



Evaluation of knowledge, attitude and practice towards corona virus disease 2019 (COVID-19) among second year medical students in post lockdown period: A quick online questionnaire based study

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Abstract:

Background: The year 2019–2020 has seen a worldwide pandemic resulting from corona virus disease 2019 (COVID-19), which can result in illnesses ranging from the common cold to severe acute respiratory syndrome (SARS). Hence, this global health crisis of COVID-19 pandemic offers a unique opportunity to evaluate knowledge, attitude, and practice among medical students.

Methods: This prospective, web-based, cross-sectional study was conducted among 100 undergraduate medical students after obtaining informed consent during first week of August 2020 using a 37-items structured questionnaire based on the Ministry of Health and Family welfare course materials and was distributed using Google forms. All the tests were performed at a significance level of 5%.

Results: Overall, the study participants' knowledge regarding COVID-19 was satisfactory they have positive attitude and they followed healthy preventive practices also. There was no significant difference found among male and females in knowledge and practice however attitude score was affected by gender.

Conclusions: Most medical students had satisfactory knowledge levels, and discrepancies in the perceptions of COVID-19, thus, with adequate training and counseling undergraduate medical students via structured teaching program, most medical students can act as a potential reservoir to fill the gaps in health-care services in the hour of need.

Keywords: COVID-19, Knowledge, attitude, Practice, Medical students, questionnaire

1. Introduction:

COVID-19 also known as coronavirus disease 2019 is an infectious disease caused by a new, recently discovered novel Coronavirus(1). This new virus and the disease were unknown before the outbreak began in Wuhan, China, in December 2019. It was responsible for serious illness and numerous deaths in china. The scope of this outbreak is unclear at present and the situation is rapidly evolving still now(2).

COVID-19 causes respiratory illness with main clinical symptoms such as a dry cough, fever and in more severe cases, difficulty in breathing. In the past, multiple epidemic outbreaks occurred like SARS in 2002 resulting in 800 deaths and Middle East respiratory syndrome (MERS)-CoV in 2012 resulting in 860 deaths.(3)(4)

COVID-19 is a highly contagious disease and has spread very quickly. In China only there were 50,054 laboratory-confirmed cases and 1524 deaths by 15 February 2020 and had reached 25 countries.(5) China has taken firm infection control measures by isolating the exposed and suspected cases according to international standards. China is also constantly updating the diagnosis, treatment process and carrying out public education(6).

On 11 March 2020, WHO changed the status of the COVID-19 emergency from public health international emergency (30th January 2020) to a pandemic. The fatality

rate of the current pandemic is on the rise (2%-4%), relatively lower than the previous SARS-CoV (2002) and MERS-CoV (2012) outbreaks(7).

The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. As of 8 June 2020, the MoH & FW has confirmed a total of 256,611 cases, 124,430 recoveries (including 1 migration) and 7,200 deaths in the country.(8) After a 14-hour voluntary public curfew named as 'Janta Curfew' on 22nd March, India immediately announced the implementation of a nation-wide complete lockdown for 21 days (i.e. from 25th March to 14th April 2020), which only allowed essential services to operate over the entire 130 million population of India(8). Further centre extended the lockdown till 31 May(9)(10). This pandemic has increased workload on the healthcare system in all over the world. Following preventive measures is the most important step in order to prevent the spread of disease as no specific vaccine or drug found still now.(11)

Guidelines for the prevention and control of COVID-19 for health-care workers were published by the WHO and Ministry of Health and Family welfare and they have also initiated several online training sessions and materials on COVID-19 in various languages.

Thus this COVID-19 pandemic offers an unique opportunity to evaluate knowledge, attitudes, and practices (KAP) towards COVID-19 among medical students.

Several studies have shown that the KAP level in individuals is associated with effective prevention and management of illness and promotion of one's own health. On the contrary, deficiencies in KAP are linked to poor health and maladaptive disease preventive behavior.(12)(13)(14) Therefore, we conducted a survey to investigate the Knowledge, Attitude and Practice towards COVID-19 among the second year medical students of a government medical college during the post lockdown period of the COVID-19 outbreak in Maharashtra.

2. Material and methods:

Study setting and design:

This online, Cross sectional study was carried out at Mahatma Gandhi Institute of Medical Sciences, Sevagram in Wardha district of Maharashtra, India during the 1st week of August 2020.

Study population and sample size:

The study participants included 100 Second year MBBS students of 2017 batch. The study participants were informed about the details of the study objectives for filling the questionnaire and confidentiality and informed consent was obtained from each participant and anonymity and confidentiality of the participants was maintained.

Study tool:

A self-designed questionnaire was prepared. The questions established on the basis of some published literature(15)(16)(17) and from the MoHFW i.e. Ministry of Health and Family Welfare website(18) and the authors' experience of KAP.

The study questionnaire comprised four sections containing 37 items. Section 1 had two items that explored the demographic information of respondents like age and gender. Section 2 comprised 17 questions and aimed to gather students' in depth knowledge about COVID-19 including symptoms, route of transmission, high risk groups, treatment, vaccination, preventive measures for COVID-19. Section 3 comprised 6 questions and aimed to evaluate students' attitudes about COVID-19. Section 4 comprised of 12 questions and aimed at evaluation of students' practices for prevention of COVID-19 including washing hands, using personal protective equipments, carrying hand sanitizer, social distancing and travelling. 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. 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. The questionnaire was distributed using Google Forms.

Data collection:

The data was collected using Google form platform as an online survey. Participation in this survey was voluntary and was not compensated. Informed consent was obtained from each participant prior to participation. students were approached and recruited through social networking websites (Gmail, WhatsApp), and the survey links were posted on the same. 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. The participants were given a week's time to voluntarily complete the questionnaire and those does not respond back to the questionnaire within defined time and reminders were declared as dropouts and were not included in the data analysis.

Data analysis:

The collected data were tabulated and analysed using Microsoft excel worksheet. Measurement data were expressed as mean \pm SD and categorical data were expressed as frequency and percentage. Parametric tests (t and ANOVA) were used for comparison between different subgroups of the participants pre-intervention. Comparisons of KAP scores among the students with respect to gender 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 $\alpha=0.05$.

3. Results:

Demographic characteristics:

Frequency and percentage of all the demographic characteristics like gender and age are represented in Table 1. Out of the 100 participants, 60% were males while the rest were female (40%); 53% of them were between 18-20 years old while 47% were > 20 years old. Females were relatively younger than males though there was no significant difference in age of males and females ($P > 0.05$)

Table 1: Demographic information of the participants:

Age	Sex		Total
	Female	Male	
18-20	25	28	53
>20	15	32	47
TOTAL	40	60	100

Knowledge:

The results of the knowledge survey are presented in Table 2. The majority of the participants (98%) had correct knowledge about the main symptoms of COVID-19. Furthermore, 99% of the participants were aware that early symptomatic and supportive treatment can help most patients recover from the infection. Most of the participants knew that not all persons with COVID-19 develop severe cases. 79% of the participants were of the opinion that children and young adults need to take extra precaution whereas only 33% participants considered pregnancy as one of the risk factor for developing COVID-19. The majority of the students had correct knowledge about the

transmission routes of the virus. Only 76% participants agreed that ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus. 79% participants believed that COVID-19 can be transmitted in areas with hot and humid climate. Consciousness about the prevention and treatment was high among the participants, such as nearly everyone (99%) knew that COVID-19 can be prevented by avoiding crowded places such as train stations and avoiding public transportation. Furthermore, 96% of participants realized 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.

Table 2: Results of the knowledge survey (n = 100)

Questions	True	False	I don't know
1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia.	98	2	0
2. There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection.	99	1	0
3. Not all persons with COVID-2019 will develop severe cases. Only those who are elderly, have chronic illnesses, and are immunocompromised are more likely to be severe cases.	92	7	1
4. Eating or contacting wild animals would not result in the infection by the COVID-19 virus.	57	28	15
5. Persons with COVID-2019 can transmit the virus to others when a fever is not present.	93	4	3
6. The COVID-19 virus spreads via respiratory droplets of infected individuals.	96	1	3
7. Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus.	76	17	7
8. It is necessary for children and young adults to take extra precautions to prevent the infection by the COVID-19 virus.	79	19	2
9. To prevent the infection by the COVID-19 virus, individuals should avoid going to crowded places such as train stations and avoid taking public transportation	99	0	1
10. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	98	1	1
11. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the observation period is 14 days	96	1	3
12. Pregnancy is one of the risk factor for developing COVID-19.	33	36	31
13. Severe pneumonia is one of the clinical syndrome associated with COVID-19 infection	80	7	13
14. COVID-19 can spread through food especially Eating chicken, meat, eggs	8	79	13
15. COVID 19 virus can not be transmitted in areas with hot and humid climates	9	79	12
16. vaccines against pneumonia protect you against new corona virus	2	75	23
17. Tab HYDROXYCHLOROQUINE can prevent Covid 19 ?	31	47	22

Attitude:

Table 3 shows that the high percentage of the students (91%) agreed that media coverage (e.g. newspaper, television, online) give much exposure to news about COVID-19 virus while 9% were not sure about that. Only half of the participants (54%) were in favor of “Janta

Curfew” and 80% the participants supported the lockdown of the major cities. Only 34% participants believed that COVID-19 will be successfully controlled while 66% participants were not sure. Most of the participants thought that unnecessary travelling had not helped India to control COVID-19. 70% of the participants supported using Aarogya setu app to keep track of COVID-19 updates.

Table 3: Results of the attitude survey (n=100)

Questions	True	False	I don't know
1. Media coverage (e.g. newspaper, television, online) gives much exposure to the news about the COVID-19 virus?	91	4	5
2. "Janta Curfew" has helped India to win the battle against the COVID-19 virus.	54	36	10
3. Lockdown of major cities has helped India to control the COVID-19 virus?	80	15	5
4. The COVID-19 virus finally will be successfully controlled.	34	28	38
5. Unnecessary travelling during the outbreak has helped india to control COVID-19.	21	75	4
6. Using Aarogya setu app has helped a lot of people to keep track of COVID-19 updates	70	14	16

Practice:

Table 4 presents the prevention practices of the participants. Almost all participants accepted that during COVID-19 outbreak they increased the frequency of washing their hands. Also, a high percentage of participants used hand sanitizer, washed their hands, used a mask, covered a cough and sneeze with a tissue, which represented a good practice of the participants towards COVID-19. Maintaining social distance during the outbreak was the second most prevalent behavior reported by the participants. A high percentage of

the participants avoided unnecessary travel (99%) and outing (98%) during the outbreak. 85% of the participants preferred readymade sanitizer over homemade one whereas 15% participants used homemade sanitizer. 61% participants stored helpline number to contact in case of COVID-19 disease suspicion. However, 39% participants failed to store helpline number. 27% participants thought that taking hot bath can prevent COVID-19 whereas 73% participants believed that it can not prevent COVID-19. 89% participants believed that drinking alcohol is of no use in preventing COVID-19.

Table 4: Results of the practice survey (n=100)

Questions	Yes	No
1. Did the outbreak of the COVID-19 virus make you increase the frequency of washing hands?	99	1
2. Did the outbreak of the COVID-19 virus make you use hand sanitizer more frequently?	98	2
3. Did the outbreak of the COVID-19 virus make you use personal protective equipment (e.g. mask) more often than you used to?	97	3
4. Did you carry hand sanitizer with you during the outbreak in India?	93	7
5. Did you write down or store in your phone any helpline number to contact in case you suspected that you or someone you know had the COVID-19 virus?	61	39
6. Did you maintain social distance during the outbreak?	94	6
7. Did you cover cough and sneeze with a tissue, handkerchief, etc. during the outbreak?	99	1
8. Did you avoid unnecessary travel during the outbreak?	99	1
9. Did you avoid unnecessary outing during the outbreak?	98	2
10. Did you choose homemade sanitizer over readymade one ?	15	85
11. Taking Hot bath can prevent COVID-19 disease.	27	73
12. Drinking alcohol can prevent Covid 19.	11	89

Analysis of KAP scores with respect to demographic characteristics

Table 5 describes the scores of knowledge, attitude, and practices towards COVID-19 with respect to demographic variables such as gender and age. The knowledge scores of both males and females were equal and there was no significant difference ($P>0.05$).

Higher scores of females were observed in the attitude as compared with that of males. In addition, the difference in

attitude score was significant ($P<0.05$). Practice score was slightly higher in males as compared to females but the difference was not significant ($P>0.05$).

Secondly, the Knowledge score among different age-categories was almost equal. While attitude score was higher among <20 age group than the other category, with no significant difference among groups ($P>0.05$). Practice score was higher among >20 age group though the difference was not significant ($P>0.05$).

Table 5: Comparison of Knowledge, attitude and practice score among different demographic variables

Variables	Knowledge			Attitude			Practice		
	Mean+SD	t value	P value	Mean+SD	t value	P value	Mean+SD	t value	P value
Gender									
Male	13.78+1.89	0.15	0.88	3.23+1.53	2.36	0.02	10.07+1.06	1.06	0.29
Female	13.73+1.92			3.90+1.13			10.28+0.82		
Age									
≤20	13.79+1.85	0.18	0.86	3.66+1.43	1.20	0.23	10.13+0.88	0.20	0.85
>20	13.72+1.95			3.32+1.40			10.17+1.07		

4. Discussion

In the present study, the knowledge, attitude, and practice of the medical students of the Mahatma Gandhi Institute of Medical Sciences, Sewagram towards COVID-19 were assessed. We found that, during the COVID-19 pandemic, 94% of the participants had extensive knowledge of COVID-19.

99% of the students responded symptomatic or supportive therapy to recover from the COVID-19 and that there is no effective cure but as the disease has resulted into pandemic, there are various studies by Chen *et al.*, Wang *et al.*, and Stebbing *et al.*, that are validating the efficacy of various drugs and plasma therapy for COVID-19 (19)(20)(21). In addition, few study participants believed that COVID-19 can be prevented with Hydroxychloroquine (31%).

In the present study no significant difference was found in mean knowledge scores with respect to all demographic variables i.e. age and gender. But gender played a significant role in mean attitude scores. Practice score was higher in males which shows that practice is affected by gender and this result is similar to the studies conducted in China, which also reported that practice scores were affected by gender(17)(22). It is worth mentioning that sufficient COVID-19 knowledge scores, positive attitude, and adequate practice were found among the students.

Considering that the present study assessed only two demographic variables, so it is recommended that more demographic factors should be included in further studies.

Our study shows that the results are very positive towards KAP. But this study was performed among medical students and not general population so we still have some suggestions for both the government and residents of India as well: (1) The importance of frequently washing hands with sanitizers should be emphasized more;

(2) Avoiding crowded places and unnecessary travelling and outing

(3) wearing masks regularly.

Consequently, health promotion activities are vital in improving KAP towards COVID-19. Positively, In the near future, India will be able to tackle COVID-19 through joint efforts of the Indian governments and all Indian residents.

The major limitation of the present study is that the sample sizes are 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 of Maharashtra and India as well, although it can certainly help the state and the country to enhance the awareness regarding KAP in the general population. 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 is also a limitations. In view of these, more studies should be conducted in the near future to investigate the KAP for COVID-19 at various states and countries.

5. Conclusion:

Most medical students had satisfactory knowledge levels, positive attitude towards COVID-19 and they had adequate practices also. Though there are some discrepancies in the perceptions of COVID-19, thus, with adequate training and counseling medical students via structured teaching program, most medical students can act as a potential reservoir to fill the gaps in health-care services in the hour of need.

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