Assessment of knowledge, preventive behaviours, and risk perception related to Covid-19 among medical students of Rawalpindi

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Abstract

Objectives: The study was conducted to determine the knowledge, preventive behaviours, and perception of risk related to Covid-19 among the medical students who are front-line workers and are more susceptible to being infected.

Materials and Methods: This analytical cross-sectional study was conducted in medical students of 1st, 2nd, and 3rd-year MBBS of various medical institutions of Rawalpindi. The study duration was 5 months (March 2020 to July 2020). The sample size was 425. Age ranging from 18 to 21 and 273 (64.2%) comprised of females. The inclusion criteria were those students who gave consent and filled out the questionnaire and the exclusion criteria were those who didn't concede. The data was analysed on SPSS. The confidence interval was set to be 95% with a 5% margin of error.

Results: Majority (91.4%) of the students were aware of the basic Covid-19 related knowledge. Practicing preventive behaviours was also on the higher side i.e. 96.1%. A significant relationship ($p < 0.05$) was found between levels of education and Covid-19 related knowledge; and between cancelled meetings, eating out with friends, less shopping, reduced the use of closed spaces, and practicing preventive behaviours. The risk perception section showed a mean $\pm$ standard deviation at 4.75 ± 1.67 which was at a moderate level.

Conclusion: Participants were found to have high levels of knowledge related to Covid-19 except use of N95 masks and the use of anti-viral drugs for treatment. Among the self-reported preventive behaviours section, the lowest score is related to the frequency of cleaning and disinfecting items that can be easily touched with hands (i.e. door handles and surfaces). Participants had moderate risk perception despite having high levels of knowledge and high performance in self-reported behaviours.

Keywords: Covid-19, medical students, risk perception.

Introduction

Coronavirus Disease 2019(COVID-19) is a continuous pandemic brought about by Severe Acute Respiratory Syndrome-2(SARS-CoV-2) otherwise called novel Coronavirus.[1] The infection arrived in Pakistan on 26th February 2020. The cases have been on increase &decrease with three peaks till now. The primary outbreak began in Wuhan, China. It is known to cause respiratory infection which can present as mild manifestations like common cold to viral pneumonia, acute respiratory syndrome, and even death.[2] Asymptomatic carriers may likewise be present. Significant morbidity and mortality have been brought about by it everywhere throughout the world till now. Genetically, it is supposed to be like SARS (sub-acute respiratory syndrome) and MERS (Middle East Respiratory Syndrome). It is a group of RNA infections that cause diseases among birds and mammals.[3]

The infection is principally spread between individuals during close contact, regularly through droplets by coughing, sneezing, and talking. Instead of going through the air over significant distances, the droplets for the most part tumble to the ground or onto surfaces.[4] Transmission may likewise happen through droplets that can remain suspended in the air for longer time frames. Less ordinarily, individuals may get infected by contacting a contaminated surface and afterward touching their face.[5] It is most infectious during the initial three days when it's symptomatic, although the incubation period is 14 days almost. The source is said to be bats or pangolins.[6]

Fever, cough, fatigue, shortness of breath, and loss of sense of smell are common symptoms. Pneumonia and acute respiratory distress syndrome may be the complications. The time from exposure to onset of symptoms is typically around five days but may range from two to fourteen days. There is no vaccination available but primary treatment is symptomatic and supportive therapy.[7]

Hand washing, covering one's mouth when coughing, maintaining distance from other people, wearing a face mask in public settings, disinfecting surfaces, increasing ventilation and air filtration indoors, and monitoring and self-isolation for people who suspect they are infected are recommended preventive measures.[8] Travel restrictions, lockdowns, workplace hazard controls, and facility closures are responses implemented worldwide by the authorities. Many places have also worked to increase testing capacity and trace contacts of infected persons.[9]

The high-risk group for developing serious complications from COVID-19 illness include older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes. The virus is thought to spread mainly from person-to-person between people who are in close contact with one another (within about 6 feet). Especially after you have been in a public place, or after blowing your nose, coughing, or sneezing, washing hands often with soap and water for at least 20 seconds is important to prevent it.[10] As of now, surgical masks and N95 respirators are basic supplies that ought to be held for healthcare workers and other people on the call. Clean and disinfect habitually contacted surfaces. Make certain to get care in the event that you experience difficulty breathing, or have some other emergency warning signs, or on the off chance that you think it is a crisis.

This current study assessed the perception of medical students about the steps in the eradication of the Corona virus. It was conducted in the early and middle stages of the Covid-19 outbreak. Medical students are the mainstay of health care workers in university hospitals; therefore, the assessment of their knowledge could provide a reference for preventing the further spread of this pandemic and proper planning. The objectives of this study were to get a snapshot of the perception of medical students about the various ways to prevent the spread of this virus. To get know-how of their knowledge about this pandemic and the ways to control it.

Materials and Methods

The study design was an analytical cross-sectional study. It was conducted on medical students of various medical institutions of Rawalpindi and their consent was taken beforehand. The study duration was 5 months (March 2020 to July 2020). Ethical approval was taken from the ethical review committee. The total sample size was calculated keeping in mind the objectives of this particular study by considering different parameters and using W.H.O. sample size calculator with 95% confidence level, 5%margin of error, it was computed to be 377. Non-probability purposive sampling was done. The inclusion criteria were those students who gave consent and filled out the questionnaire and the exclusion criteria were those who didn't concede. A validated and structured questionnaire was used based on a framework from previous studies about MERS and a new review on COVID-19.[11,12] The questionnaire consisted of four

sections: demographic data, COVID-19 related knowledge, self-reported preventive behaviours, and risk perception. In the COVID-19 related knowledge section, a correct answer was assigned 1 point and an incorrect answer or 'I don't know' was assigned 0 points. A score ≥ 75% was designated as high, 50%−75% as moderate, and ≤50% as low level of knowledge. In the self-reported preventive behaviours section, seventy-five percent or higher scores were designated as high performance and <75% as low performance. Two items were used to assess the risk perception of COVID-19 among participants. Responses were provided using a 4-point Likert-type scale (1=not at all, 4=absolutely yes). The total cumulative score ranged from 2 to 8. Scores between 2 to 3 were designated as low, 4 to 5 as moderate, and 6 to 8 as high-risk perception. Data was coded and confidentiality was maintained. SPSS version 21 was used for the analysis of this data. The Chi-square test of significance was applied in order to see the relationship between different variables. A p-value ≤ 0.05 was taken as significant.

Results

A total of 425 medical students completed the questionnaire. Most of the sample population was> 20 years old i.e. 265 (62.4%) and mostly comprised of females i.e. 273 (64.2%) while males were 152 (35.8%). Also, 113 (26.6%) students were from the 1st year, 85 (20%) 2nd year and 227 (53.4%) were from 3rd year who participated in the study because they have least or no hospital exposure so knowledge, preventive behaviours, and risk perception were assessed in them. Majority of study participants; 385 (90.6%) had received education about Covid-19. Those who had received an education were asked about their source and most of them; 255 (60%) received education from all available sources e.g. W.H.O., CDC, national guidelines and media, a small proportion from media only; 109 (25.6%) and W.H.O., CDC only; 46 (10.8%). Table 1 lists the Covid-19 related knowledge and practicing preventive behaviours items. The average of correct answers for knowledge-related items was 91.4%. The lowest scores were pertaining to three items; 'The origin of COVID-19 is not clear but it seems that it has been transmitted to humans by seafood, snakes or bats', 'only during intubation, suction, bronchoscopy, and cardiopulmonary resuscitation, you have to wear N95 mask' and 'the disease can be treated by usual antiviral drugs'. In the Covid-19 related self-reported preventive behaviours section,

the average of correct answers was 96.1%. The lowest score was pertaining to one item; 'I increased the frequency of cleaning and disinfecting items that can be easily touched with hands (i.e. door handles and surfaces)'.

Table 1: Level of Covid-19 related knowledge and practicing preventive behaviours (n = 425)

Level of COVID-19 Related Knowledge: Items (True or False)	*Correct Answer*
COVID-19 is a respiratory infection caused by a new species of the coronavirus family. (T)	98.6%
The first case of COVID-19 was diagnosed in Wuhan, China. (T)	97.6%
The origin of COVID-19 is not clear but it seems that it has been transmitted to humans by seafood, snakes, or bats. (T)	87.1%
Its common symptoms are fever, cough, and shortness of breath but nausea and diarrhea were reported rarely. (T)	97.9%
Its incubation period is up to 14 days with a mean of 5 days. (T)	96.9%
It can be diagnosed by PCR test on samples collected from nasopharyngeal and oropharyngeal discharge or from sputum and bronchial washing. (T)	95.5%
It is transmitted through respiratory droplets such as cough and sneeze. (T)	96.9%
It is transmitted through close contact with an infected case (especially in the family, crowded places, and health centers). (T)	98.8%
The disease can be prevented through handwashing and personal hygiene. (T)	98.6%
A medical mask is useful to prevent the spread of respiratory droplets during coughing. (T)	97.6%
The disease can be prevented through no close contact such as handshakes or kissing, not attending meetings, and frequent hand disinfection. (T)	97.4%
All people in society should wear masks. (F)	90.4%
Only during intubation, suction, bronchoscopy, and cardiopulmonary resuscitation, you have to wear N95 mask. (T)	62.8%
The disease can be treated by usual antiviral drugs. (F)	59.3%
If symptoms appear within 14 days from direct contact with a suspected case, the person should inquire at a nearby public health center. (T)	96.2%
Total	**91.4%**
Practicing preventive behaviours	**Yes %**
I cancelled or postponed meetings with friends, eating out, and sports events.	96.9%
I reduced the use of public transportation.	97.2%

I went shopping less frequently.	97.9%
I reduced the use of closed spaces, such as a library, theatres, and cinema.	97.6%
I avoided coughing around people as much as possible.	96.2%
I avoided places where a large number of people are gathered.	96.7%
I increased the frequency of cleaning and disinfecting items that can be easily touched with hands (i.e. door handles and surfaces).	90.4%
I washed my hands more often than usual.	96%
I discussed COVID-19 prevention with my family and friends.	96.5%
Total	**96.1%**

Table 2 shows a significant relationship between different variables i.e. receiving education about COVID – 19 and usage of N-95 mask ($p < 0.05$); level of education of students with usage of antiviral drugs for Covid-19 treatment, ($p < 0.05$); and when practicing preventive behaviours were compared with gender, there were 4 significant associations between them ($p < 0.05$) i.e. 'I cancelled or postponed meetings with friends, eating-out and sports events', 'I went shopping less frequently', 'I reduced the use of closed spaces, such as a library, theatres, and cinema', 'I discussed COVID-19 prevention with my family and friends.

Table 2: Factors significantly associated with N 95 mask, anti-viral drugs and gender (n = 425)

Covid-19 related knowledge		_N 95 mask_			
		True	False	Total	p-value
Received education	Yes	250	135	385	0.005
	No	17	23	40	
	Total	267	158	425	
Covid-19 related knowledge		Anti-viral drugs			
		True	False	Total	p-value
Level of education	1st year	56	57	113	0.015
	2nd year	39	46	85	
	3rd year	78	149	227	
	Total	267	158	425	
Practicing preventive behaviours		Gender			
		Male	Female	Total	p-value
Cancelled Meetings	Yes	144	268	412	0.049
	No	8	5	13	
Less Shopping	Yes	145	271	416	0.008
	No	7	2	9	
Closed Spaces	Yes	145	270	415	0.022
	No	7	3	10	
Discussed Covid-19	Yes	142	268	410	0.011
	No	10	5	15	

Table 3 shows the risk perception section, there were two items. The mean scores were 2.56 and 2.19 respectively. The total cumulative score was 4.75 which is indicative of moderate risk perception.

Table 3: Risk perception of Covid-19 (n = 425)

Items	_Mean $\pm$ S.D. (possible range: 1 – 4)_
I may become infected with COVID-19 more easily than others.	2.56 $\pm$ 0.77
I am afraid to be infected with COVID-19	2.19 $\pm$ 0.9
Total	**4.75 $\pm$ 1.67 (possible range = 2-8)**

Discussion

Since its initial outbreak in China in December 2019, the Covid-19 disease has enormously spread worldwide and has had a cascading effect. The disease is inciting panic and fear among people for a number of reasons as it is new which means nobody is immune and there is no vaccine yet.[13]

Participants were found to have higher levels of knowledge as compared to the study conducted by Mohammad Hossein Taghrir et al which showed lower knowledge of medical students as compared to this.[14] This may be attributed to increasing awareness and knowledge of the particular disease later on as compared to the early stages when that study was conducted.

Assessment of the sources of information used by medical students to learn about Covid-19 revealed an expected massive reliance (60.0%) on all mentioned options: social media (25.6%), national guidelines (2.1%), and official sites (10.8%) with a low percentage (1.4%) of students relying on other mediums. This was not in accordance with a similar study on medical students regarding their knowledge, attitude, and precautionary measures of COVID-19 in Jordan where social media was a major and primary source of information but the official sites were less commonly used.[15] Another study conducted on healthcare workers had shown 61% of participants including medical students used social media as a medium to

obtain information regarding COVID-19. It highlights the importance of social media in the dissemination of concerning information to the public especially in cases of such pandemics.[16] But there is a point of concern that social media contains a lot of false information as well so one should consult the source of information from authentic W.H.O., CDC, and national guidelines.

A study conducted by Akshaya Srikanth Bhagavathula et al showed a significant proportion of participants had poor knowledge of disease transmission (61%) as compared to our study which showed that more than 95% of participants had adequate knowledge about it.[17] Also the results showed that participants of our study had higher knowledge about its symptoms (97.9%) as compared to a study conducted in the U.A.E. which showed that only 63.6% of participants had adequate knowledge about the disease symptoms.[18]

The average score of preventive behaviours in our study shows a higher peak that is in accordance with a previous similar study conducted on Iranian medical students.[14] About 96% of participants adopted handwashing practice frequently and a majority 96.7% participants avoided social gatherings and preferred to stay at home that is higher as compared to a study regarding knowledge, attitude, and precautionary measures of Covid-19 conducted on medical students of Jordan.[19] Another study conducted by Ronald Olum et al showed that only 57% of participants had good practices toward the prevention of COVID-19 which was far less as compared to our study which showed that more than 90% of medical students had good preventive practices.[20]

This study is limited to the students of 1st, 2nd, and 3rd year MBBS classes, so generalization cannot be done on all medical students. Data were collected up to July 2020 and now more than one year has passed. There have been many updates since July 2020, meaning the practices maybe change now. Educational intervention should be done to medical students because they are the future doctors and in order to improve their learning and knowledge in which they are lacking.

Conclusion

The majority of the medical students had good knowledge regarding Covid-19. Their preventive practices also stand at a higher level and their risk perception is at a moderate level. The lowest scores pertaining to the origin of Covid-19, usage of N-95 mask, and treatment of Covid-19 by anti-viral drugs can be improved with educational intervention.

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