



Original Article

Prevalence of Anxiety associated with COVID-19 Pandemic among University Students of Karachi

Aisha Alamgir¹, Yasir Ali², Saeeda Khan³, Aziz Ur Rehman Yousufzai³ and Farmanullah Khan⁴¹School of Public Health, Dow University of Health Sciences, Karachi, Pakistan²Muhammad Ishaq Khan Institute of Nursing and Health Sciences, Karachi, Pakistan³Qatar College of Nursing, Qatar Hospital, Karachi, Pakistan⁴Liaquat National Hospital and Medical College, Karachi, Pakistan

ARTICLE INFO

Key Words:

Corona Virus, Anxiety, Psychological Impact, University Students, Pakistan

How to Cite:

Alamgir, A. ., Ali, Y., Khan, S. ., Yousufzai, A. U. R. ., & Khan, F. . (2023). Prevalence of Anxiety associated with COVID-19 Pandemic among University Students of Karachi: Prevalence of Anxiety associated with COVID-19 Pandemic. *Pakistan Journal of Health Sciences*, 4(06), 08-13.
<https://doi.org/10.54393/pjhs.v4i06.808>

*Corresponding Author:

Yasir Ali
 Muhammad Ishaq Khan Institute of Nursing and Health Sciences, Karachi, Pakistan
Yrose638@gmail.com

Received Date: 30th May, 2023Acceptance Date: 18th June, 2023Published Date: 30th June, 2023

ABSTRACT

The outbreak of corona virus made quite an impact on not only physical health but additionally mental health and psychological wellness. **Objective:** To determine the anxiety of corona virus among university students. **Methods:** The observational cross-sectional study was conducted. Data were obtained from different universities in Karachi. Undergraduate and postgraduate students of engineering and business administration were asked through questionnaire about the impact of COVID-19 after the consent from students and respective university. To assess the anxiety among the students valid and reliable corona virus anxiety scale (CAS) was used. 385 participants were included with fulfilled inclusion criteria. **Results:** Overall 385 complete responses were obtained. Among population male gender predominated with a frequency of (n=208) 54.0% and females were (n=177) 46.0%. According to marital status and level of education, the majority (72.5%) of participants was single and of undergraduate level (56.4%) in education. The overall prevalence of anxiety was 13.5%. It was found that postgraduate students were less likely to be anxious about COVID-19 when compared with undergraduate students (OR = 0.34, p-value=0.002). Moreover, students whose family members and friends diagnosed with coronavirus were unlikely to have anxiety when compared to students with friends and family COVID-19 negative (OR = 0.32, p-value=0.004). **Conclusions:** It was concluded from this study that students possess adequate knowledge of COVID-19, instead they are psychologically anxious. Anxiety, psychological distress and other symptoms of mental illness are correlated with the outspread of any infectious disease.

INTRODUCTION

Nerve-racking circumstances, for instance, the coronavirus pandemic has disrupted people's lives and have detrimental effects on physical and psychological well-being [1]. World Health Organization (WHO) first reported the incidence and articulate as sixth Public Health Emergency of International Concern (PHEIC) for COVID-19 on 30th January 2020, beneath International Health Regulation (IHR) subsequent outbreak of H1N1 influenza in 2009. Corona virus was authoritatively names as Corona Virus Disease 2019 on 11th February 2020 by WHO. Not only elevated number of mortalities has been reported due to

this viral infection globally, additionally COVID-19 caused several psychological and mental health devastation among affected and non-affected population [2, 3]. Due to its clinical features, transmission route, epidemiological appearance, extreme public health vulnerability, lack of health care preparedness globally and unconventional nature of the pandemic occurrence of this viral disease have great potential on mental health anxiety towards healthy and unhealthy at risk individuals. The very first case of Corona virus was announced in Pakistan on 26th February 2020 and in a few months by April the number of cases

reached to 20,000 with 2% mortality rate [4, 5]. On 23rd March 2020, because of the intensified situation nationwide a comprehensive locked down enforced in the country. By 9th May 2020, complete country closure converted into "smart lockdown" that include total closure of all educational institutes, markets, and every public places. School, college and universities shutdown owing to COVID-19 pandemic remained an effective attempt to decrease viral transmission and flatten the peak of disease incidence [6, 7]. This approach seemed to be extremely effective in terms of reducing interaction between students and protecting from illness [8]. The fast surge in infected patients throughout the world has fostered a sense of uncertainty, anxiety and stress about what will next [9]. The sustainable social isolation, intriguing theories, quarantine, false information, sensational and controversial media statements regarding COVID-19, triggered frustration, and tedium, no interaction with friends, class fellows, and teachers, insufficient personal space due to joint family system and financial issues because of complete lock down all these factors contribute and play significant role to increase anxiety among university students [10, 11]. In addition, previously changes in our routine, such as working remotely, temporary joblessness, virtual schooling and dearth of socialization. As the pandemic maintains high infection and fatality rates, the fear has become a more significant concern and may reduce the academic performance of students [12]. Research claims that these implications might have detrimental social and behavioral impacts in student's life particularly those who are deprived of basic amenities, increasing the possibility of disparities in the country's education sector [13, 14].

METHODS

Cross sectional study was conducted in Karachi, Pakistan after approval from scientific committee of Dow University of health sciences right after releasing lockdown between 1st September to 10th September 2020. Before starting the data collection procedure, a necessary official approval was obtained from head of department of targeted universities and participants. Undergraduate and postgraduate students of Engineering and Business Education were included in the study after fulfilling the criteria. Those students who have history of pre-existing chronic medical condition and those who were taking antidepressants or with other mental health disorder were excluded. An English version questionnaire was administered to collect data from participants. A sample size of 385 was calculated thorough Who Open Epi and the data were collected from three different universities of Karachi (Indus University, Sir Syed University of

Engineering and Technology and Dadabhoy Institute of Higher Education) by using consecutive sampling technique. For data collection structured questionnaire was used that is consist of socio demographic information and Corona virus anxiety scale (CAS) to evaluate anxiety level during lockdown [15]. The scaling system is from 1 to 5 (Not at all to nearly every day over the last 2 weeks). Statistical analysis was performed by using IBM SPSS version 22.0. Chi Square test was used to explore the statistical relation among demographic characteristics of respondents and anxiety and levels. Furthermore, logistic regression was performed as well. Significant factors in univariate logistic regression were further carried out for multivariable analysis if they predicted student's anxiety. Results of strength of association were illustrated by odds ratio (OR) and p-value <0.05 was statistically significant.

RESULTS

Table 1 shows demographic characteristics of study participants. In this study male gender was prominent with a frequency of 54.0% (n=208) and females 46.0% (n=177). According to marital status and level of education, the majority (72.5%) of participants were single and undergraduate level (56.4%) respectively. The most prominent study year (39.7%) was 2nd year. It was found that almost of the participants (80.8%) lived with guardians. In this study, 51.7% participant's families and friends had experienced novel coronavirus SARS-CoV-2 infection while 30.4% students' family and friends didn't experience. However, 24.4% of students were in direct contact with novel coronavirus infected patients while 28.1% of participants were unaware of direct exposure to infected patients, 47.5% respondents were assured about that they did not have any direct interaction with COVID-19 positive patients. Moreover, 59.5% of students went for the test of novel coronavirus infection of which only 25.2% got positive test outcome.

Table 1: Study participants demographics and COVID-19 Test

Demographic Variables	Respondents N (%)
Gender	
Male	208 (54.0)
Female	177 (46.0)
Marital status	
Single	279 (72.5)
Married	106 (27.5)
Level of education	
Undergraduate	217 (56.4)
Postgraduate	168 (43.6)
Year of education	
1st year	104 (27.0)
2nd year	153 (39.7)

3rd year	67(17.4)
4th year	61(15.8)
Live with parents	
Yes	311(80.8)
No	74(19.2)
Family and friends COVID-19 positive	
Yes	199(51.7)
No	117(30.4)
I don't know	69(17.9)
Direct interaction with COVID-19 patients	
Yes	94(24.4)
No	183(47.5)
I don't know	108(28.1)
Test for COVID-19	
Yes	229(59.5)
No	156(40.5)
Test Result (n=229)	
Positive	97(25.2)
Negative	132(34.3)

It was found that out of 385 students, only 52 (13.5%) students found to have anxiety. Table 2 shows the association between demographic variables and COVID-19 test with anxiety status. There were only 18.4% undergraduate students and 7.1% postgraduate students experienced anxiety, indicated significant association (p-value=0.001). Whereas only 8.0% participants reported anxiety because their family and friends were COVID-19 positive, 21.4% students showed no anxiety. This indicates statistically significant association between anxiety and family and friends COVID-19 positive variable (p-value=0.003). On the other hand, year of education and students living with parents were not significantly associated. Direct interaction with COVID-19 infected patients variable also showed significant association with anxiety status(p-value=0.039).

Table 2: Association of anxiety status with demographic variables and Test of COVID-19

Variables	N (%) No Anxiety (n=333)	N (%) Anxiety (n=52)	p-value
Gender			
Male	185(88.9)	23(11.1)	0.128
Female	148(83.6)	29(16.4)	
Marital status			
Single	241(86.4)	38(13.6)	0.916
Married	92(86.8)	14(13.2)	
Level of education			
Undergraduate	177(81.6)	40(18.4)	0.001*
Postgraduate	156(92.9)	12(7.1)	
Year of education			
1st year	93(89.4)	11(10.6)	0.265
2nd year	129(84.3)	24(15.7)	
3rd year	55(82.5)	12(17.9)	
4th year	56(91.8)	5(8.2)	

Level of education			
Yes	266(85.5)	45(14.5)	0.257
No	67(90.5)	7(9.5)	
Family and friends COVID-19 positive			
Yes	183(92.0)	16(8.0)	0.003*
No	92(78.6)	25(21.4)	
I don't know	58(84.1)	11(15.9)	
Direct interaction with COVID-19 patients			
Yes	88(93.6)	6(6.4)	0.039*
No	157(85.8)	26(14.4)	
I don't know	88(81.5)	20(18.0)	
Test for COVID-19			
Yes	201(87.8)	28(12.2)	0.374
No	132(84.6)	24(15.4)	
Test Result			
Positive	85(87.6)	12(12.4)	0.955
Negative	116(87.9)	16(12.1)	

Table 3 shows the strength of association between demographic characteristics and presence of anxiety. In univariate logistic regression results reported that males are 0.634 times less likely to have anxiety in comparison with females. It was found that postgraduate student 0.34 time less likely to be anxious about COVID-19 when compared with undergraduate students (p-value=0.002). Students with 2nd and 3rd years of study were 1.573 and 1.845 times prone to be anxious comparatively 1st year student. Moreover, students with family and friends COVID-19 positive were 0.32 time less likely to have anxiety in comparison to participants with friends and family COVID-19 negative(p-value=0.004). Result indicated that students with COVID-19 test positive were 1.02 times prone to be anxious comparatively COVID-19 negative test. Variables with significant associations from univariate analysis were included in multivariable logistic regression. The results of multivariable analysis indicate that postgraduate students are 0.385 time less likely to have anxiety symptoms as compared to undergraduate(p-value=0.07).

Table 3: Univariate and Multivariable logistic regression for prediction of anxiety among students

Variables	Univariate Analysis		Multivariate Analysis		
	Anxiety N (%)	Crude OR N (%)	p-value	Adjust OR	p-value
Gender					
Male	29(16.4)	1	0.13	-	-
Female	23(11.1)	0.634		-	-
Marital status					
Single	38(13.6)	1	0.916	-	-
Married	14(13.2)	0.965		-	-
Level of education					
Undergraduate	40(18.4)	1	0.002*	1	0.07*
Postgraduate	12(7.1)	0.34		0.385	
Year of education					
1st year	11(10.6)	1		-	-

2nd year	24 (15.7)	1.573	0.277	-	-
3rd year	12 (17.9)	1.845		-	-
4th year	5 (8.2)	0.755		-	-
Live with parents					
No	7 (9.3)	1	0.261	-	-
Yes	45 (14.5)	1.619		-	-
Family and friends COVID-19 positive					
No	25 (21.4)	1	0.004*	1	0.018*
Yes	16 (8.0)	0.322		0.358	
don't know	11 (15.9)	0.698		0.513	
Direct interaction with COVID-19 patients					
No	26 (14.4)	1	0.048*	1	0.239
Yes	6 (6.4)	0.412		0.694	
don't know	20 (18.0)	1.372		1.552	
Test for COVID-19					
No	24 (15.4)	1	0.374	-	-
Yes	28 (12.2)	0.766		-	-
Test Result					
Negative	16 (12.1)	1	0.955	-	-
Positive	12 (12.4)	1.024		-	-

DISCUSSION

This cross-sectional study involved 385 undergraduate and postgraduate students of Engineering and Business Education in Karachi, Pakistan. The particular students were selected to provide information about the level of anxiety that students were bearing in an ongoing pandemic. To meet the major groups of targeted population, consecutive sampling technique was used. Overall frequency of anxiety was 13.5% of COVID-19 scores had declined in contrast with past studies. The reason might be the natural human resilient coping mechanism [16]. However, the discrepancies in the overall anxiety scores may vary depend on age, gender and difference in ethnicity, geographic regions, provinces, stress tolerance, and coping mechanism, etc. At present, we found that 16.4% of females were more anxious than males. Similarly Kuman *et al.*, reported a significantly predominance of anxiety in females as compared to males [17] while on the other hand; Islam *et al.*, conducted a study in Bangladesh where he revealed higher prevalence of anxiety levels in males [14]. Moreover, anxiety scores had shown some indirect relationship with the increase in age numbers and the level of education. Apparently in our study, the anxiety scores among younger or junior students were higher than old or senior students besides above all common factors such as communal inaccessibility, insecurity about the future, challenges of distance learning education systems, etc. Similarly, Doshi *et al.*, had reported in their respective study that anxiety is more common in young adults or junior level of education as compared to older group or senior level of students [18]. On the contrary side, students involved with healthcare systems or working as a health care provider had shown the exceptional higher

distribution of anxiety and fear during the ongoing course of pandemic reported by following studies [19]. In Pakistan, a similar study was conducted by Rehman *et al.* They targeted different regional medical and dental students in their study. 41.5% of students had reported anxiety symptoms. The plausibility of the high prevalence of anxiety scores was the presence of selection bias as the survey was conducted online. Online assessment obstructs the generalizability of the results [20]. Furthermore, anxiety have commonly been inflated with multiple factors such as an individual becoming the host of infection, misperception in society about the cross-infection, and exposure with other infected individuals [21]. However, in our study, 18% and 21.4% of students were more anxious significantly, who were unaware about the direct exposure to infected individuals and also whose family members or friends were not infected respectively. An unrelated finding was reported by Akdeniz *et al.*, as anxiety level was high in students who were aware of the direct exposure to the COVID-19 infected patient [22].

CONCLUSIONS

Students possess sufficient knowledge of corona virus, instead they are intellectually anxious. Anxiety, psychological distress and other symptoms of mental and physical illness are correlated with the outspread of any infectious disease. It was concluded from this study that 13.5% students had anxiety of COVID-19. Males and postgraduate student were less likely to be anxious about COVID-19 when compared their counterpart. Students with COVID-19 test positive were more prone to be anxious as compared with COVID-19 negative test.

Authors Contribution

Conceptualization: AA,
 Methodology: FK
 Formal Analysis: AA
 Writing-review and editing: AA, YA, SK, AURY

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

- [1] Khawar MB, Abbasi MH, Hussain S, Riaz M, Rafiq M, Mehmood R, *et al.* Psychological impacts of COVID-19 and satisfaction from online classes: disturbance in daily routine and prevalence of depression, stress, and anxiety among students of Pakistan. Heliyon.

- 2021 May; 7(5): e07030. doi: 10.1016/j.heliyon.2021.e07030.
- [2] Xiao C. A novel approach of consultation on 2019 novel coronavirus (COVID-19)-related psychological and mental problems: structured letter therapy. *Psychiatry Investigation*. 2020 Feb; 17(2): 175. doi: 10.30773/pi.2020.0047.
- [3] Gunnell D, Appleby L, Arensman E, Hawton K, John A, Kapur N, et al. Suicide risk and prevention during the COVID-19 pandemic. *The Lancet Psychiatry*. 2020 Jun; 7(6): 468-71. doi: 10.1016/S2215-0366(20)30171-1.
- [4] Rana W, Mukhtar S, Mukhtar S. Mental health of medical workers in Pakistan during the pandemic COVID-19 outbreak. *Asian Journal of Psychiatry*. 2020 Jun; 51: 102080. doi: 10.1016/j.ajp.2020.102080.
- [5] Tso IF and Park S. Alarming levels of psychiatric symptoms and the role of loneliness during the COVID-19 epidemic: A case study of Hong Kong. *Psychiatry Research*. 2020 Nov; 293: 113423. doi: 10.1016/j.psychres.2020.113423.
- [6] Salman M, Asif N, Mustafa ZU, Khan TM, Shehzadi N, Tahir H, et al. Psychological impairment and coping strategies during the COVID-19 pandemic among students in Pakistan: a cross-sectional analysis. *Disaster Medicine and Public Health Preparedness*. 2022 Jun; 16(3): 920-6. doi: 10.1017/dmp.2020.397.
- [7] Baloran ET. Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. *Journal of Loss and Trauma*. 2020 Nov; 25(8): 635-42. doi: 10.1080/15325024.2020.1769300.
- [8] Abdulamir AS and Hafidh RR. The Possible Immunological Pathways for the Variable Immunopathogenesis of COVID-19 Infections among Healthy Adults, Elderly and Children. *Electronic Journal of General Medicine*. 2020 Mar; 17(4): em202. doi: 10.29333/ejgm/7850.
- [9] Al-Rabiaah A, Temsah MH, Al-Eyadhy AA, Hasan GM, Al-Zamil F, Al-Subaie S, et al. Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *Journal of Infection and Public Health*. 2020 May; 13(5): 687-91. doi: 10.1016/j.jiph.2020.01.005.
- [10] Chew NW, Lee GK, Tan BY, Jing M, Goh Y, Ngiam NJ, et al. A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. *Brain, Behavior, and Immunity*. 2020 Aug; 88: 559-65. doi: 10.1016/j.bbi.2020.04.049.
- [11] Alici NK and Copur EO. Anxiety and fear of COVID-19 among nursing students during the COVID-19 pandemic: A descriptive correlation study. *Perspectives in Psychiatric Care*. 2022 Jan; 58(1): 141-8. doi: 10.1111/ppc.12851.
- [12] Sintema EJ. Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia Journal of Mathematics, Science and Technology Education*. 2020 Apr; 16(7): em1851. doi: 10.29333/ejmste/7893.
- [13] Van Lancker W and Parolin Z. COVID-19, school closures, and child poverty: a social crisis in the making. *The Lancet Public Health*. 2020 May; 5(5): e243-4. doi: 10.1016/S2468-2667(20)30084-0.
- [14] Islam MS, Sujon MS, Tasnim R, Sikder MT, Potenza MN, Van Os J. Psychological responses during the COVID-19 outbreak among university students in Bangladesh. *PloS One*. 2020 Dec; 15(12): e0245083. doi: 10.1371/journal.pone.0245083.
- [15] Lee SA. Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies*. 2020 Jul; 44(7): 393-401. doi: 10.1080/07481187.2020.1748481.
- [16] Ang WH, Shorey S, Lopez V, Chew HS, Lau Y. Generation Z undergraduate students' resilience during the COVID-19 pandemic: a qualitative study. *Current Psychology*. 2022 Nov; 41(11): 8132-46. doi: 10.1007/s12144-021-01830-4.
- [17] Kuman Tunçel Ö, Taşbakan SE, Gökengin D, Erdem HA, Yamazhan T, Sipahi OR, et al. The deep impact of the COVID-19 pandemic on medical students: An online cross-sectional study evaluating Turkish students' anxiety. *International Journal of Clinical Practice*. 2021 Jun; 75(6): e14139. doi: 10.1111/ijcp.14139.
- [18] Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV. Assessing coronavirus fear in Indian population using the fear of COVID-19 scale. *International Journal of Mental Health and Addiction*. 2021 Dec; 19: 2383-91. doi: 10.1007/s11469-020-00332-x.
- [19] Valdez D, Ten Thij M, Bathina K, Rutter LA, Bollen J. Social media insights into US mental health during the COVID-19 pandemic: Longitudinal analysis of Twitter data. *Journal of medical Internet research*. 2020 Dec; 22(12): e21418. doi: 10.2196/21418.
- [20] Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, anxiety and stress among Indians in times of Covid-19 lockdown. *Community Mental Health Journal*. 2021 Jan; 57: 42-8. doi: 10.1007/s10597-020-00664-x.
- [21] Tariq R, Hamid H, Mashood S, Tariq Y, Tariq S, Asiri FY, et al. Common misconceptions regarding COVID-19 among health care professionals: an online global cross-sectional survey. *Journal of Oral Research*.

2020 Jul; S2(1): 36-45. doi:10.17126/joralres.2020.049.

- [22] Akdeniz G, Kavakci M, Gozugok M, Yalcinkaya S, Kucukay A, Sahutogullari B. A survey of attitudes, anxiety status, and protective behaviors of the university students during the COVID-19 outbreak in Turkey. *Frontiers in Psychiatry*. 2020 Jul; 11: 695. doi: 10.3389/fpsy.2020.00695.