RESEARCH ARTICLE

COVID-19 related risk perception and altruistic response amongst undergraduates on reopening of educational institutes

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Abstract

Objective: To determine the coronavirus disease-2019-related risk perception and altruistic response among undergraduate medical students post-lockdown.

Method: The analytical cross-sectional study was conducted from October 1, 2020, to March 31, 2021, at the Baqai Medical University, Karachi, and comprised undergraduates aged 16 and above, studying in medical, dental, physiotherapy, pharmacy and Information technology departments. Data was collected using a structured and standardised online questionnaire. Positive responses led to a perceived risk score ranging 0-9, with a higher score indicating a greater perception of risk. The score was corelated with demographic variables. Data was analysed using SPSS 21.

Results: Of the 743 subjects, 472(63.5%) were females. The overall mean age of the sample was 21.34±1.8 years. The mean risk perception score was 3.8±2.5, and it was significantly associated with disease exposure (p<0.001). Altruism had a strong association with the perceived risk score (p<0.001), indicating lower risk perception.

Conclusion: The risk perception among the students was low, pointing towards a need of psychological assistance programme for the students.

Keywords: COVID-19, Risk, Perception, Students, Academics, Institutes. (JPMA 73: 284; 2023)

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Introduction

The coronavirus disease-2019 (COVID-19) pandemic is the defining global health crisis of modern times and arguably the greatest challenge the world has faced since World War II. COVID-19 has changed people's lives globally and their perceptions of daily living. Although the mortality rate of COVID-19 is lower than severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), it has higher rate of infectivity.[1,2] This rapid rate of transmission is a public health risk and requires focussed strategies to educate the general public about the risks involved and the precautions required. Multiple strategies have been used by health authorities globally to contain the virus, including social distancing, wearing of masks, using sanitisers, limiting gatherings, closing of the educational institutions, and imposing partial or complete lockdowns over cities and across countries.[3,4]

Risk perception is a belief towards a potential harm or a possibility of a loss.[2] Risk perceptions and fear of acquiring COVID-19 can promote preventive measures and can be used to develop future strategies. Risk evaluation by an individual can be influenced by various personal and societal factors. It is based on prior knowledge, experiences, beliefs and ability to foresee the consequences, while social, cultural and contextual factors may also influence risk perception.[5]

Pakistan witnessed its first case of COVID-19 in February 2020.[6] Both locally and globally, governments have taken measures to contain the virus by adopting smarter techniques and new models of prevention, including periodic, complete or partial closures of educational institutions, followed by their reopening.

Reopening of academic institutions was not free from risk of acquiring COVID-19 for their attendees. Students are a dynamic group of young individuals, who love to socialise. Medical students, being frontline healthcare workers, are more susceptible to a COVID-19 infection. These students may also have an impact on risk perception of people around them. Moreover, as their beliefs, knowledge, values and attitudes may influence their decisions and behaviours towards prevention, evaluating students' risk perception becomes ever more important.

The current study was planned to determine the COVID-19-related risk perception and altruistic response among

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undergraduate medical students after the resumption of academic studies post-lockdown.

Subjects and Methods

The analytical cross-sectional study was conducted from October 1, 2020, to March 31, 2021, at the at various constituent institutes of Baqai Medical University, Karachi. After approval from the institutional ethics review committee, the sample size was calculated using OpenEpi calculator[7] while keeping study outcome at 50% for a most liberal estimate with 95% confidence interval (CI) and 5% precision. The sample was raised using non-probability convenience sampling technique.

Those included were undergraduate students aged 16 and above, studying in medical, dental, physiotherapy, pharmacy and information technology departments. Data was collected using a structured and standardised online questionnaire on Microsoft (MS) Forms after taking informed consent from the participants. Those not willing to participate were excluded. Forms returned incomplete were also excluded.

Data was collected after two weeks of the resumption of educational activities in October 2020. After sending the forms, follow-up reminders were sent after 2 days, and the survey was closed after 1 week.

Each questionnaire was kept anonymous and the collected data was kept confidential. After the data-collection phase, all questionnaires were reviewed for completeness and accuracy to maintain quality control related to documentation. The entire process was directly supervised by the principal investigator.

The questionnaire was developed in the English language by a group comprising two senior internal medicine consultants, a qualified family physician and an epidemiologist. It was checked for content validity and was pretested to assess face validity and reliability. The reliability coefficient obtained by calculating Cronbach's alpha was 0.74 which indicated an acceptable level of internal consistency. The questionnaire was then finalised after incorporating the necessary changes. The questionnaire had four sections. Section A comprised demographics, including age, gender, co-morbids, smoking status, and academic unit. Section B inquired about COVID-19 experience, such as being a suspected/confirmed patient, any history of quarantine or isolation, self/family COVID-19 positivity and any death in family or among friends due to COVID-19. Section C assessed COVID-19-related risk perceptions and comprised 9 items, which were adapted from two previous studies that assessed the psychological impact of SARS on hospital employees in China and Taiwan.[8,9] These items were modified to assess participants' perceptions of a COVID-19-related threat on the reopening of educational institutions. Positive responses on these items were counted to produce a COVID-19-related perceived risk score ranging from 0 to 9, with a higher score indicating a greater perception of risk. Section D assessed altruistic response, like acceptance of COVID-19 risk by the participants using a Likert scale with five responses, ranging from strongly agree to strongly disagree.

Data was analysed using SPSS 21. Categorical variables were described by using frequencies and percentages, while continuous variables were summarised by using means and standard deviations. After checking data normality, independent samples t-test and one-way analysis of variance (ANOVA) were used to compare mean perceived risk score across demographic variables. The significance level was kept at $p<0.05$.

Results

Of the 743 subjects, 472(63.5%) were females. The overall mean age of the sample was 21.34±1.8 years (range: 17-29 years), with 408(54.9%) subjects aged <21 years. Among them, 292(39.3%) subjects were from the Baqai Medical College, 165(22.2%) from the Baqai Dental College, 121(16.3%) from the Department of Physiotherapy, 130(17.5%) from the Baqai Institute of Pharmaceutical Sciences and 35(4.7%) were from the Baqai Institue of Information Technology (IT). Moreover, 24(3.2%) students reported co-morbidity and 23(3.1%) were smokers.

The overall rate of risk perception was 42.2% with a mean score of 3.8±2.5. Individual responses to the 9-item section of the questionnaire were noted (Table 1).

Among the variables, institute ($p<0.001$) and co-morbidity ($p=0.001$) were significantly associated with the perceived

Table-1: COVID-19-related perceived risk of the students (n=743).

Items	Yes n (%)	No n (%)
I believe that my institute is putting me at great risk	335 (45.1)	408 (54.9)
I feel extra stress in attending university	338 (45.5)	405 (54.5)
I am afraid of contracting COVID-19 at university	480 (64.7)	263 (35.3)
I feel I have little control over contracting COVID-19 infection at university	466 (62.7)	277 (37.3)
I think it would be unlikely to survive, if I get COVID-19	214 (28.8)	529 (71.2)
I think about quitting university because of COVID-19 pandemic	155 (20.9)	588 (79.1)
I am afraid I would pass on COVID-19 to others	325 (43.7)	418 (56.3)
My family and friends are worried that they might get infected through me	356 (47.9)	387 (52.1)
People avoid my family because of my professional education	154 (20.7)	589 (79.3)

COVID-19: Coronavirus disease-2019

risk score (Table 2).

Of the total, 175(23.6%) students ever had any exposure to COVID-19 as suspected or confirmed patient, 282(38.0%) ever had themselves or their family isolated during the outbreak, 307(41.3%) had ever been tested for COVID-19 and 211(36.5%) had any of their family member/relative/friend tested positive (Table 3).

The mean perceived risk score was significantly higher for students with positive COVID-19-related experiences (Table 4).

Altruistic response to the statement, "Because I want to resume my learning at university to become a better qualified professional, I am willing to accept the risk involved with COVID-19", showed 444(59.8%) students were in agreement (strongly agreed and agreed) and

Table-2: COVID-19-related perceived risk of the students (n=743).

Student Demographics (n=743)	n	Perceived Risk Score Mean±S.D.	Median (IQR)	*p-value
Age (years)				
Up to 21	408	3.70±2.47	4.00 (5)	0.225
More than 21	335	3.92±2.51	4.00 (4)	
Gender				
Male	271	3.64±2.69	3.00 (5)	0.139
Female	472	3.89±2.37	4.00 (4)	
Institute				
Baqai Medical College	292	3.90±2.51	4.00 (4)	<0.001
Baqai Dental College	165	3.48±2.46	3.00 (5)	
Department of Physiotherapy	102	4.88±2.47	5.00 (4)	
Baqai Institute of Pharmaceutical Sciences	130	3.22±2.38	3.00 (4)	
Baqai Institue of Information Technology	54	2.97±2.25	2.00 (4)	
Co-morbidity				
Yes	24	5.58±2.63	7.00 (5)	0.001
No	719	3.74±2.47	4.00 (4)	
Smoking				
Yes	23	4.30±3.11	4.00 (6)	0.405
No	720	3.78±2.47	4.00 (4)	

COVID-19: Coronavirus disease-2019. SD: Standard deviation, IQR: Interquartile range.
*p-values reported are for the comparison of means.

Table-3: COVID-19-related experience of the students (n=743).

COVID-19 related Experience	Yes n (%)	No n (%)
Have you ever had any exposure to COVID-19 suspected or confirmed patient?	175 (23.6)	568 (76.4)
Have you or your family, ever been isolated during COVID-19 outbreak?	282 (38.0)	461 (62.0)
Have you ever been tested for COVID-19?	307 (41.3)	436 (58.6)
Have you ever been tested positive for COVID-19?	42 (5.7)	701 (94.3)
Have any of your family member/relative/friend got tested positive for COVID-19?	211 (36.5)	472 (63.5)
Have you had any death in family/relative/friend due to COVID-19?	123 (16.6)	620 (83.4)

COVID-19: Coronavirus disease-2019.

Table-4: COVID-19-related experience and mean perceived risk score (n=743).

COVID-19 related Experience	n	Perceived Risk Score Mean±S.D.	Median (IQR)	*p-value
Have you ever had any exposure to COVID-19 suspected or confirmed patient?				
Yes	174	5.01±2.49	6.00 (4)	<0.001
No	569	3.43±2.37	3.00 (4)	
Have you or your family, ever been quarantined during COVID-19 outbreak?				
Yes	282	4.36±2.49	5.00 (4)	<0.001
No	461	3.46±2.43	3.00 (4)	
Have you ever been tested positive for COVID-19?				
Yes	42	5.57±2.39	6.00 (3)	<0.001
No	701	3.69±2.46	4.00 (5)	
Have any of your family member/relative/friend got tested positive for COVID-19?				
Yes	271	4.61±2.39	5.00 (4)	<0.001
No	472	3.33±2.43	3.00 (4)	
Have you had any death in family/relative/friend due to COVID-19?				
Yes	123	4.61±2.39	6.00 (3)	<0.001
No	620	3.33±2.43	3.00 (5)	

COVID-19: Coronavirus disease-2019, SD: Standard deviation, IQR: Interquartile range.
*p-values reported are for the comparison of means

Table-5: Mean perceived risk score related to COVID-19 and altruistic response of the students (n=743).

Altruistic Response	n	Perceived Risk Score Mean±S.D.	Median (IQR)	*p-value
Strongly Agree	161	2.74±2.45	2.00 (4)	<0.001
Agree	283	3.43±2.40	3.00 (4)	
Neutral	175	4.30±2.26	5.00 (4)	
Disagree	85	5.01±2.22	5.00 (4)	
Strongly Disagree	39	5.97±2.07	7.00 (3)	

COVID-19: Coronavirus disease-2019, SD: Standard deviation, IQR: Interquartile range.
*p-values reported are for the comparison of means.

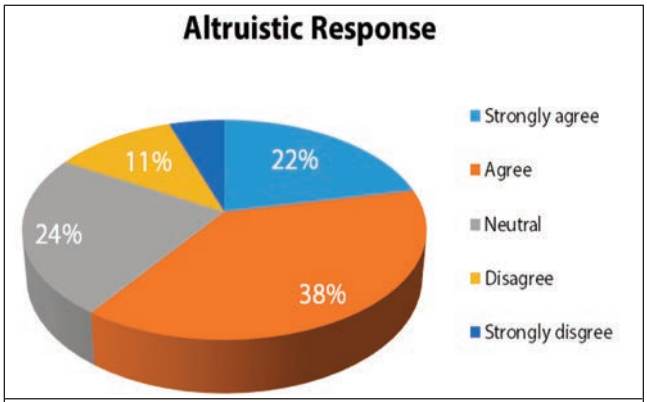

Figure: Altruistic Response of the Students

124(16%) either strongly disagreed or disagreed (Figure).

Altruistic response to the question was lower ($p<0.001$) among those agreeing with the statement than those who disagreed (Table 5).

Discussion

To the best of our knowledge, the current study is the first

in the local context on COVID-19-related risk perception of students at a medical university. In this young population, the overall risk perception related to COVID-19 was surprisingly quite low, which is alarming. This underestimation of risk to one's health might reduce the acceptance of the strict mitigation measures enforced by the government to counter the pandemic.[10] Considering the strong infectivity of COVID-19 and the occult nature of the disease[11,12] underestimation of the risk by a large number of medical students may lead to careless behaviour and neglect that may have undesirable health consequences.

Perceiving a danger is multi-factorial and is influenced by awareness, trust, imagination, uncertainty and control.[5,13] The current finding is in contrast with other countries. A study in Iran showed medical students had a medium risk perception of COVID-19,[14] while in China, the risk perception was reported to be high.[15] This might be due to the fact that the infection originated in China and reached Iran in the early phase of the pandemic, causing high morbidity and mortality, creating uncertainty and leading to a high risk perception. In Pakistan, on the other hand, the virus reached a few months later and behaved indistinctly towards the relatively younger population, which may have resulted in a low risk perception among the young.

The World Health Organisation (WHO) praised Pakistan's handling of COVID-19, and stated that the international community should learn from Pakistan.[16] This might have created the perception of winning the battle against COVID-19 prematurely, causing low risk perception and subsequently leading to risk-taking behaviour and suboptimal practices.

The low perceived risk score of medical university students in the current study is also unfavourable to the efforts of society that were focussed on outbreak prevention.[17] This highlights the need to increase awareness about the risks of COVID-19.

The risk perception in the current study also in contrast with a study in Italy where most participants felt uncertainty, fear and sadness.[18] It may be due to the fact that the case fatality rate in Italy was over 12.3% at the highest point of pandemic. This was much higher than that recorded at the peak of the pandemic in the United States (2.8%) and most other countries, including Pakistan.[19]

Risk perceptions of people in Pakistan are also influenced by their strong religious beliefs and faith on a pre-decided day of death. This might have played a significant role in shaping behaviours towards the pandemic, undermining the health risk as in a study in India, nearly half of the participants felt panicked by reports of COVID-19-related mortality.[20]

Besides, involvement in a risk event related to COVID-19 may enhance one's risk perception,[21] as was found in the current study.

Participants with any pre-existing co-morbidity showed a significantly higher risk perception (5.58±2.63) which could be due to a higher risk of complications associated with COVID-19 infection in such individuals.[22]

In the current sample, physiotherapy students showed significantly higher mean perceived risk score, which might be related to their close physical contact with patients, and relatively lesser medical knowledge that may have caused excessive fear. This is consistent with a study of college students' attitudes toward H1N1 flu in Turkey.[23] Similarly, a study of college students' psychological response to SARS in Hong Kong reported that healthcare students had lower perceived stress than non-healthcare students.[24] Participants from healthcare fields, such as medicine, dentistry and physiotherapy, had significantly higher risk perception than those from non-healthcare fields, such as IT and pharmacy. This could be due to the fact that people with greater knowledge are more aware of the risk, and thus have a higher risk perception.[25,26]

Compared to earlier studies in China[17] and South Korea,[27] the mean risk perception of the current respondents did not change significantly across their age and gender categories. This might be due to the fact that, unlike the earlier studies, a majority of the respondents had medical or allied background.

In the current study, nearly 60% students showed altruism towards resumption of academic activities, with those agreeing to re-join having a significantly lower mean risk perception than those who did not agree. This higher risk perception among those disagreeing is likely to be associated with emotional distress, anxiety and fear[28,29] which is likely to result in an overestimation of health risk[30] that may affect their studies and performance.

The current study has certain limitations. Firstly, there may be some recall bias as a self-administered questionnaire was used. Secondly, co-morbidity was assessed on the basis of self-report alone, and no dedicated tool was used for the purpose. Thirdly, the findings may be relevant only to the active phase of COVID-19.

However, the study may serve as a reference for future studies exploring any change in risk perception of students over time. The current findings also provide a theoretical

basis for the relevant health authorities and will assist them in carrying out effective prevention and control of COVID-19 among students.

Conclusion

The findings are alarming and reflect a risk-taking behaviour among university students having low risk perception. Strong association of the risk perception with COVID-19-related experience and lack of altruism may provide insight into the students' psychological distress. This highlights the need of psychological assistance programmes for students to improve their mental wellbeing.

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