Original Article

Emotional impact of delay in entrance examination on intermediate students – Another hard strike of COVID-19

Ramesha Tahir[1], Wania Sohail[2], Dr. Gulzaib[3], Amna Adil [4], Zainab Ishtiaq[5], Zainab Fawad[6], Tahreem Aftab[7], Rida Fatima Rahat[8], Ibrahim Rashid[9], Rabia Khalid[10]

[1,2,4-10] Final year MBBS students, Rawalpindi Medical University, Rawalpindi.

[3] Demonstrator of Community Medicine, Rawalpindi Medical University, Rawalpindi.

Author's Contribution

[1,3] Conception of study
[3] Experimentation/Study conduction
[1,2,3] Analysis/Interpretation/Discussion
[1,2,3,4,5] Manuscript Writing
[2,4,5] Critical Review
[6,7,8,9,10] Facilitation and Material analysis

Corresponding Author

Mrs. Ramesha Tahir,
Final year MBBS Student,
Rawalpindi Medical University,
Rawalpindi
Email: rameshachan664@gmail.com

Article Processing

Received: 11/12/2021
Accepted: 12/05/2022

Cite this Article: *Tahir, R., Sohail, W., Gulzaib, D., Adil, A., Ishtiaq, Z., Fawad, Z., Aftab, T., Rahat, R.F., Rashid, I., Khalid, R., Emotional impact of delay in entrance examination on intermediate students – Another hard strike of COVID-19. Student Supplement of Journal of Rawalpindi Medical College. 15 Sep. 2022; 26(1): 38-43.*

Conflict of Interest: *Nil*
Funding Source: *Nil*

Access Online:

Abstract

Background: COVID-19 pandemic quickly became a major health issue globally. In order to contain it, there was a lockdown and consequently shutdown of many educational institutions and delays in examinations. It particularly influenced students' psychological health which we studied in our research.

Objective: To assess the emotional impact of delay of entrance examination on intermediate students of Federal Capital and Punjab and to find its association with demographic variables.

Materials and Methods: Students who had registered themselves, whether they appeared in the entrance examination or not, were selected by non-probability convenience sampling in this cross-sectional descriptive study. Our online Google form included an explanation of study objectives, consent of the student and a section on the demographic variables of the students. Anxiety was assessed by using GAD-7 and PHQ-9 was utilized to assess depression. Maslach Burnout Inventory was used to assess burnout .Insomnia Severity Index was used to asses insomnia. Descriptive statistics were applied by SPSS v.25.Chisquare was applied to compare variables of emotional impact with socio-demographic variables. $p \leq 0.05$ was taken as significant.

Results: Among the total of 196 participants, 64 (32.1 %) were male and 132 (67.1 %) were female with a mean age of 18.9 ± 0.93 years. Anxiety, depression, burnout, and insomnia (mild to severe) were present among 136 (69.4%), 173 (88.3%), 185 (94.4%), and 115 (58.6%) of the participants correspondingly. A noteworthy association was established between the students who joined online classes for entrance examination preparation and those at risk of developing burnout ($p=0.039$). The frequency of sub-threshold and moderately severe insomnia in female students of intermediate was higher.

Conclusion: Due to the long-lasting pandemic situation and measures such as lockdown and repeated delays in exams, many students were suffering from emotional issues such as anxiety, depression, insomnia, and burnout.

Keywords: Anxiety, Depression, Insomnia, Burnout.

Introduction

COVID-19 was first identified in Wuhan, China in the December of 2019. The disease spread at a frightening rate and ultimately became a chief international health problem.[1,2]

The World Health Organization (WHO) in response, declared a public health crisis of international concern on January 30, 2020.[3] Before COVID-19 was formally announced as a pandemic, the spread of the SARS-CoV-2 had already affected 114 countries and led to an extremely large number of cases and deaths.[4,5] In Pakistan, the first case of COVID-19 was reported by the Health Ministry on 26 February 2020 after which it spread rapidly all over Pakistan.[6]

To contain the extent of COVID-19, a large number of educational institutes around the world decided to suspend in-person teaching for the time being and shift to a comparatively remote learning method. According to UNESCO, by the end of April 2020, educational institutions in 186 countries had shut down, affecting about 74% of total enrolled students.[7]

The pandemic and the measures of lockdown and quarantine have created immense stress and anxiety, along with other predicaments for the general population, with students being no exception. After having to confront a momentous life change or a traumatic incident, we are put under a lot of psychological pressure.[8] A large number of studies back the conclusion that COVID-19 has intensely affected people's mental health and behavior with very few studies suggesting otherwise.[9-14] Mental health hotlines in the United States experienced a 1000% increase in texts during April, the time when most of the people were under lockdown.[15] Some medical facilities have seen more deaths from suicide, apparently because of extremely poor mental health, than from COVID-19 infection itself.[16] Some researchers observed that for the most part, students' psychological health was more influenced by the pandemic than the other groups.[17]

In the educational setting, one of the situations that require more effort and creates continued stress in the students is the waiting time for exams, especially the entrance examination. Coping with delay in examination has also been related to students' burnout and emotional fatigue which can be intensified due to continuous delays in the commencement of the entrance tests.[18] A study conducted during the early COVID-19 outbreak in China established that 53.8% of the students rated the psychological impact of the pandemic as moderate to severe.[17] A literature review showed that the symptoms of anxiety, depression, and self-reported stress are common psychological responses to the COVID-19 pandemic.[19]

The current study is intended to identify emotional issues such as anxiety, depression, burnout, and insomnia and also to determine their frequencies among the targeted population.

Materials and Methods

A descriptive cross-sectional study was conducted from June 2021 to September 2021 through an online well-structured Google form that was sent to the intermediate (part II) students of Punjab and Federal Capital (Islamabad). Non-probability convenience sampling was used to collect the data from a sample size of 196 students which was calculated using a 95% confidence interval, 0.05 margin of error, and 85% as previous prevalence.[20] We included students who registered themselves for the entrance examination 2020 but did not appear in entrance examinations (NMDCAT, ECAT, NUST). Moreover, students who not only registered themselves but also appeared in entrance examinations 2020 were also included. The exclusion criterion was formed by students of commerce and arts, students who were already suffering from anxiety, depression, insomnia, and/or burnout even before COVID-19-related postponements. Our online Google form included an explanation of our study objectives, consent of the student, and a section on the demographic variables of the student's Generalized Anxiety Disorder Assessment (GAD-7) was used to assess anxiety, Physical Health Questionnaire (PHQ-9) was used to assess depression, Maslach Burnout Inventory was used to assess burnout. Insomnia Severity Index was used to assess insomnia.

GAD-7 is a self-reported questionnaire (developed by Robert L. Spitzer et al) to assess the level of anxiety. We assigned scores of 0, 1, 2, 3 to the response categories of 'not at all', 'several days', 'more than half the days', and 'nearly every day' respectively, and then added the scores. Results were interpreted as;

- 0-4 (no to low risk)
- 5-9 (mild risk)
- 10-14 (moderate risk)
- >15 (severe risk)

PHQ-9 developed by primary care evaluation of mental disorders (PRIME MD) was used to assess depression levels among participants. The scale

ranged from 0 to 3, where 0 implies 'not at all' and 3 implies 'nearly every day'. The level of depression was categorized as;

- 0-4 (minimal)
- 5-9 (mild)
- 10-14 (moderate)
- 15-19 (moderately severe)
- 20-27 (severe)

A burnout self-test questionnaire (developed by Christina Maslach and Susan E. Jackson) was used to assess an individual's experience of burnout. We measured three dimensions of burnout: emotional exhaustion (9-item scale), depersonalization (5-item scale), and personal accomplishment (8-item scale). All items were scored using a 7-level frequency ranging from 'never' to 'daily' (0-6). The results were interpreted as;

- 15-18 (no sign of burnout)
- 19-32 (little sign of burnout)
- 33-49 (at risk of burnout)
- 50-59 (severe risk of burnout)
- 60-75 (very severe risk of burnout)

Insomnia severity index (ISI) validated by Morin is a seven-item self-rated instrument. It was used to assess insomnia based on criteria from the International Classification of Sleep Disorders. Each item was rated as 0 to 4 and all scores were added up. Results were interpreted as;

- 0-7 (no clinically significant insomnia)
- 8-14 (sub-threshold insomnia)
- 15-21 (clinical insomnia/moderate severity)
- 22-28 (clinical insomnia/severe)
-

Data obtained on the associated excel sheet were entered in SPSS version 25. Mean ±S.D were calculated. Descriptive statistics were applied. The chi-square test was used to compare demographic variables with the measures of emotional impact i.e., anxiety, depression, insomnia, and burnout. $p \leq 0.05$ was considered significant.

Results

Our study included 64 (32.1 %) males and 132 (67.1%) females.

The age range of the participants was from 17 to 23 years (18.87 ± 0.930).

Out of 196 students, 129 (65.8%) students faced a delay in their entrance examinations for the duration of 2-4 months.

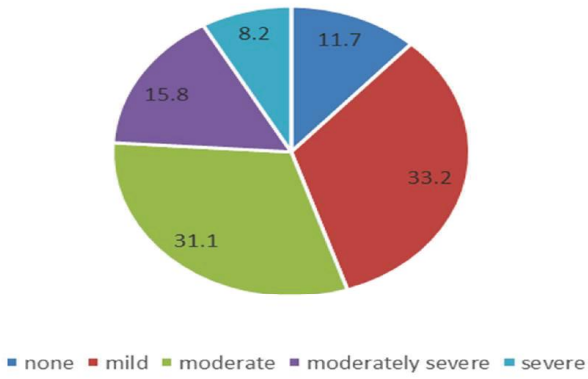

Figure 1: Percentage prevalence of depression among intermediate students (n=196)

Adapted from Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. Journal of general internal medicine. 2001 Sep;16(9):606-13.

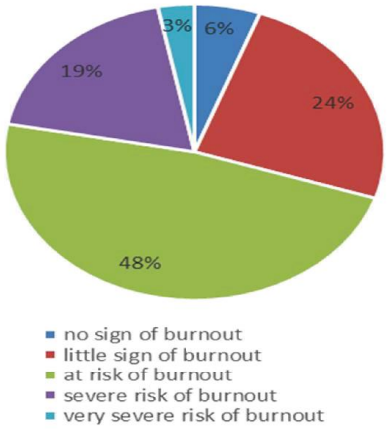

Figure 2: Percentage prevalence of burnout among intermediate students (n=196)

Adapted from Koeske GF, Koeske RD. Construct validity of the Maslach Burnout Inventory: A critical review and reconceptualization. The Journal of Applied Behavioral Science. 1989 May;25(2):131-44.

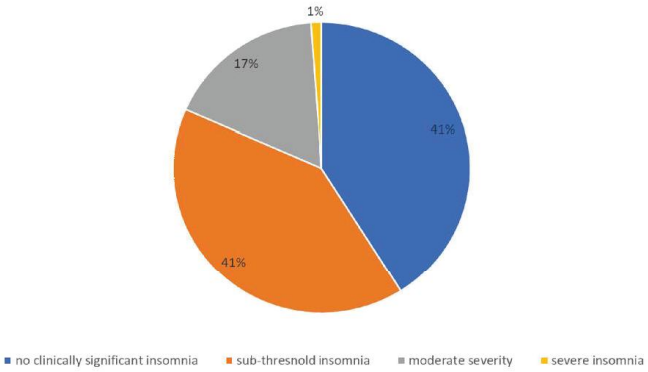

Figure 3: Prevalence of insomnia among intermediate students (n=196)

Adapted from Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. Sleep medicine. 2001 Jul 1;2(4):297-30

Table I: Association between burnout and status of online classes among students preparing for entrance examination (n=196)

Degree of B.O*	Students attending OLC* n (%)	Students not attending OLC* n (%)
No sign of B.O	11(6.8%)	0(0%)
Little sign of B.O	44(27.3%)	4(11.4%)
At risk of B.O	73(45.3%)	21(60%)
Severe risk of B.O	27(16.8%)	10(28.6%)
Very severe risk of B.O	6(3.7%)	0(0%)

**OLC= Online classes*
**BO= Burn out*

Table II: Level of anxiety among study participants as per GAD-7* (n=136)

Level of anxiety	n	%
Mild	77	39.3
Moderate	43	21.9
Severe	16	8.2

* *Adapted from Williams N. The GAD-7 questionnaire. Occupational medicine. 2014 Apr 1;64(3):224.*

Table III: Association between gender and insomnia according to Insomnia Severity Index* among students preparing for entrance examination (n=196)

Level of insomnia	Male n (%)	Female n (%)
No clinically significant insomnia	33(51.6%)	48(36.4%)
Sub-threshold insomnia	26(40.6%)	54(40.9%)
Clinical insomnia/Moderate severity	4(6.3%)	30(22.7%)
Clinical insomnia/Severe	1(1.6%)	0(0%)

* *Adapted from Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. Sleep medicine. 2001 Jul 1;2(4):297-307.*

Discussion

In this study, four parameters of emotional health i.e., anxiety, depression, insomnia, and burnout were studied in intermediate students. Our study has determined that 94.4% (185) of the participants were at risk of burnout of any category (little to very severe), which is quite similar to the results of a study conducted by Winga M et al revealing that approximately 90%of students were at risk of burnout.[20] Students who attended online classes for entrance examination were at higher risk of developing burnout than those who did not attend online classes according to Table I.

Table II shows that 77 (39.3%) participants had mild, 43 (21.9%) had moderate and 16 (8.2%) had severe anxiety. In contrast, a study conducted by Yadav RK et al in Nepal revealed that 52.8% of the participants had mild anxiety, approximately 40% of the participants suffered from moderate anxiety while 5% suffered from severe anxiety.[21]

Our study reported mild depression in 65 (33.2%), moderate depression in 61 (31.1%), moderately severe in 31 (15.8%), and severe depression in 16 (8.2%) of the participants. Our findings were contradicted by a Nepalian study which shows slightly lower percentages of mild and moderate depression (31.3% and 8.1% respectively) and a very low percentage of severe depression (0.2%).[21] This might be due to more unpredictable circumstances that prevailed during the postponement period of NMDCAT/ECAT/NUST examination for the students of Punjab.

Moreover, a study conducted by Li Y et al in China stated that 26% of the participants suffered from COVID-19 uncertainty-related insomnia[22], while our

study determined that 115 (58.6%) participants were experiencing clinical insomnia of any category (sub-threshold, moderate and severe).

Amongst the associations of the variables of emotional impact with the demographic variables, a statistically substantial association was found between gender and insomnia ($p=0.011<0.05$). It is implied that female students experienced insomnia more than male students. It might be due to cyclical changes in female reproductive hormones during their menstrual cycle.[23] These findings are similar to yet another study conducted in Saudi Arabia by Ahmed AE et al which also revealed that insomnia was more common in females.[24] On the other hand, a study conducted in Karachi determined that there was no significant association between gender and insomnia, which contradict our results.[25]

In this study, no significant association was found between gender and other emotional impact variables i.e. depression, anxiety, and insomnia, but these three variables were insignificantly higher, also in females. However, a study conducted in China reported that females were more likely to be attacked by COVID-19-related anxiety and depression.[17] The contradicting results might be due to the fact that we collected our data through online surveys with a non-uniform distribution of gender which is one of the limitations of this study.

Moreover, no significant association was noted between age and emotional impact parameters. Emotional impact variables were found to be considerably higher among those who did not take online classes, but the association was statistically insignificant except for burnout ($p=0.039$). A study conducted by Hossain MJ et al associated online education with psychological distress among students; however, the association was statistically insignificant.[26]

Conclusion

Delay in entrance examination had a significant impact on emotional issues namely anxiety, depression, insomnia, and burnout among intermediate students of Federal Capital and Punjab. Insomnia was found to be more common among females, whereas no statistically significant gender-based difference was noted for anxiety, depression, and burnout.

This issue needs to be addressed on a priority basis to not only assess and resolve the gravity of the current problem but also to formulate future policies to tackle such critical scenarios.

Acknowledgements

We would like to thank Ayesha Saleem, Javeria Rubab, Laiba tul Jannat, Asma Zaheer, Shafia Khalid, Zunaira Javed, Jaweria Jafar, Areeha Iftikhar, Amna Akhtar Virk, Khawaja Haris Ismail, Gullab Shah, Tawseef Rashid Wani [Final Year MBBS students, Rawalpindi Medical University, Rawalpindi] for their active role in the conduction of this study.

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