



Original Research Article

A study of knowledge, attitude and practices regarding SARS COV-2 infection and its control amongst medical students of Rama Medical College Kanpur (U.P)

Anju Gahlot¹, S P Singh^{1,*}, Vijayshree Verma¹, Monika Singh¹

¹Dept. of Community Medicine, Rama Medical College Hospital and Research Centre, Kanpur, Uttar Pradesh, India



ARTICLE INFO

Article history:

Received 07-08-2020

Accepted 27-08-2020

Available online 29-10-2020

Keywords:

SARS COV2

KAP

Containment zones

ABSTRACT

Background: A person's adherence to the prevention measures is essential for controlling the spread of COVID-19, which can be explained by their knowledge, attitudes, and practices (KAP) on COVID-19. Thus, we conducted a survey to investigate the KAP on COVID-19 among the medical students of a Rama Medical College during the rapid rise of the COVID-19 outbreak.

Introduction: Coronavirus disease 2019 (COVID-19) is an emerging respiratory infection caused by a novel coronavirus called Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2). The outbreak was declared a Public Health Emergency of International Concern on January 30, 2020. The WHO has now characterized the outbreak as a pandemic.¹

Materials and Methods: Cross-sectional survey was conducted among the medical students from Rama medical college, in Kanpur (U.P), from 30th June to 20th July 2020, the 3 weeks. Predesigned questionnaire based online survey was used for data collection total 281 students from 3 MBBS batches included in the study. Total 23 questions related to KAP regarding COVID-19 out of which (11 related to Knowledge, 4 related to Attitude and 8 related to Practices) scores were calculated, t-test was used for statistical analysis.

Results: Out of the total participants (n=281), 50.2% were males while the rest were female (49.8%); the majority of them 63.3% were ≥21 years old while only 36.7% were 17-20 years old. Almost all the participants (96.8%) avoid unnecessary travel or outing during the outbreak under the lock down period due to COVID-19. Although no significant relationship was found between different genders, age-categories in terms of Attitude and practices, the male participants had higher knowledge. In addition, but gender had no significant impact on knowledge scores (P>0.05) while among age groups was not have a significant relation with attitude score (P>0.05).

Conclusion: Positive results were seen in the study but there is constant need of updating knowledge of the health force since concepts about COVID-19 are evolving on an everyday basis. Implementing periodic educational interventions, training programs and conducting webinars on infection control practices for COVID-19 for all health care workers and students can be very useful for improving awareness. Updates by the World Health Organization and government websites are best and authentic sources for health care workers to review their knowledge.

© 2020 Published by Innovative Publication. This is an open access article under the CC BY-NC license (<https://creativecommons.org/licenses/by-nc/4.0/>)

1. Introduction

Coronavirus disease 2019 (COVID-19) is an emerging respiratory infection caused by a novel coronavirus called Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2). The virus is a member of the coronavirus family that are zoonotic pathogens, i.e., the viruses cause and

transmit illnesses between human and several animals species such as cattle, camels, cats, and bats.^{2,3} The SARS-CoV-2 virus is similar to Middle East Respiratory Syndrome coronavirus (MERS-CoV) and Severe Acute Respiratory Syndrome coronavirus (SARS-CoV), which have their origins in bats.

A novel coronavirus (2019-nCoV) was identified as the causative virus by Chinese authorities on January 7.

* Corresponding author.

E-mail address: drmajsatyaprakash@gmail.com (S. P. Singh).

The outbreak was declared a Public Health Emergency of International Concern on January 30, 2020. The WHO has now characterized the outbreak as a pandemic.¹ This disease causes severe acute respiratory syndrome (SARS CoV- 2), which presents with symptoms like fever, cough, shortness of breath, muscle pain, sputum production, sore throat, diarrhea, abdominal pain, loss of smell, and in severe conditions leading to viral pneumonia and multi-organ failure.^{4–7} This virus spreads through respiratory droplets and by close contact from people to people.⁸ From the time of exposure to onset, the symptoms show between 2-14 days, with an average of 5 days.^{9,10} Elderly persons and those suffering from co-morbidities like heart disease, lung disease and diabetes, are at higher risk of developing severe COVID-19 illness.¹¹

The standard test to be conducted for the detection of the virus is reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab.^{12,13} The health ministry has also advised observing good personal hygiene, regular monitoring of health, frequent hand washing with soap and water or use of alcohol-based hand sanitizer, to follow respiratory etiquettes, to wear a mask and to contact a doctor immediately if cough, fever or problem in breathing arises. The infection rate of COVID-19 in India is reported to be 1.7%, significantly lower than the worst affected countries, as the report on 29 March 2020.⁸ India announced the implementation of a nation-wide complete lockdown for 21 d (i.e. up to 14th April 2020), which only allowed essential services to operate over the entire 130 million population of India which was later extended.¹⁴

A person's adherence to the prevention measures is essential for controlling the spread of COVID-19, which can be explain by their knowledge, attitudes, and practices (KAP) on COVID-19. Thus, we conducted a survey to investigate the KAP on COVID-19 among the medical students of a Rama Medical College during the rapid rise of the COVID-19 outbreak.

2. Materials and Methods

This cross-sectional survey was conducted among the medical students from Rama medical college, in Kanpur (U.P), from 30th June to 20th July 2020, the 3 weeks the 2nd unlock period of India. As we all know, social- distancing is the best way of prevention from COVID-19, therefore instead of conducting a community-based survey, present study collected the data by means of an online survey. Ethical clearance was taken from ethical committee. The survey questionnaire form which was adapted from a Chinese study by Bao-Liang Zhong et al¹⁵ was posted and circulated using various social media platforms like Whatsapp Group and e-mail address of the students. The study participants were informed about the details of the study objectives for filling the questionnaire and confidentiality at the beginning of the survey, and informed consent was obtained from each

participant. It has been disclosed to all the participants that their identity will keep confidential and the results will be used only for research purposes. Among the 300 students responses of 7 were incomplete and 12 were not responded therefore our final sample for present study was 281.

2.1. Questionnaire

A self-designed questionnaire was prepared, which comprised two parts to collect details of the participants profile along with KAP towards COVID-19. The questions were established on the basis of some published literature and the authors' experience of KAP. After the preparation of the questionnaire, it was sent to some experts to consult their opinions regarding the validity of the questionnaire followed by a small pilot study to test its simplicity and difficulty. However, the results of the pilot study were not included in the actual samples used for the study.

The first part of the questionnaire covered information of the participants profile and the second part contained questions for KAP assessment. Participants profile variables included age, gender and MBBS Batch (as per year of admission in Institution). The self-designed questionnaire comprised 11 questions regarding knowledge, 4 for attitude, and 8 for practice.

Knowledge questions mainly dealt with the participants' knowledge regarding clinical symptoms, transmission routes, prevention, and control of COVID-19. These questions were responded on a true/false basis with an additional "I don't know" option. The true answer was assigned with 1 point and false/I don't know answers were assigned with 0 point. Higher scores represented a better knowledge of COVID-19. Similar options were assigned for the questions related to attitude while only two options namely 'Yes' and 'No' were assigned for the questions related to practice towards COVID-19.

2.2. Statistical analysis

Statistical analyses were performed using SPSS, version 22. Knowledge, attitude, and practice Measurement data were expressed as mean \pm SD and categorical data were expressed as frequency and percentage. Parametric test (independent samples t-test) was used for comparison between different subgroups of the participants. Comparisons of KAP scores among the students with respect to gender and age group are done using independent samples t-test, as appropriate. The statistical significance level of the test was expressed as ($\alpha=0.05$).

3. Results

3.1. Study participants profile

Frequency and percentage of all the participants characteristics like gender, age, and MBBS Batch (year in

which they joined) are represented in Table 1. Out of the 281 participants, 50.2% were males while the rest were female (49.8%); the majority of them 63.3% were ≥ 21 years old while only 36.7% were 17-20 years old. Almost equal number of participants from 2018 Batch 33.8% and 2019 batch 33.5% rest 32.7% from 2017 MBBS Batch.

Table 1: Study participants profile(N=281)

Variable	n	Percentage (%)
Gender		
Male	141	50.2
Female	140	49.8
Age group (years)		
17-20	103	36.7
≥ 21	178	63.3
MBBS Batch		
2017 Batch	92	32.7
2018 Batch	95	33.8
2019 Batch	94	33.5

3.2. Knowledge

The results of the knowledge survey are presented in Table 2. Most of the participants (79.7%) had correct information about the main clinical symptoms of COVID-19. About 83.6% of the study subjects were aware symptomatic supportive treatment is helpful in most patients to recover from the infection.

Majority of the participants knew about the transmission of the virus, but only 42.7% of the total participants agreed that general population can wear ordinary triple layered cloth mask for protection against infection from COVID-19 virus. Level of knowledge about prevention and treatment was high among the students, (88.3%) knew that they should avoid crowded places i.e., public places and limit public transport to minimum in order to prevent COVID-19 virus infection. Majority (94.3%) knew that immediate isolation of people with h/o contact with someone infected with the COVID-19 Virus generally for 14 days is necessary.

3.3. Attitude

Table 3 shows that about 79.7% participants said that Mass media (eg, newspapers, internet, and television news channels etc.) are the major source of information about COVID-19 virus. Majority had a positive attitude towards the lockdown and curfews in containment, could possibly control the spread of virus. 73.3% had an optimistic view that the pandemic would be successfully controlled in the future.

3.4. Practice

Table 4 presents preventive practices of the participants during the COVID-19 pandemic. Majority reported that

there was a considerable increase in hand washing and use of hand sanitizer during this period. About 91.5% agreed that they use gloves and masks more frequently now. Majority (92.5%) now carry a sanitizer with them. Social distancing and respiratory etiquettes were followed by 94.3% and 94% respectively. 96.8% avoided unnecessary travel after the COVID-19 pandemic. While only 56.9% participants had saved any helpline number for COVID-19 in case of any queries or information was required.

3.5. Awareness, attitude and practices scores

Table 5 describes the scores of knowledge, attitude, and practices towards COVID-19 with respect to demographic variables such as gender, age, and religion. The knowledge scores of the male were slightly higher than that of females, although the difference was not significant ($P > 0.05$). Higher scores of males were observed in the attitude and practice as compared with that of females. In addition, the difference in practice score was significant between different genders ($P < 0.05$), therefore, it is recommended that Females should pay more attention to practice towards COVID-19. Secondly, the KAP score for the age-category of 17-20 was higher than the other category, with no significant difference among groups ($P > 0.05$).

4. Discussion

An increasing role of medical students in spearheading a voluntary task force while gaining skills and experience has been proposed in recent times.¹⁶ In the midst of this crisis, the Indian health ministry has proposed to provisionally permit medical undergraduates of senior grades to treat COVID-19 patients.¹⁷ COVID-19 is a global pandemic and all the countries are fighting with this disease. Many accept that medical students can be considered in a portion of the emergency and non-emergency clinical based jobs and should be prearranged for health care workers shortage.¹⁸ This approach would not only help to reduce the doctor population ratio and provide care to a large number of people in need. Hence, medical students were included in our study. Since COVID 19 is a new disease there is a limited information around, so it is all the more essential to provide the medical students with authentic and relevant information.

In the present study 50.2% were males while the rest were female (49.8%); the majority of them 63.3% were ≥ 21 years old while only 36.7% were 17-20 years old. Almost equal number of participants from 2018 33.8% and 2019 batch 33.5% rest 32.7% from 2017 MBBS Batch (Table 1). Similarly in a study by Vishwesh Agarwal et al¹⁹ done in April 2020 out of 616 undergraduates (age 21.5 years, 46.1% males) had recently completed (16.7%) or in the final year of their undergraduate training program (54.1%). Demographic factors, especially the association

Table 2: Knowledge

Question	True n (%)	False n (%)	I Don't Know n (%)
1- The main clinical symptoms of COVID-19 are fever, fatigue, dry cough and myalgia.	224 (79.7)	16 (5.7)	41 (14.6)
2- There is no cure for COVID -19 but symptomatic supportive treatment is helpful in most patients to recover from the infection.	235 (83.6)	17 (6.1)	29 (10.3)
3- All the cases with COVID-19 do not develop severe symptoms, only elderly with chronic illness and obesity are likely to be develop severe symptoms.	256 (91.1)	10 (3.6)	15 (5.3)
4-Consumption and close contact with wild animals does not lead to COVID-19 infection.	138 (49.1)	66 (23.5)	77 (27.4)
6-. The COVID-19 virus spreads through respiratory droplets of infected person.	245 (87.2)	9 (3.2)	27 (9.6)
7- General population can wear ordinary triple layered cloth mask for protection against infection from COVID-19 virus.	120 (42.7)	104 (37.0)	57 (20.3)
8-Children and young adults should take extra precautions to prevent infection from COVID-19 virus.	252 (89.7)	23 (8.2)	6 (2.1)
9- People should avoid crowded places i.e., public places and limit public transport to minimum in order to prevent COVI-19 virus infection.	248 (88.3)	6 (2.1)	27 (9.6)
10- Spread of virus can be reduced by isolation and treatment of people who are infected with the COVID-19 virus.	260 (92.5)	8 (2.9)	13 (4.6)
11- Immediate isolation of people with h/o contact with someone infected with the COVID-19 Virus generally for 14 days.	265 (94.3)	9 (3.2)	7 (2.5)

Table 3: Attitude

Questions	Truen (%)	Falsen (%)	I don't known (%)
1.Mass media (eg, newspapers, internet, and television news channels etc.) are the major source of information about COVID-19 virus?	224 (79.7)	16 (5.7)	41 (14.6)
2. "Curfew in containment zones" willhelp India to control the spread COVID-19 pandemic in India?	235 (83.6)	17 (6.0)	29 (10.3)
3. COVID-19 can be controlled by lockdown of major cities?	256 (91.1)	10 (3.6)	15 (5.3)
4. COVID-19 will be successfully controlled in the future?	206 (73.3)	26 (9.3)	49 (17.4)

Table 4: Practice

Questions	Yes [n (%)]	No [n (%)]
1. COVID-19 pandemic has increased the frequency of washing hands?	234 (83.3)	47 (16.7)
2. After theCOVID-19 pandemic the frequency of hand sanitizer use has increased?	254 (90.4)	27 (9.6)
3.Use of mask and gloves has increased after the COVID-19 pandemic?	257 (91.5)	24 (8.5)
4. Do you carry hand sanitizer with you after theCOVID-19 pandemic?	260 (92.5)	21 (7.5)
5. Did you write down or save any helpline number for COVID-19 in your phone?	160 (56.9)	121 (43.1)
6. Do you follow social distancing after COVID-19 pandemic?	265 (94.3)	16 (5.7)
7. Do you cover your face and nose with a tissue, handkerchief, etc. while coughing and sneezing after the COVID-19 pandemic?	264 (94.0)	17 (6.0)
8. Do you avoid unnecessary travel or outing after the COVID-19 pandemic?	272 (96.8)	9 (3.2)

Table 5: Awareness, attitude and practices scores (Independent Sample t-test)

Variable	Awareness Score					Attitude Score				Practices Score			
	N	Mean±SD	F	t	'P'	Mean±SD	F	t	'P'	Mean±SD	F	t	'P'
Gender													
Male	140	8.83±1.37	.189	.185	.416	3.22±.77	.029	.512	.609	7.06±1.27	.022	.222	.825
Female	141	8.70±1.29				3.17±.80				7.02±1.38			
Age group													
17-20	103	8.88±1.38	.338	1.13	.259	3.16±.85	1.19	.608	.544	7.16±1.27	.284	1.13	.256
≥21	178	8.69±1.30				3.22±.75				6.97±1.36			

between gender and KAP towards COVID-19 are consistent with previous studies on COVID-19 and SARS in 2003 in general.^{15,20,21}

Regarding the knowledge about COVID 19, majority of the participants in this study (79.7%) had correct knowledge about the main symptoms of COVID-19. These findings were comparable to studies done by Taghrir et al²² and Alzoubi et al.²³ 83.6% of the participants aware of about that early symptomatic and supportive treatment can help most patients recovering from the infection. Similarly in the study by Modi et al²⁴ in Mumbai, the overall percentage of correct answers from study participants was 71.2% with the highest percentage of correct responses from medical undergraduate students (74.10%) and lowest from the non-clinical/administrative staff (53.64%). In our study majority of the students had correct knowledge about the transmission routes of the virus which were comparable with the study by Ambika Sharma²⁵ done in April 2020 where almost all knew the mode of transmission of infection and common preventive measures. In the present study most of them believed that washing hands and wearing mask are important for prevention. Consciousness about the prevention and treatment was high.(88.7%) knew that COVID-19 can be prevented by avoiding crowded places such as train stations and avoiding public transportation. Similarly in a study by Modi et al²⁴ more than 75% of the responders were aware of the various infection control measures like rapid triage, respiratory hygiene, and cough etiquette and having a separate, well-ventilated waiting area for suspected COVID-19 patients. 94.3% of participants in our study knew that people who have contacted with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 day. 88.5% of students correctly answered about incubation period of disease as 1-14 days in the study done by Taghrir et al.²² and Ambika Sharma²⁵ Results were similar in study by Giao et al²⁶ from Vietnam, only 60-70% of the HCWs were aware of the incubation period, treatment options and route of transmission. In our study 79.7% of the students agreed that media coverage (e.g. newspaper, television, online) give much exposure to news about COVID-19 virus are consistent with results by

Ambika Sharma²⁵ where common source of information was internet, television, and social media. Similarly study by M. Saqlain et al.²⁷ 87.68% of HCWs used social media as their main source of information, followed by radio and television (45.89%) and seniors/other colleagues (42.51%). In the present study 96.8% of the participants avoided unnecessary travel or outing during the outbreak. Maintaining social distance during the outbreak was the second most prevalent behavior reported by the participants. A high percentage of were following all the preventive practices Similarly 94.47% medical students answered yes for practicing preventive behavior in a study done on Iranian medical students by Taghrir et al.²² In the present study the knowledge scores of the male were slightly higher than that of females. Higher scores of males were observed in the attitude and practice as compared with that of females, difference in practice score was significant between different genders (P<0.05).KAP score for the age-category of 17-20 was higher than the other category, with no significant difference among groups (P>0.05). Similarly in the study by Taghrir et al.²² difference between males and females was significant in risk perception at level of P< 0.01 Females had lower risk perception.

5. Conclusion

Positive results were seen in the study but there is constant need of updating knowledge of the health force since concepts about COVID-19 are evolving on an everyday basis. Implementing Periodic educational interventions, training programs and conducting webinars on infection control practices for COVID-19 for all health care workers and students can be very useful for improving awareness. Updates by the World Health Organization and government websites are best and authentic sources for health care workers to review their knowledge.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. WHO? Coronavirus Disease 2019 (COVID_19), Situation No. 51; 11th March, 2020.
2. Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G. COVID-19: towards controlling of a pandemic. *Lancet* . 2020;395(10229):1015–8.
3. Gao J, Tian Z, Yang X. Breakthrough: chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. *Biosci Trends*. 2020;14:72–3.
4. Sugiyama K, Suto T, Amano Y. A new corona-like virus causing diarrhea in infant mice (DVIM): morphological and biological characteristics (author's transl). *Uirusu*. 1978;28:10–8.
5. Tsunoda A. Corona virus. *Naika*. 1970;26:435–40.
6. Cao J, Tu WJ, Cheng W, Yu L, Liu YK, Hu X, et al. Clinical Features and Short-term Outcomes of 102 Patients with Corona Virus Disease. *Clin Infect Dis*. 2020;71(15):748–55.
7. Nagashima K, Wege H. Early and late CNS-effects of corona virus infection in rats. *Adv Exp Med Biol*. 1978;100:395–409.
8. Wang D, Zhou M, Nie X, Qiu W, Yang M, Wang X. Epidemiological characteristics and transmission model of Corona Virus Disease 2019 in China. *J Infect*. 2020;80(5):25–7.
9. Yang C, Ma QY, Zheng YH, Yang YX. Transmission routes of 2019-novel coronavirus (2019-nCoV). *Zhonghua Yu Fang Yi Xue Za Zhi*. 2020;54(4):374–7.
10. Dietz L, Horve PF, Coil DA, Fretz M, Eisen JA, Wymelenberg KVD. 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission. *mSystems*. 2020;5(2):245–20.
11. Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) - United States, February 12-March 16, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(12):343–9.
12. Ieki R. Diagnostic tests: Corona virus. *Nihon Rinsho*. 2005;63(7):339–42.
13. Kuratsuji T, Kirikae T. Diagnostic tests: SARS-Corona virus. *Nihon Rinsho*. 2005;63(7):343–5.
14. Singhal T. A review of coronavirus disease-2019 (COVID-19). *Indian J Pediatr*. 2020;87(4):281–6.
15. Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci*. 2020;16(10):1745–52.
16. Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infect Dis*. 2020;20(7):777–8.
17. 17.A step India is taking could make doctor shortage a non-issue in coronavirus battle. (2020). Available from: <https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/a-step-india-is-taking-could-make-doctor-....>
18. Mahase E. Covid-19: Portugal closes all medical schools after 31 cases confirmed in the country. *BMJ*. 2020;368:986.
19. Agarwal V, Gupta L, Davalbhakta S, Misra D, Agarwal V, Goel A. Undergraduate medical students in India are underprepared to be the young-taskforce against Covid-19 amid prevalent fears. *medRxiv*. 2020;doi:10.1101/2020.04.11.20061333.
20. Zhang X, Sun Y, Ye D, Sun Z, Su H, Ni J. Analysis on mental health status of community residents in Hefei during SARS spread. *Chin J Dis Contr Prev*. 2003;7:280–2.
21. Jiao J, Tang X, Li H, Chen J, Xiao Y, Li A. Survey of knowledge of villagers in prevention and control of SARS in Hainan Province. *Chin Trop Med*. 2005;5:703–5.
22. Taghrir MH, Borazjani R, Shiraly R. COVID-19 and Iranian Medical Students; A Survey on Their Related-Knowledge, Preventive Behaviors and Risk Perception. *Arch Iran Med*. 2020;23(4):249–54.
23. Alzoubi H, Alnawaiseh N, Mnayyis AA, Lubada MA, Aqel A, Shagahin HA. COVID-19 – Knowledge, Attitude and Practice among Medical and Non-Medical University Students in Jordan. *J Pure Appl Microbiol*. 2020;14(1):17–24.
24. Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpure AS, et al. COVID-19 Awareness Among Healthcare Students and Professionals in Mumbai Metropolitan Region: A Questionnaire-Based Survey. *Cureus*. 2020;12(4):e7514.
25. Sharma A. COVID-19 Knowledge, attitude and practice among medical students. *Int J Sci Res*. 2020;9(7):6–8.
26. Huynh G, Nguyen T, Tran VK, Vo KN, Vo VT, Pham LA. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital. *Asian Pac J Trop Med*. 2020;13(6):260–5.
27. Saqlain M, Munir MM, Rehman SU, Gulzar A, Naz S, Ahmed Z. Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. *J Hosp Infect*. 2020;105(3):419–23.

Author biography

Anju Gahlot Professor

S P Singh Assistant Professor

Vijayshree Verma PG Student

Monika Singh PG Student

Cite this article: Gahlot A, Singh SP, Verma V, Singh M. A study of knowledge, attitude and practices regarding SARS COV-2 infection and its control amongst medical students of Rama Medical College Kanpur (U.P). *Indian J Forensic Community Med* 2020;7(3):134-139.