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Original Research Article

Knowledge, attitude and preventive behaviours regarding COVID-19 infection among medical students of Solapur, Maharashtra

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ABSTRACT

Background: It is important for medical students to know about COVID-19 in order for them to be a well-versed future health workers. The aim of the study was to assess the knowledge, attitude, and practice regarding COVID-19 infection among medical students at government medical college in western Maharashtra. To study the knowledge, attitude and practice regarding COVID-19 infection among medical students and to find the association between KAP levels and demographic variables.
Methods: An observational descriptive study with cross sectional design was conducted during July 2021 on 400 Under Graduate medical students of a Government medical college.
Results: Out of 400 students 53%- female (212); 47%- male (188). Most of the students belong to Hindu religion 86.75% (347), rest Muslim 39 (9.75%), Christians 14 (3.5%). Overall, 92%, 81%, 90.5% of surveyed medical students had adequate knowledge, attitude and practice towards COVID 19 pandemic respectively.
Conclusions: In our study, students exhibited good knowledge, positive attitude, and sensible practices regarding COVID-19. Such KAP studies should be conducted across other medical college and we should educate our medical students so that we can use the help of medical students for management of mild covid cases if manpower crisis occurs.

Keywords: COVID 19, Knowledge, Attitude, Practice, Medical student, Western Maharashtra

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an acute respiratory disease caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China.[1] Since then, it has rapidly spread to more than 200 countries and has been declared a global pandemic by the WHO. As of 31 July 2020, there are more than 17.1 million positive COVID-19 cases recorded with 668,910 deaths globally.[2,3]

Being an emerging acute respiratory infectious disease, the primary mode of spread for COVID-19 is through the respiratory tract, by droplets, respiratory secretions, and direct contact.[4] The clinical features of COVID-19 vary from asymptomatic state to acute respiratory distress syndrome and multiorgan dysfunction. The common clinical features were found to be fever, cough, sore throat, headache, fatigue, headache, and breathlessness. By the end of the 1st week, the disease may progress to pneumonia, respiratory failure, and death. Common complications which require intensive care admissions include acute lung injury, acute respiratory distress syndrome, shock, and acute kidney injury.[4,5]

At present, based on epidemiological investigation, the incubation period is 1-14 days, with a median time of 3-7 days and the disease is found to be contagious during the latency period. It is highly transmissible in humans,

especially in the elderly and people with underlying diseases producing fatal outcomes and even death in them.[6]

As of now, there are no approved treatments for this infection, hence, prevention is crucial. However, knowledge and awareness regarding symptoms and mode of transmission of the disease and preventive measures, including basic hygiene principles and measures adopted in the public health crisis, have proven effective in preventing the epidemic's spread in a broader scale.

Medical students need to have the utmost responsibility to be well versed with the situation and also show an attitude which can be looked up to by the entire community. It is also important for medical students to know about COVID-19 prevention and treatment in order for them to be a well-versed future health workers. There are very few studies on knowledge, attitude, and practice on COVID-19 as this is a novel disease. The aim of the study was to evaluate the adequacy of knowledge of the medical students to deal with the ongoing pandemic, their attitudes and practices towards the prevention and control of the pandemic.

Aim and objectives

The aim and objective of the study was (a) to determine the knowledge, attitude and practice regarding COVID-19 infection among medical students; and (b) to find the association between KAP levels and demographic variables.

METHODS

An observational descriptive study with cross sectional design was conducted on under graduate medical students of Govt. medical college, Solapur, Western Maharashtra during July 2021. All the 1st, 2nd and 3rd year UG medical students of both gender, who are willing to participate in the study during July 2021 were included in the study and those who were unwilling to participate were excluded from the study.

Sample size and selection

Sample size was calculated using the formula:

$$N = \frac{4pq}{d^2}$$

where p=81.6 (percentage of students having adequate knowledge regarding COVID-19 infection as per the study in Kerela).[5] The final sample size was calculated to be 400 with 10% non-responsive rate. Stratified sampling method was used and 145, 145, 110 samples from 1st, 2nd and 3rd year UG students respectively has been collected. This study used Google form platform for collecting data. A self-designed questionnaire was prepared, which compromised two parts to collect demographic details of the participants along with KAP towards COVID-19. The questions were established on the basis of published literature and also by author's experience of KAP.[7-10] After the preparation of the questionnaire, it was sent to some experts to consult their opinions regarding the validity of the questionnaire. The questionnaire was prepared in google form and the link was circulated in the WhatsApp of the students. The study participants were informed about the study objectives and also about the confidentiality at the beginning of the study. It has been disclosed that their results will be used only for research purpose and identity of the participants will not be exposed. Among the responses received, first 145,145 and 110 completed responses from 1st, 2nd and 3rd year UG students respectively has been collected.

Demographic variables included age, gender and religion. The self-designed questionnaire consists of 10 questions each regarding Knowledge, attitude and practice against COVID-19 infection. Knowledge questions mainly dealt with participants knowledge regarding clinical symptoms, transmission routes, prevention and control of COVID-19. The questions were responded on a multiple choice, true/ false, agree/disagree, yes/ no basis with additional 'I don't know' option. The true/correct answer was assigned with 1 point whereas false/incorrect/I don't know answer was assigned with 0 point. Higher scores indicate good knowledge about COVID-19. While for assessing attitude and practice against COVID-19 'yes/no' options were assigned. Score of 7 or more than 7 per 10 KAP questions was considered adequate.

Statistical analyses were performed using SPSS, version 22. Measurement data were expressed in mean±SD and categorical data were expressed in percentage and frequency. The Chi-square test, Parametric test (t test and ANOVA test) were used. Comparisons of KAP scores among the students with respect to gender, religion, and age-category are done using independent samples t-test and one-way Analysis of variance (ANOVA), as appropriate. The statistical significance level of the test was expressed as α=0.05.

RESULTS

Out of the 400 participants, 53% were males (212) while the rest 47% were female (188) (Figure 1). The majority of students (36.25% each) were 1st and 2nd year M.B.B.S students, while the rest 27.50% were 3rd year M.B.B.S. students. (Figure 2). Most of the students belong to Hindu religion 86.75% (347), followed by Muslim 39 (9.75%) and Christians 14 (3.5%). (Figure 3).

Knowledge

The majority of the participants (93.5%) knows that even asymptomatic patient can also spread COVID-19 infection. Furthermost, 93.25% of the participants aware that there was no specific drug to treat COVID-19 infection. Maximum number of participants (90.5%) knows that touching or shaking hands with infected

COVID-19 persons will result in spread of infection. Maximum number of participants (86%) knows that COVID-19 is a single stranded RNA virus. Maximum number of the participants (73.25%) knows the minimum concentration of alcohol in hand sanitizer needed to kill the COVID-19 virus is 70%. Only 59.50% of participants knows that high risk group for COVID-19 infection were geriatric, pregnant women, comorbid people and patients on immune suppressants (Table 1).

Attitude

Majority of participants (96%) agreed it is necessary to follow official updates about the COVID-19 infection. In addition, the majority of the participants (94.75%) agreed that they can prevent yourself from being infected by COVID-19 by practising proper social distancing, wearing mask and self-hygiene. Only 60.25% of participants agreed that government's initiatives to prevent COVID-19 are adequate. Nearby half of the participants (57%) were ready to treat COVID-19 patients (Table 2).

Practice

Maximum number of participants (94.50%) agreed that they will isolate themselves and will do prompt testing if they were suspected to have had contact with an infected person. 94.25% of participants had discussed about COVID-19 appropriate behaviours with their family and friends. Maximum number of participants (80.50%) had decreased the use of public transport after the outbreak of COVID-19. Less than half of the participants (39.25%) maintain social distance in hostel, mess and in college (Table 3).

The knowledge scores of the female were higher than that of males, the difference was highly significant ($p>0.05$). Females had more scores in attitude and practices regarding COVID-19 infection than males, but the difference is not statistically significant ($p>0.05$). 3rd year students scored more in knowledge, attitude and practices regarding COVID-19 infection than 1st and 2nd year students. In addition, the difference in practice score was significant between different batch students ($p<0.05$).

With respect to religion, Muslim religion students had more score in knowledge and practices regarding COVID-19 infection than Hindu and Christian students. But the difference was not statistically significant ($p>0.05$). Christian students had more score in attitude regarding COVID-19 infection than Hindu and Christian students, but the difference was not statistically significant ($p>0.05$) (Table 4).

Overall, 92%, 81%, 90.5% of surveyed medical students had adequate knowledge, attitude and practise towards COVID-19 pandemic respectively. A good practice towards COVID-19 prevention was found to have a statistically significant association with adequate knowledge regarding COVID-19 ($p<0.05$) (Table 5).

Table 1: Knowledge regarding COVID-19 infection among medical students (N=400).

Questions	Response N (%)	
	Correct	Incorrect
1. What is COVID-19 stands for?	317 (79.25)	83 (20.75)
2. Corona virus is a?	344 (86)	56 (14)
3. Minimum concentration of alcohol in hand sanitizer needed to kill the COVID-19 virus?	293 (73.25)	107 (26.75)
4. Common mode of transmission of COVID-19 infection?	328 (82)	72 (18)
5. Most effective mask preventing corona infection?	313 (78.25)	87 (21.75)
6. High risk age group for Covid infection?	238 (59.50)	162 (40.50)
7. Is there any specific drug to treat COVID-19 infection?	373 (93.25)	27 (6.75)
8. Touching or shaking hands with infected COVID-19 persons will result in spread of infection?	362 (90.50)	38 (9.5)
9. It is not necessary to take necessary preventive measures for paediatrics and young adults against COVID-19 infection?	331 (82.75)	69 (17.25)
10. Can asymptomatic patient spread COVID-19 infection?	374 (93.50)	26 (6.50)

Table 2: Attitude regarding COVID-19 infection among medical students (N=400).

Questions	Response N (%)	
	Positive	Negative
1. Are you sure COVID-19 infection will be successfully contained?	324 (81)	76 (19)
2. Do you think government's initiatives to prevent COVID-19 are adequate?	241 (60.25)	159 (39.75)
3. Media coverage (e.g. newspaper, television, online) gives much exposure to the news about the COVID-19 virus?	304 (76)	96 (24)
4. If you get symptoms, do you do anything to avoid isolation?	248 (62)	152 (38)

Continued.

Questions	Response N (%)	
	Positive	Negative
5. Do you believe that you can prevent yourself from being infected by COVID-19 by practising proper social distancing, wearing mask and self-hygiene?	379 (94.75)	21 (5.25)
6. Is lockdown is an effective measure to slow the spread of infection?	267 (66.75)	133 (33.25)
7. Will you avoid attending crowded places or mass functions, even when invited by close acquaintances?	359 (89.75)	41 (10.25)
8. Do you think it is necessary to follow official updates about the COVID-19 infection?	384 (96)	16 (4)
9. Do you think it is necessary to verify the WhatsApp forward messages about COVID-19 infection?	328 (82)	72 (18)
10. Are you ready to treat COVID-19 infected patients?	228 (57)	172 (43)

Table 3: Practice regarding COVID-19 infection among medical students (N=400).

Questions	Response N (%)	
	Yes/correct	No/incorrect
1. What will you do if you are have or suspected to have had contact with an infected person?	378 (94.50)	22 (5.50)
2. Have you washed your hands with soap and water for at least 40 seconds after going to crowded places/nose blowing/coughing/sneezing?	337 (84.25)	63 (15.75)
3. Did you carry hand sanitizer with you?	371 (92.75)	29 (7.25)
4. Did you maintain social distance in hostel, mess, college?	157 (39.25)	243 (60.75)
5. Did the shopping frequency has been reduced after the outbreak?	331 (82.75)	69 (17.25)
6. Did you decreased the use of public transport after the outbreak of COVID-19?	322 (80.50)	78 (19.50)
7. Did you cancelled or postponed any meeting with friends/eating out/sport events?	349 (87.25)	51 (12.75)
8. Did you discussed about COVID-19 appropriate behaviours with your family/friends?	377 (94.25)	23 (5.75)
9. Did you monitor your personal physical health?	376 (94)	24 (6)
10. Did you persuade people around you to follow precautionary guidance?	353 (88.25)	47 (11.75)

Table 4: Association between knowledge, attitude and practice scores and demographic variables (N=400).

Variables	Knowledge scores		Attitude scores		Practice scores	
	Mean±SD					
Gender						
Male	7.97±1.22	t=3.23; p=0.001*	7.57±1.46	t=1.02; p=0.30*	8.22±2.0	t=1.61; p=0.107*
Female	8.36±1.19		7.72±1.45		8.51±1.59	
Batch						
1st year	8.13±1.19	F=0.15; p=0.85	7.55±1.63	F=1.21; p=0.29	8.07±2.16	F=3.81; p=0.02*
2nd year	8.20±1.19		7.62±1.38		8.44±1.50	
3rd year	8.20±1.30		7.83±1.29		8.68±1.57	
Religion						
Hindu	8.14±1.23	F=1.34; p=0.26	7.60±1.45	F=1.54; p=0.21	8.36±1.85	F=1.77; p=0.17
Muslim	8.46±1.14		7.97±1.59		8.74±0.93	
Christian	8.35±1.21		8±1.24		7.71±2.19	

Note: *-p value<0.05 statistically significant.

Table 5: Association between adequate knowledge with adequate attitude and knowledge.

Knowledge level	Adequate (N=368) (%)	Inadequate (N=32) (%)	P value; df
Attitude level			
Adequate (N=324)	300 (92.60)	24 (7.40)	0.367; 1
Inadequate (N=76)	68 (89.50)	8 (10.50)	
Practice level			
Adequate (N=362)	337 (93.10)	25 (6.90)	0.012*; 1
Inadequate (N=38)	31 (81.60)	07 (18.40)	

Note: *-p value<0.05 statistically significant.

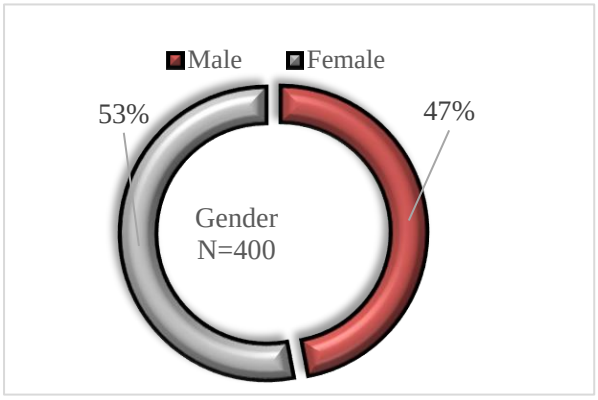

Figure 1: Gender-wise distribution of students (N=400).

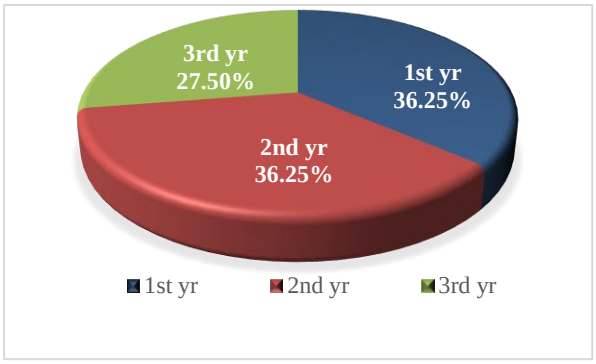

Figure 2: Academic year wise distribution of students (N=400).

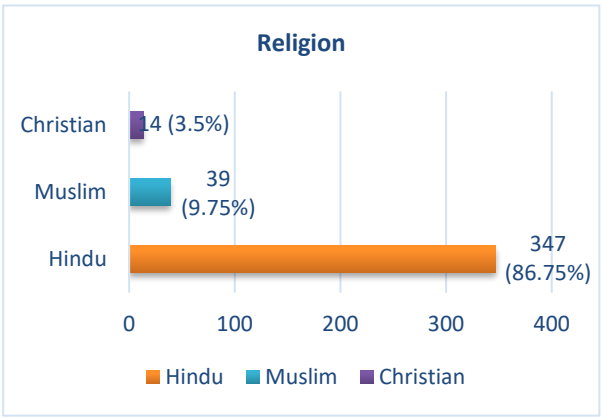

Figure 3: Religion wise distribution of students (N=400).

DISCUSSION

Similar to present study, an Indian study conducted by Krishna et al among medical students in Karnataka observed that 51% were females and 49% were males.[11] Another Indian study conducted by Kallinath et al in Kerela observed that majority of the participants were males (73.30%) and females were 26.70%.[7]

Kallinath et al study finding showed 81.6%, 91.3%, 84.7% adequate KAP levels; increasing age and female gender were found to have statistically significant association with adequate KAP scores.[7] Maheswari et al study showed 92.7% students has extensive knowledge, more than 80% showed positive attitude towards COVID-19.[8] Moreover, Peng et al reported that Chinese medical students had good knowledge (83.0%), a positive attitude (75.8%), and proactive practice (87.9%), respectively.[12] Tahrir et al and his colleagues, in their study among Iranian medical students, indicated that on average, about 86.96% had a correct answer of knowledge, and 94.47% had an average rate of performance in preventive behaviours.[13]

However, no significant difference was found in mean knowledge or attitude scores with respect to all demographic variables, but gender played a significant role in mean practice scores, and this result is similar to the studies conducted in Dehradun and in China, which also reported that practice scores were affected by gender.[8,14,15] Also in our present study, there was significant difference in mean practice scores between different batch students.

Limitations

The major limitation of the present study was that the sample sizes were limited to the students of a government medical college, and hence the results based on the used sample sizes could not be generalized to all the populations. Due to the questionnaire being self-answered by the participants, there is also a high chance of errors or misrepresentation of information. Less demographic variables were also an limitation.

CONCLUSION

In the present study, the knowledge, attitude, and practice of the medical students of the Government Medical College, Solapur towards COVID-19 were assessed. Out of 400 students 53% were female; 47% were male. Most

of the students belong to Hindu religion 86.75%, rest 9.75% Muslim and 3.5% Christians. We found that, during the COVID-19 pandemic, 92% of the participants had adequate knowledge of COVID-19. In addition, 81% of the participants had a positive attitude towards COVID-19 and 90.5% of students had adequately followed COVID appropriate behaviours. It is worth mentioning that sufficient COVID-19 knowledge scores, positive attitude, and adequate practice were found among the students. It is worth mentioning that sufficient COVID-19 knowledge scores, positive attitude, and adequate practice were found among the students. Females had more knowledge regarding COVID-19 infection than males. Preventive behaviours among 3rd year MBBS students was found more than other batch students.

Recommendations

Considering that the present study assessed only three demographic variables, so it is recommended that more demographic factors should be included in further studies. Such KAP studies on COVID-19 should be conducted across other medical college. If low KAP levels found, we should educate our medical students so that if emergency arises, we can use the help of medical students for management of mild covid cases if manpower crisis occurs. Studies should also be conducted among other nonmedical undergraduates and the general population to identify low KAP levels. Health promotional activities, including health education sessions, should be organized in such populations through universities, local government bodies, and non-governmental organizations, which will go a long way in containing the epidemic.

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