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A Cross-Sectional Survey of Knowledge, Attitude and Practice (KAP) Among the MBBS Students after a Year of COVID-19 Outbreak

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ABSTRACT

Background: Novel Coronavirus Disease (COVID-19) outbreak was declared a pandemic on 11th March, 2020 and it is one of the biggest challenges we are facing today. The disease has affected the entire world with more than million deaths. The study was carried out to assess the knowledge, attitude and practice in young health care professionals post one year of pandemic. **Materials and Methods:** A cross-sectional survey was conducted on 300 MBBS students. A self-designed online questionnaire based on WHO and CDC guidelines on KAP (Knowledge, Attitude and Practice) was done. Students' KAP levels were defined as "good" or "poor" based on Bloom's cut off point. **Results:** The Mean±SD of the overall knowledge, attitude and practice score was 63.6% (13.5), 80.94% (10.3) and 85.05% (13.45) which was satisfactory. Majority of students demonstrated overall good knowledge, positive attitude and good practices regarding COVID-19 pandemic. **Conclusion:** This study reinforces the need on the emphasis on basic preventive measures to combat the virus spread. The results of this study could help health authorities to design better strategies in combating the spread of this deadly corona virus.

KEYWORDS

Covid-19, KAP, SARS-CoV-2

INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was initially diagnosed in December, 2019 from Wuhan, China[1,2]. On 11 March, 2020, WHO declared COVID-19 outbreak as a pandemic and directed all the countries to take prompt steps for detection, management and reducing transmission of cases[3,4]. Till date, corona virus has infected millions worldwide. The disease spreads mainly through indirect or direct contact via small respiratory droplets which are expelled when a symptomatic or even asymptomatic person with COVID-19 coughs, sneezes or speaks[5,6]. Evidence has suggested that high mortality occurs in 11% of COVID-19 patients. Moreover, there is requirement of mechanical ventilation or fall in respiratory insufficiency or multiple organ failure in 5% of the infected patients, mainly according to age and comorbidities. Studies have revealed that around 4 out of 5 people recover from the disease without needing hospital treatment[7,8].

Various vaccines have been introduced and the vaccination drive is going on all over the world[9]. However, the long term outcomes are still being studied. It is widely believed in scientific circles that COVID-19 is here to stay. Therefore, the best strategy to tackle the disease is probably interrupting its transmission. Medical students can help

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stop stigma related to COVID-19 by having knowledge of the disease and sharing them with others in the community. The need of the hour is to ensure that medical students are still practicing safe measures after 1 year of COVID-19 outbreak. Till date, few such surveys have been done on knowledge, attitude and practice for prevention against COVID-19 in medical undergraduates in India. Therefore, through this study, we have taken up a small step towards understanding knowledge, attitude and practices of medical professionals which could contribute positively, in the near future to tackle COVID-19 through joint efforts of all the stakeholders.

MATERIALS AND METHODS

Participants

This cross-sectional survey was conducted on 300 MBBS students of Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi through an online survey. All MBBS students who were willing to participate were included in this study. Students were asked to respond through a yes/no response to confirm their willingness to participate voluntarily in the study through wats app groups and e-mails. Students were asked not to reveal their identity. Based on WHO and CDC guidelines for clinical and community management of COVID-19, a questionnaire was designed in google form by the authors and validated by peer review[1,9]. Out of 300 students, 249 responded to the questionnaire.

Data collection measures

The questionnaire was based on KAP (Knowledge, Attitude and Practice) having 10 questions on knowledge, 10 questions on attitude and 10 questions on practice regarding prevention and control of COVID-19, respectively. For the knowledge questions, incorrect or uncertain (do not know) responses were given a 0 score, while 1 point was assigned for choosing the correct answer. The expected maximum total knowledge score was 10. A higher score implied a better knowledge of COVID-19. Attitude towards COVID- 19 was measured by 10 questions. A correct statement with options strongly agree, agree, not sure, disagree and strongly disagree were given 5, 4, 3, 2 and 1, respectively. The expected maximum total attitude score was 50. Practice was scored 2, 1 and 0 for "always", "occasional" and "never", respectively.

Students' KAP levels were defined as "good" or "poor" based on Bloom's cut off point. Students with knowledge scores above 60% were regarded as having good knowledge, while those with score below 60% were considered having poor knowledge[10]. Students with attitude scores of 80% and above were considered as having a good attitude, while those within the range of 60-79% moderate and score below 59% were regarded as having an unacceptable attitude[11]. For practice section, participants with scores >80% and <80% were classified as taking acceptable and unacceptable preventive measures, respectively[12].

Data analysis

Data entry and statistical analysis was done using the Statistical Package for Social Sciences (SPSS) version 20 and presented by using mean and standard deviation. Descriptive statistics was used to determine KAP scores. The KAP assessment was carried out by assigning scores to the variables.

Ethical approval was obtained prior to the study. The questionnaire was designed to be anonymous and informed consent was obtained from participants before conduct of the study. The data were kept confidential and the results did not identify the respondents personally.

RESULTS

Assessment of MBBS students' knowledge towards COVID-19

Out of the 249 participants, 189 (75.9%) students had good knowledge (>60%) while 60 (24.1 %) MBBS students had knowledge within the unsatisfactory range (<60%). The overall knowledge score (SD) was 63.6% (13.5) and the Mean±SD of the knowledge score was 6.36 (1.35). Most of the respondents were aware of the etiology and risk factors as summarized in Table 1. Surprisingly, 96.4% (240) students had misunderstanding about the 3 most common symptoms of COVID-19 as fever, dry cough and tiredness. Furthermore, only 129 (52.2%) participants were aware of the incubation period of COVID-19. However, regarding the knowledge of preventive practices for COVID-19, most students (69.6%) had good knowledge of hand washing for 20 sec and many students (62.6%) had fair understanding that washing hands with soap is better than using sanitizer. Unfortunately, only 75 (31.1%) respondents were aware that they should keep a minimum distance of 3 feet in preventing this dreadful disease. Despite being a medico, only 51.8% students were aware that recommended percentage of alcohol in sanitizer is 60%.

Assessment of MBBS students' attitude towards COVID-19

Out of 249 students, majority of the students (169, 67.87%) had a good attitude (>80%) towards the prevention of COVID-19, while 76 (30.5%) participants had a moderate acceptable attitude (60-79%) and 4 students had an unacceptable attitude (<60%) based on the mean total

Table 1: Knowledge regarding COVID-19

Questions	Correct answer	Wrong answer
K1. What is its most common mode of transmission (etiology)		
Airborne transmission		
Faeco-oral route		
Respiratory droplets	229 (92.3%)	20 (7.7%)
Through pets		
K2. Where the first human SARS COV2 occurred? (etiology)		
Newyork, USA		
Wuhan, China	246 (98.8%)	3 (1.2%)
Milan, Italy		
Xiaogan city, China		
K3. What are 3 most common symptoms of COVID 19 (clinical presentation)		
Dry cough, tiredness and difficulty in breathing	9 (3.6%)	240 (96.4%)
Fever, tiredness and difficulty in breathing		
Fever, dry cough and difficulty in breathing		
Fever, tiredness and dry cough		
K4. What is incubation period of COVID 19 (transmission)		
1-14 days		
5-14 days	129 (52.2%)	100 (47.8%)
10-14 days		
1-28 days		
K5. How much minimum distance is recommended from person who is sick (prevention)		
1 feet		
2 feet		
3 feet	75 (31.1%)	174 (69.8%)
4 feet		
K6. Which people are more at risk of developing severe illness (risk factor)		
Infants		
Children		
Adolescents	245 (98.8%)	4 (0.2%)
Older people		
K7. What is the minimum amount of time recommended for handwashing (prevention)		
10 seconds		
20 sec		
30 sec	172 (69.6%)	77 (30.4%)
40 sec		
K8. What is percent of alcohol recommended to be present in sanitizer (prevention)		
40%		
60%		
80%	128 (51.4%)	121(48.5%)
100%		
K9. Which is better? soap or sanitizer (prevention)		
Soap		
Sanitizer	156 (62.6%)	93 (37.4%)
Equal		
K10. Coronavirus causes disease ranging from common cold to more severe diseases. What serious diseases have been caused by it earlier (etiology)		
SARS and swine flu		
SARS and MERS		
Swine flu and Ebola	191 (80.9%)	58 (19.1%)
Ebola and MERS		

attitude scores. The Mean±SD of the attitude scores was 40.47 (5.19). Hence, overall attitude score was 80.94% (10.3) which was optimistic and acceptable.

Majority of the students (86.74%) strongly agreed that they would quarantine themselves if they feel sick. Furthermore, 72.6% students agreed strongly that authenticity of all treatment/preventive measures related to COVID 19 should be checked before sharing it with others as shown in Table 2. Also, more than 50% students strongly agreed that hands should be washed more frequently and believed that stigma related to this disease should be stopped. Furthermore, 42% students agreed strongly that they remained calm on hearing about this pandemic. Out of 249 students, 35.7% agreed and 11.6% strongly agreed that wearing single mask is more appropriate than multiple masks for protection from coronavirus. Furthermore, majority of students have agreed that this pandemic has changed their lives. Additionally, only 31.13% students

Table 2: Attitude towards COVID-19

Items		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
A1	I will stay home and self-quarantine myself if i fell unwell	216 (86.7%)	22 (8.8%)	03 (1.2%)	04 (1.6%)	04 (01.6%)
A2	I remain calm on hearing the news about the pandemic	105 (42.1%)	90 (36.1%)	31 (12.4%)	20 (8%)	03 (1.2%)
A3	I am anxious about my friends and relatives and myself	65 (26.1%)	124 (49.7%)	43 (17.2%)	11 (4.4%)	06 (2.4%)
A4	I believe that social stigma related to COVID 19 should be stopped for betterment of society	140 (56.2%)	72 (28.9%)	22 (8.8%)	08 (3.2%)	07 (2.8%)
A5	I check authenticity of all cure/preventive measures related to COVID 19 before sharing it with others	181 (72.6%)	56 (22.4%)	08 (3.2%)	-	04 (1.6%)
A6	I feel wearing single mask is more appropriate than multiple masks	29 (11.6%)	89 (35.7%)	54 (21.6%)	44 (17.7%)	33 (13.2%)
A7	I feel that hands should be washed frequently then before	150 (60.2%)	87 (34.9%)	07 (2.8%)	01 (0.4%)	04 (1.6%)
A8	I feel this pandemic has changed my life	98 (39.3%)	103 (41.3%)	38 (15.3%)	06 (2.4%)	04 (1.6%)
A9	I will continue same preventive and hygienic measures with same frequency even when pandemic is over	78 (31.3%)	122 (48.9%)	34 (13.7%)	12 (4.8%)	3 (1.2%)
A10	I believe that hoarding house with daily needed objects for 2 months is not required	22 (8.8%)	59 (23.6%)	75 (30.1%)	78 (31.3%)	15 (6%)

Table 3: Practice towards COVID-19 prevention

	Items	Always	Occasionally	Never
P1	I use soap to wash my hands	213 (85.5%)	31 (12.44%)	05 (2%)
P2	I use mask if I have to go outside my house	218 (87.5%)	25 (10.04%)	06 (2.4%)
P3	I am not attending gatherings/family visits during pandemic	234 (93.9%)	07 (2.81%)	03 (1.2%)
P4	I maintain distance between myself and anyone who is coughing or sneezing.	226 (90.7%)	19 (7.63%)	04 (1.6%)
P5	I avoid touching my eyes, nose and mouth	127 (51%)	110 (44.17%)	12 (4.8%)
P6	I cover my face with handkerchief/bent elbow during coughing or sneezing	222 (89.1%)	21 (8.43%)	07 (2.8%)
P7	I clean and disinfect frequently touched surfaces daily like tables, doorknobs, switches, faucets, etc.	131 (52.6%)	101 (40.5%)	17 (6.8%)
P8	I clean and disinfect my cell phone daily	56 (22.4%)	151 (60.6%)	42 (16.8%)
P9	I try to keep my family/friends informed regarding preventive measures for COVID 19	202 (81.1%)	42 (16.86%)	05 (2%)
P10	I keep myself updated with latest developments of pandemic	223 (89.55%)	21 (8.4%)	06 (2.4%)

strongly agreed that they would continue the same preventive measures with the same frequency even after this pandemic. However, only 22 students (8%) agreed strongly that hoarding items of daily needs for 2 months is not required.

Assessment of MBBS students' practice towards COVID-19

Table 3 showed the responses of the students regarding the various preventive practices. The Mean±SD of the total practice score of the participants is 17.01 (2.69) which implied that practice score in our study was 85.05% (13.45) was acceptable. Among the students, 83.9% were doing a good practice and 16.1% had a poor practice towards COVID-19 prevention. The majority of the respondents (>80%) practiced protective measures in their hygiene, including handwashing with soap (85.5%) and wearing mask while going out (87.5%). Furthermore, >80% students were keeping themselves well as their friends and families updated with information about COVID-19. Also, 93.9% students avoided gatherings/family visits during the pandemic. Furthermore, majority of the students were not only covering their faces with handkerchief/bent elbow while coughing or sneezing but also maintaining distance from the person who is doing so. About 51.0% of the respondents always refrained from touching eyes/ nose/mouth. Furthermore, only 131 (52.6%) students disinfected frequently touched surfaces like tables, doorknobs, switches, faucets, etc., daily and 22% students disinfected their cell phones daily while majority of students were doing so occasionally.

DISCUSSION

Increased prevalence of COVID-19 and occurrence of asymptomatic and subclinical cases in healthcare facilities make health care workers and medical students susceptible and at higher risk of acquiring and subsequently transmitting the disease to their family members and colleagues. In the present study, the knowledge, attitude and practice of the medical students of a medical college in New Delhi towards COVID-19 were assessed.

This study revealed that during the COVID-19 pandemic, 189 (75.9%) students had a good knowledge (>60%) while 60 (24.1%) MBBS students had knowledge within the

unsatisfactory range (<60%). The Mean±SD score was 63.65% (13.52) which indicated a good level of knowledge. This current study is believed to be among the 1st few studies of its kind among MBBS students. It was corroborated with other studies which also showed good knowledge but showed higher knowledge scores among MBBS students[13,14]. More than 90% respondents were aware of the etiology and risk factors but unfortunately the depth of knowledge among MBBS students, particularly about the clinical symptoms, mode of transmission and incubation period of COVID-19 was within the unsatisfactory range (<60%). Worryingly, our study also suggested that 69.8% respondents were not aware that they have to keep a minimum distance of 3 feet while talking to another person who is sick which is very important in preventing this alarming disease. This is unfortunate because the rise of this pandemic is globally catastrophic and a large number of resources are being used to educate people especially health care workers and improve their knowledge about COVID-19. The more knowledge the medical students will have regarding the disease, the better equipped they will be to manage the cases at hospital. A study conducted recently on health care workers from Asia also showed similar results about the mode of transmission and incubation period of COVID-19[15]. Regarding the knowledge of preventive practices for COVID-19, most students (>60%) had good knowledge of hand washing for 20 sec and had fair understanding that washing hands with soap is better than using sanitizer.

Our study also revealed that majority of students (67.87%) had a positive perception (acceptable attitude) regarding prevention and control of COVID-19. Majority of the students (86.74 and 72.6%) strongly agreed that they will quarantine themselves if they feel sick and also check authenticity of all treatment/preventive measures related to COVID-19 before sharing it with others. Furthermore, it was seen that more than 50% students strongly agreed that hands should be washed more frequently and felt that stigma related to this disease should be prevented for betterment of society. Adequate knowledge about the disease may minimize the stigma and may cause acceptance in the general population. Our study results showed an acceptable attitude towards prevention and it reiterated the findings of study conducted in Asia on health care workers[15]. However, almost same number of students strongly agreed as well as disagreed that wearing multiple masks is not better for protection from coronavirus. Although, because of this attitude there would not be any harm to health care worker but it still reflects less knowledge on prevention of this disease.

However, regarding hoarding items of daily needs, only 8% students strongly agreed and 23.6% participants agreed, respectively. This also showed an unacceptable approach and fear towards COVID-19. Lack of adequate knowledge and deception can lead to hysterical behavioural outcomes, like panic buying which causes deleterious effects on health supply chains leading to shortage of essentials like sanitizers, masks and pain relievers. Unfortunately, our results were similar to study conducted on Indian population where 55% females and 23% males agreed to idea of grocery and medicines stocking[16]. However, discrepancies were also identified in the attitude in different aspects towards COVID-19. For instance, only 39.3% students strongly agreed that this pandemic has changed their lives. This unacceptable attitude showed that they are continuing on with their normal daily lives, may be after 1 year too and not following social distancing. Moreover, 42% students strongly agreed and 36.1% agreed that they remained calm on hearing about this pandemic. Also, it was seen in earlier studies that mental health is playing an important role in managing COVID-19 pandemic. The anxiety which was created 1 year back has destroyed relationships due to the panic created. Earlier, it left us scared and unsafe. So, it was difficult to remain calm as seen in other studies[17]. But after a year of COVID-19 outbreak, most probably the fatigue has set in and now majority of people remained calm and composed as seen in our study.

Moreover, only 26.1% respondents strongly agreed that they are anxious about themselves, their friends and relatives. Our results were not consistent with other studies in Indian population which showed frequent inappropriate behaviour (anger, restlessness, worry) and it was seen that 83% population felt that it would be beneficial if mental health professional would help them to tackle this pandemic[18].

Based on the overall practice scores of 85.05%, most of the participants took precautions to avoid infection by COVID-19. These could be primarily attributed to the vast community outreach measures and wide broadcasting by the government and overall good knowledge score. However, these scores were lower than those of practice towards COVID-19 as compared to other studies conducted in general population[19].

The majority of the respondents (>80%) practiced protective measures in their hygiene, including handwashing with soap, covering their faces with handkerchief/bent elbow while coughing or sneezing. All these represented good practice measures towards curbing this pandemic. Our results showed concordance with other

studies which also showed higher percentage of students taking good precautions (Gupta *et al*., 2020). Also, majority of students (93.9%) have taken optimistic measures by avoiding gatherings/crowded places. More than 85% participants were wearing masks while going out. Also, majority of students (80%) were keeping themselves as well as friends and family informed and updated. Also, the present study showed that <50% students were disinfecting their cell phones daily. However, 52% students said that they were always cleaning and disinfecting frequently touched surfaces like tables, doorknobs, switches, faucets etc. More than 90% students were maintaining distance from other persons. This practice is primarily due to strict measures taken by government to prevent COVID-19 infection. Similar findings were also seen in other studies[19]. Studies have shown that one person can infect 406 people in 30 days. If the social distancing is followed properly, one sick person can only infect 2.5 persons. It was seen earlier in case of influenza which was curbed successfully by following social distancing[20,21].

The major limitation of this study was that it was a cross-sectional study conducted online only among MBBS students. Secondly, larger study can be conducted with more number of participants from different regions so as to have a better idea of students perception towards COVID-19.

CONCLUSIONS

Majority of students demonstrated overall good knowledge, positive attitude and good practices regarding COVID-19 pandemic. The results of this study could help health authorities/policy makers to design better strategies in combating the spread of this deadly corona virus. However, sufficient data on the knowledge, attitudes and preventive practices towards COVID-19 among MBBS students are still lacking. With an increasing prevalence of COVID-19, there is an urgent need to collect essential data for effective control and preventive measures. People should be encouraged or motivated to continue universal precautions in spite of COVID-19 fatigue and in some cases vaccination. The need of the hour is to promote health activities which are vital in improving KAP towards COVID-19 and it is recommended to conduct interventional studies using the result of this study.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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DISCLAIMERS

The opinions expressed in this article are the authors' personal views and do not represent that of their affiliated organizations, employers, or associations.

DATA AVAILABILITY STATEMENT

Not Applicable

AUTHOR CONTRIBUTIONS

SA conceived the review idea. SK conducted the literature search. SA and SK prepared the 1st draft of the manuscript. AA reviewed, edited and revised the manuscript substantially on the key intellectual content. IAK finalized and approved the current version agreed to be accountable for accuracy and integrity and decided to submit the manuscript to Trends in Medical Research.

HIGHLIGHTS OF THE STUDY

People's adherence to preventive measures towards COVID-19 depends on knowledge attitude and practice towards this disease:

- Majority of students demonstrated overall good knowledge, positive attitude and good practices regarding COVID-19 pandemic.
- But periodic educational interventions are still needed.
- The study evaluate present understanding of uptake of preventive measures as well as recognise possible interventions to improve perceptions towards prevention of COVID -19

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