north India by Maheswari and colleagues.[10] Lower rate of correct response (74.5%) was reported from a study in Mumbai with different knowledge questions.[11] A community based study from China also reported similar findings in knowledge score, but in general population.[12]

We found no significant difference in knowledge score across gender which is expected from the students in any educational institution. However, knowledge score was significantly different in semester and age group of the students which may be due to the difference in knowledge score of the students across the semesters.

Positive attitude towards COVID19 was shown by majority of the students (7 out of 10) in our study whereas, Maheswari et al., 2020 reported optimistic response in 4 out of 5 medical students in north India. Nearly, 4 out of 5 participants believed that India will win battle against COVID- 19 and 9 out of 10 respondents believed the role of frequent hand washing in prevention of COVID 19 infection. No significant difference was present in attitude of the students with regards to gender, age group and semester. Attitude towards frequent hand washing in prevention of COVID19 infection was significantly influenced by mean knowledge score the participants. This may be taken as action point for enhancing positive attitude towards frequent hand washing in infection prevention in those with less Knowledge score. The positive attitude of medical students towards COVID-19, may be related to the stringent measures taken by Indian

government i.e. announcement of nationwide lockdown. Furthermore, enhanced knowledge base of medical students compared to the general population may have provided weightage.

Medical students seem very cautious and practice stringent measures to safeguard them from infection. Majority (96.2%) of participants did not go to crowded places, 19 out of 20 students wore masks when going out and 97.5% practiced frequent hand washing during the COVID-19 outbreak. Practice of the students did not differ with respect to gender, age group, semesters and knowledge score of the participants. In contrary to this study, study from Dehradun reported significant difference in practice among genders.[10]

In spite of having good knowledge score; overall 90.4% correct rate; optimistic attitude the current study still showed that 2.5% gap in hand washing, and 5% did not wore mask. These potentially risky behaviors need to be identified on priority basis and addressed by adopting proper behavioral change communication and counseling.

The strengths of our study were that participants invited for the study during critical period of COVID-19 pandemic when the students were not present in the campus, and specifically addressed the issue for budding health care professionals (medical students).

Response bias cannot be overruled in the current study as it was online survey. As Sample was taken from only one institution, it may be non-representative and hampers its generalization of the result to the other medical institutions in the country and to general population. Adequate assessment of attitude and practices by the online survey method was a difficult task and the authors acknowledge that too. Moreover, findings from the study could be tailored to create few action points for policy makers and educationists in the form of education model to enhance the knowledge of students as well as general populations to combat the ongoing pandemic. Also health promotional measures may be undertaken for a larger good.

Conclusion

In this study majority undergraduate students have good knowledge, majority showed optimistic attitude and appropriate practices towards COVID-19. Furthermore, good knowledge towards COVID-19, leads to positive attitude and appropriate practices. Therefore, there is need and scope for promoting health education programs for enhancing optimistic attitude and appropriate practices. Our study also showed that one out of 40 students not practiced hand washing and one in 20 students did not wear mask, which mandated for need of behavior change communication.

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Conflicts of Interest: Nil

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