

COVID-19: Knowledge, Attitude and Practice of Preventive Measures Among Undergraduate Medical Students of Pakistan

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Abstract

Objective: To evaluate the knowledge and attitude of undergraduate medical students regarding Covid-19 and to assess their practice of precautionary measures.

Methods: This cross-sectional study was conducted from 13th to 18th July'2020. A pretested questionnaire, created on google forms, was distributed to a sample of medical students employed through convenience sampling. Data was analyzed using IBM SPSS version 20. Qualitative variables were described in frequencies and percentages. Chi-square test was applied to find associations between variables. A p-value of less than 0.05 was considered statistically significant.

Results: We received 406 validated responses from medical students studying in Punjab (35%), Khyber Pakhtunkhwa (21%), Sindh (19%), Azad Kashmir (12.6%), Federal Capital (8%) and Balochistan (4.4%). More than two-third of them had attended lectures on Covid-19. The respondents were least knowledgeable about contagiousness after recovery (27%) and the recovery criteria of the disease (41%). About 40% of them would avoid working with a Covid-19 patient. Practice of certain precautionary behaviors were associated with level of concern (p=0.01). Handwashing, use of face masks and social distancing measures were adopted by the majority of the respondents (≥80%). The respondents reported increased worry (75%) and loneliness (50%) during the pandemic. Increased anxiety was more common among female participants (p=0.04).

Conclusion: The practice of preventive measures among medical students was satisfactory. However, we identified some knowledge gaps in their understanding about Covid-19 which should be addressed. Formal or practical lectures on Covid-19 may benefit medical students.

Keywords: Covid-19, Medical students, KAP study, Pakistan

Introduction

The Coronavirus disease 2019 (Covid-19) is a respi-ratory infection caused by SARS CoV-2.¹ It started as a pneumonia outbreak in Wuhan, China in December 2019 and eventually spread to more than 200 countries, causing a pandemic.² The first

confirmed case of Covid-19 in Pakistan presented on February 26, 2020.³ To date, there have been 261,916 reported cases of COVID-19, with 5,522 reported deaths.⁴ To control infection spread, a national lockdown was instituted, and all educational institutions were closed. Fortuna-tely, this month we saw a downturn in the number of new cases.⁵ This development led to discussions about reopening educational institutions. If the government decides to resume all academic activities, strict implementation of standard operating procedures (SOP's) will be necessary to ensure the safety of students and faculty. The implementation of safety guidelines is important especially in medical colleges because their students and faculty are required to spend time in their teaching hospitals during clinical ward rounds, and maybe at a greater

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risk of exposure to infection. To improve the condition of medical colleges, we need studies that assess medical students' knowledge, attitude and practice of preventive measures. Currently, there is only one study that assessed the awareness of medical students regarding Covid-19. It was a single institution study and also included students of Allied health sciences.⁶ The objective of our study was to identify knowledge gaps in medical students and to evaluate their attitudes and practices regarding Covid-19. The findings of this study will highlight the deficiency areas of medical students and help improve those areas for better adoption of preventive measures.

Methods

This cross-sectional study was conducted from July 13, 2020 to July 19, 2020. Medical students studying in different medical colleges of Pakistan were conveniently sampled. The required sample size was 374 (95% confidence interval and 5% margin of error). The population estimate was obtained from Wikipedia and the calculation was done with Raosoft calculator.⁷ The inclusion criteria for this study was enrolment in the MBBS program. Responses without given consent were excluded. We used a pretested questionnaire from a Jordanian KAP study.⁸ The questionnaire was created on Google forms and its link was shared through WhatsApp Messenger (a freeware messaging platform) to medical students of different colleges. The participants were required to sign in with their Google account to fill out the questionnaire. This prevented participants from making duplicate submissions. A description of the study along with a statement of consent, information confidentiality and voluntary participation study was given at the beginning of the questionnaire. In the first section, the participants' gender, year of education and the name and location of their medical college were recorded. Section 2 and 4 contained statements that assessed their knowledge about Covid-19 transmission, virulence and potential risk factors. Section 3 assessed their perceived knowledge about Covid-19. In section 5, we assessed their perception regarding susceptibility and disease severity. Section 6 assessed their attitude toward testing and prevention measures. The response options were Agree, Disagree and Don't know. Section 7 recorded behaviour changes during the pandemic and section 8

asked about the precautionary measures adopted since the start of the pandemic. Lastly, the participants were asked if they had attended any lecture regarding Covid-19 and if they were interested in attending one. They were also asked about their level of concern during the pandemic. This study was approved by the Institutional Review Board of CMH Lahore Medical College & Institute of Dentistry.

The responses were analysed using IBM SPSS version 20. Descriptive variables were expressed in frequencies and percentages. Chi-square test was performed to find associations between variables and a p-value of less than 0.05 was considered statistically significant.

Results

We surveyed 455 medical students from 17 public and 26 private medical colleges of Pakistan and received 406 valid responses. The majority respondents were females (n=256, 63%). Most of them were studying in Punjab (n=143, 35.2%); followed by Khyber Pakhtunkhwa (n=86, 21.2%), Sindh (n=77, 19%), Azad Kashmir (n=51, 12.6%), Federal Capital (n=31, 7.6%) and Balochistan (n=18, 4.4%). Our sample consisted of 20.4% first year students, 18.5% second year students, 11.6% third year students, 23.9% fourth year students and 25.6% final year students. More than two-third of the students had attended lectures on COVID-19. Moreover, 68% of them said they wanted to attend more COVID-19 related lectures.

In section 2, participants identified "hand shaking" (n=390, 96.1%), "large droplet inhalation" (n=361, 88.9%), "kissing" (n=352, 86.7%), "air" (n=266, 65.5%), "skin contact" (n=309, 76.1%) and "contact with contaminated surfaces" (n=381, 93.8%) as potential modes of SARS CoV-2 transmission. Fifty-three percent (n = 216) respondents said that "animals" were an unlikely source of SARS-CoV-2 transmission while 23.6% (n=96) were unsure about it. About 41% (n=167) of the respondents were of the view that "contaminated food" was a potential source of COVID-19 however fewer respondents (n=123, 30%) agreed that COVID-19 has a Feco-oral mode of transmission. One third of the participants were unsure if SARS-CoV-2 can be transmitted from breast milk (n=144, 35%) or vertically (n=140, 34%).

Blood transfusion (n=188, 46.3%) was identified as another likely source of COVID-19.

In section 3, the majority claimed that they had clear knowledge of COVID-19 symptoms (89.9%) and transmission (88.2%). The least understood subject for them was “infectiousness after recovery” (27.3 %), as evident in figure 1.

Sections 4, 5 and 6 are summarized in table 1.

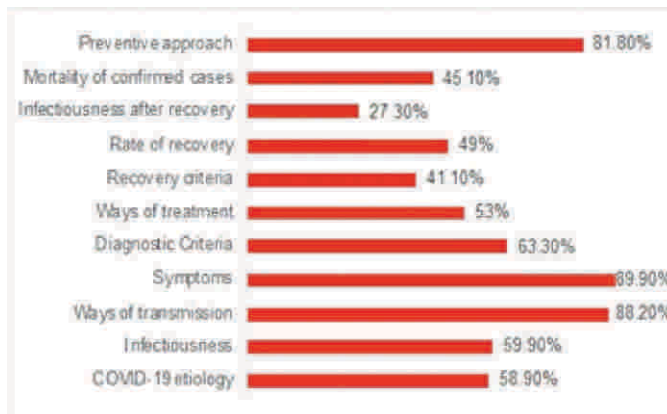


Table 1: Statements Regarding Potential Risks, Susceptibility and Attitude Towards Testing and Prevention

Section 4	Statements	Disagree	Don't know	Agree
1.	COVID-19 has severe implications on health and economy of Pakistan.	6 (1.5%)	35 (8.6%)	365 (89.9%)
2.	The spread of COVID-19 in Pakistan is controllable.	121 (29.8%)	107 (26.4%)	178 (43.8%)
3.	I consider myself as knowledgeable about COVID-19.	31 (7.6%)	122 (30%)	253 (62.3%)
4.	People with chronic diseases are at a higher risk for COVID-19.	13 (3.2%)	47 (11.6%)	346 (85.2%)
5.	Unlike common cold viruses and other strains of Corona viruses, COVID-19 could cause pneumonia.	25 (6.2%)	90 (22.2%)	291 (71.7%)
6.	COVID-19 has a high recovery rate.	38 (9.4%)	101 (24.9%)	267 (65.8%)
7.	One sick person can transmit the disease to about four other people.	34 (8.4%)	81 (20.0%)	291 (71.7%)
8.	Health education can help to prevent the disease.	8 (2.0%)	48 (11.8%)	350 (86.2%)
9.	Wearing a regular mask prevents getting the disease.	18 (4.4%)	56 (13.8%)	332 (81.8%)
10.	This virus is a human made or a biological weapon.	148 (36.5%)	163 (40.1%)	95 (23.4%)
11.	The media coverage of COVID-19 in Pakistan is sufficient.	167 (41.1%)	116 (28.6%)	123 (30.3%)
12.	I spread information about this virus without checking the facts.	306 (75.4%)	61 (15.0%)	39 (9.6%)
13.	I double check information about the virus that I read/heard.	54 (13.3%)	92 (22.7%)	260 (64.0%)
14.	I have stocked up on supplies in case of another lockdown.	255 (62.8%)	79 (19.5%)	72 (17.7%)
15.	I would avoid working with a patient who is a suspect of COVID-19.	160 (39.4%)	85 (20.9%)	161 (39.7%)
16.	Only sick people should be wearing a mask to prevent the spread of the virus.	306 (75.4%)	53 (13.1%)	47 (11.6%)
17.	The number of COVID-19 cases will increase beyond the capacity of local hospitals.	39 (9.6%)	119 (29.3%)	248 (61.1%)
Section 5	Statements	Disagree	Don't know	Agree
1.	I am anxious of getting COVID-19.	112 (27.6%)	126 (31.0%)	168 (41.4%)
2.	I am anxious that one of my family members will get COVID-19.	79 (19.5%)	72 (17.7%)	255 (62.8%)
3.	I'm susceptible to acquiring COVID-19.	139 (34.2%)	128 (31.5%)	139 (34.2%)
4.	My family is susceptible to acquiring COVID-19.	103 (25.4%)	110 (27.1%)	193 (47.5%)
5.	It is possible to acquire COVID-19 in my local community.	47 (11.6%)	79 (19.5%)	280 (69%)
6.	I might get COVID-19 in the next 6 months.	89 (21.9%)	164 (40.4%)	153 (37.7%)
Section 6	Statements	Disagree	Don't know	Agree
1.	I would consider being tested for COVID-19 if I show signs and symptoms of the disease.	23 (5.7%)	46 (11.3%)	337 (83%)
2.	I would consider having vaccination against COVID-19 if it is available.	18 (4.4%)	33 (8.1%)	355 (87.4%)
3.	If a person gets COVID-19, they should be avoided because of it.	55 (13.5%)	60 (14.8%)	291 (71.7%)
4.	If a person gets COVID-19, their family should be avoided because of it.	61 (15.0%)	65 (16.0%)	280 (69.0%)
5.	If somebody in my family were to get COVID-19, I would want it to remain a secret.	229 (56.4%)	71 (17.5%)	106 (26.1%)
6.	If I got infected, I will be extremely stressed out by how the health-workers, people in hospital, hospitalization process will deal with me.	121 (29.8%)	108 (26.6%)	177 (43.6%)
7.	If I got infected, I will do anything to avoid isolation.	336 (82.8%)	24 (5.9%)	46 (11.3%)

Table 2: *Statements Regarding Preventive Behaviors*

Statement		Never	Rarely/ Sometimes	Often/All the time	p- value
1.	Buying masks.	21 (5.2%)	78 (19.2%)	307 (75.6%)	NS
3.	Wearing a face mask.	9 (2.2%)	59 (14.5%)	338 (83.3%)	NS
4.	Wash hands regularly.	7 (1.7%)	36 (8.9%)	363 (89.4%)	NS
5.	Use disinfectant.	19 (4.7%)	58 (14.3%)	329 (81.0%)	0.004
9.	Disinfecting my phone (screen).	60 (14.8%)	89 (21.9%)	257 (63.3%)	0.02
10.	Avoid public gatherings.	20 (4.9%)	41 (10.1%)	345 (85.0%)	0.01
11.	Stay at home as much as possible	9 (2.2%)	41 (10.1%)	356 (87.7%)	0.01
12.	Avoid eating outside.	19 (4.7%)	53 (13.1%)	334 (82.3%)	NS
13.	Avoid shaking hands when greeting others.	16 (3.9%)	62 (15.3%)	328 (80.8%)	0.005
14.	Avoid hugging others when greeting them.	17 (4.2%)	62 (15.3%)	327 (80.5%)	0.009
15.	Avoid using public transportation.	16 (3.9%)	41 (10.1%)	349 (86.0%)	0.002
16.	Get sufficient sleep.	27 (6.7%)	76 (18.7%)	303 (74.6%)	NS
19.	Persuade people to follow the precautionary guidance.	9 (2.2%)	49 (12.1%)	348 (85.7%)	NS
20.	Follow social distancing procedures.	16 (3.9%)	45 (11.1%)	345 (85.0%)	0.002

Notes: Association with Gender significant at p

Discussion

With knowledge and awareness comes the understanding of better safety practices. That is the rationale for Covid-19 related KAP studies from different countries.^{6,8} Our study assessed medical students studying in public and private medical colleges in a comprehensive manner. We highlighted the knowledge gaps present in medical students regarding Covid-19 related topics and assessed their attitude and practice of preventive measures during the pandemic. Regarding potential sources and modes of SARS CoV-2 transmission, many of respondents knew about disease transmission through contact. However, there was a significant difference in the number of people who agreed with droplet transmission (88.9%) versus airborne transmission (65.5%). Some of the respondents (23.6%) were unsure about animals being a source of the virus. One third agreed that Covid-19 had a feco-oral mode of transmission while 41% agreed that Covid-19 can be contracted from contaminated food. They were also unsure about the vertical transmission of the virus. These results were comparable to the findings of Khasaneh et al.⁸ The majority of the respondents had self-reported knowledge of Covid-19 symptoms, ways of transmission and preventive approaches. Very few respondents had clear understanding of infectiousness after recovery (27%). Many respondents (89%) agreed that Covid-19 had caused economic disruption in Pakistan. Only 43% agreed that Covid-19 is controllable. This could mean low confidence in the

healthcare system. This was reflected more in section four statement,¹⁷ where more than two third of the respondents agreed that Covid-19 cases will increase beyond the capacity of the hospitals. In section six, 43% of the participants showed extreme concern about how the healthcare workers would deal with them if they had Covid-19. Regarding the origin of the virus, some (23%) believed that the virus was human-made, and some were unsure about its origin (40%). Interestingly, 39% respondents said they would avoid working with a suspected Covid-19 patient. However, similar proportion of people disagreed with that statement. One surprising finding was that 11% respondents believed that only sick people need to wear masks. It seems that there is still some ambiguity regarding the necessity of face mask use. Similar observation was reported by Modi, Pranav D et al in their study.⁹ Eighty- three percent agreed that they would get tested if they showed signs and symptoms of the disease. Many of them were willing to get vaccinated for Covid-19.

We also observed that the respondents who were concerned about getting sick with the virus in the coming months had better hand washing habits. This could be because higher risk perception affects behavior change.¹⁰ The level of concern among the participants also influenced their compliance with certain measures like social distancing. A lot of the preventive behaviours showed association with gender, which was not observed in other studies.

We also assessed the emotional well-being of the respondents. There were increased reports of anxiety, worry and loneliness. Many participants complained of poor sleep. The participants felt less happy during the pandemic.

More than 80% of the medical students admitted to being cautious during the pandemic and had adopted preventive measures to protect themselves from the virus.

The biggest limitation of this study was its sampling method. The cross-sectional nature of the study could also be considered as a limitation.

Conclusion:

The majority of the medical students had knowledge about Covid-19 symptomology, disease transmission and prevention. A few knowledge gaps were identified in this study. Many of them were worried about themselves and their family contracting the disease. The majority of them showed good compliance towards preventive measures. A few negative psychological effects of the pandemic were highlighted in the study. Medical students showed willingness to attend additional lectures on Covid-19.

Authors Contribution:

KZ: Conceived and designed the study. Did statistical analysis and manuscript writing.

M.L: Manuscript writing and data collection.

HSL: Data collection, editing and review of manuscript.

SOS: Data collection and editing of manuscript

FI, RKA: Drafting, Revision and final approval.

Conflict of Interest: None

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