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Common mental disorders among high school students during COVID-19 pandemic with online education satisfaction level in Pakistan

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ABSTRACT

Objective: The objective of the study is to determine the prevalence of common mental disorders among high school students and their online education satisfaction levels in Pakistan. **Study Design:** It was an observational, cross sectional study. **Place and Duration of Study:** The study took place among students registered across various high schools at different cities in Pakistan. The duration of the study was about six months from January 2021 to June 2021. **Material and Methods:** A cross sectional study was conducted across different high schools in Pakistan. For a total of 275 selected study participants, structured and validated questionnaires were used to determine the common mental disorders such as anxiety, depression, and Psychosis. Chi square was used to determine the association between the satisfaction levels of online learning with mental disorders. **Results:** Among students 28% and 34.7% and 32%, suffered from severe anxiety, depression and Psychotic disorder respectively. The relationship of severe depression ($r=0.7$ ($p=0.001$)), severe anxiety ($r=0.6$ ($p=0.036$)) and severe psychotic ($r=0.8$ ($p=0.002$)) disorder had significant strong relationship with student's satisfaction with online classes. **Conclusion:** High levels of mental disorders among students during the pandemic and low satisfaction with online learning were common among students due to stress. It is recommended that the mental level of students should be monitored, and counseling services should be provided.

Keywords: Anxiety, Depression, Psychosis, Satisfaction, Student

1. INTRODUCTION

The COVID-19 pandemic affected almost all countries in the world. A total of 370 million cases and 56 million deaths have been reported since the pandemic. There are several social impacts, such as working at home, social distancing, and closure of educational institutions. It also impacts the mental

functions of human beings leading to a global increase in the prevalence of several psychological disorders (Fisher & Hood, 1987). During the pandemic, students are considered to be a population that is especially vulnerable to mental health and this trend is occurring across many countries worldwide (Krifa et al., 2022; Alyoubi et al., 2021; Voltmer et al., 2021).

Compared with previous pandemics, this pandemic also had different mental disorders such as anxiety and depression among the world population. The reasons for these disorders are social break down, economic hard ship, and social isolation (Holm Hadulla et al., 2009). Previous study results depicted that 70% of people suffered from anxiety during the SARS outbreak (Usher et al., 2020). Similarly, more than half of health care workers (56.7%) suffered from anxiety during the pandemic of H₁N₁ influenza (Goulia et al., 2010). The limited mental health resources at universities and colleges relative to the scope of the problem are increasing the prevalence of mental disorders in students (Auerbach et al., 2018). Owing to the COVID-19 pandemic, students are more vulnerable to mental disorders as compared to general population, which leads to an increase in the rate of domestic crime in the society (Cao et al., 2020). The results of a study found that 15.6% of study participants suffered from mental disorders during this pandemic. Another study discovered that during the COVID-19 pandemic, different populations (including students) suffered from insomnia (36.1%), anxiety (44.7%) and depression (50.7%) (Liu et al., 2020). Yet, another study found that students suffered from post traumatic stress (16.3%) during the COVID-19 pandemic (Li et al., 2021).

Owing to study burden, students are susceptible to psychological disorders during the pandemic. Another factor that contributes to the psychological disorder is disruptions in learning in an educational institution. During the COVID-19 infection surge, due to the increased amount of study materials made available by online learning, most students worldwide experienced an increased work load during their university education (Chau et al., 2019). Another factor contributing to mental disorders is a lack of guidance, which leads to confusion and misunderstanding of the curriculum (Chau et al., 2019). In the current situation, it is necessary to find out the factors that contribute to learning difficulties and mental disorders among students. Students are a nation's future, and if the quality of training declines and the prevalence of mental disorders among them rise, it would lead to a gap in quality of human resources in the country. The objective of this study is to determine the prevalence of mental disorders and online education satisfaction levels during the COVID-19 pandemic among high school students.

2. MATERIAL AND METHODS

Study design and setting

It was a cross sectional survey that was conducted in a multi center study. The study was conducted among students enrolled in different high schools across different cities in Pakistan. The study began in January 2021 and ended on June 2021 lasting for about six months. The validated and structured questionnaire was used which consisted of demographic information, a section on mental disorder and an online education satisfaction level. The questionnaire was created using Google Forms. Social media platforms were used to contact students from various high schools in all major cities of Pakistan.

Sample size and Sampling Technique

The Epi info online sample size calculator was used to calculate the sample size. A total of 100,000 students were enrolled in high schools throughout Pakistan. The parameters that were used to calculate the sample size included prevalence of mental disorder as 50% (because it was unknown from previous studies), 95% confidence interval and 5% margin of error. This study had a sample size of 275 students. The students were chosen using the cluster random sampling technique. The participants requested that the e-questionnaire be distributed to their social contacts through social media platforms such as Facebook Messenger, WhatsApp, Instagram, and Twitter.

Inclusion and exclusion criteria

Those students who were enrolled in high schools were eligible to participate in the research. Students who completed their studies were excluded from the study.

Data collection procedure

A questionnaire was divided into three sections. Demographic parameters included age, gender, and academic year of studies. The Beck Depression Inventory scale indicated that the instrument's sensitivity and specificity were 61% and 94% respectively, for mental disorders. For the diagnosis of anxiety, the Beck Anxiety Inventory scales had a sensitivity of 92% and a specificity of 76%. To determine the presence of a psychotic disorder, the Psychotic Symptom Rating scales were used. A five item scale was used to

assess students' satisfaction with online classes. The components of scale were quality of instructor, course design, instructor feedback, and student expectation (Brooks et al., 2020).

The Beck Depression Inventory scale score ranged from 1 to 40. A score of 1-10 was depicted as normal, 11-16 mild, 17-30 moderate, 31-40 severe, and over 40 very severe. A Beck Anxiety Inventory score ranged from 0–60. A score of 0-21 indicated mild, a score of 22 to 35 as moderate, and a score of over 36 as severe anxiety. Psychotic Symptom Rating scales ranged from 0–40. A score of 0-13 indicated mild Psychosis, 14-25 indicated moderate psychosis, 26-34 indicated severe psychosis, and 35-40 indicated very severe psychosis. Online satisfaction was an eleven point rating scale. Each item had 1 point and the cutoff point was 7, which indicated online dissatisfaction.

Statistical analysis

Data analysis was done by the Statistical Package for Social Sciences program (SPSS) version 23 (IBM-SPSS). A mean and standard deviation were calculated for continuous variables, and frequencies and percentages were calculated for categorical variables. The normality of the data was determined through the Kolmogorov Smirnov test. P-values less than 5% were considered statistically significant. The Chi square test was applied to test the relationship between categorical variables. The odds ratio and associated 95% confidence intervals were analyzed in the data.

Compliance with ethical standards

Research involved human participants and all procedures were carried out in accordance with the 1964 Helsinki statement and its later revisions or comparable ethical standards, as well as the ethical requirements of the institutional and/or national research committee. The research involved human participants and informed consent was obtained from each participant. Research was approved by the ethical review committee from the hospital, and confidentiality of data was maintained.

3. RESULTS

The average age of the students was 20.41 years, 65% were females and 35% were males, 70% were under graduates and 30% were post graduate students. Most (68.7%) of them had educational difficulties and most (59%) were suffering from post traumatic disorders (Table 1).

Table 1 Socio-Demographic Characteristics of Study Participants (n=275)

Characteristics	Frequency (%)
Age (Years) (Mean \pm SD)	20.41 \pm 0.77
18-25	206(75)
26-30	69(25)
Gender	
Male	96(35)
Female	179(65)
Level of Study	
Grade 11	193(70)
Grade 12	82(30)

Those students suffering from minimal to very severe depression ($r=0.3$, $r=0.5$, $r=0.2$, $r=0.7$), mild to severe anxiety ($r=0.1$, $r=0.8$, $r=0.6$) and mild to very severe psychotic disorder ($r=0.5$, $r=0.9$, $r=0.8$, $r=0.7$) were strongly related to low satisfaction level of online learning (Table 2).

Table 2 Relationship between mental disorders with high school student satisfaction with online classes among students (n=275)

Characteristics	Dissatisfaction with online classes Correlation Coefficient	p-value
Depression		
Minimal	$r=0.3$	0.487
Mild	$r=0.5$	0.350

Moderate	r=0.2	0.002
Severe	r=0.7	0.001
Anxiety		
Mild	r=0.1	0.568
Moderate	r=0.8	0.015
Severe	r=0.6	0.036
Psychotic Disorder		
Mild	r=0.5	0.465
Moderate	r=0.9	0.003
Severe	r=0.8	0.002
Very severe	r=0.7	0.040

Most of the students were suffering from severe anxiety (28%), depression (34.7%), and obsessive compulsory disorder (32%) respectively (Figure 1). A high level of severe anxiety among female students was observed as compared to male students (Figure 2).

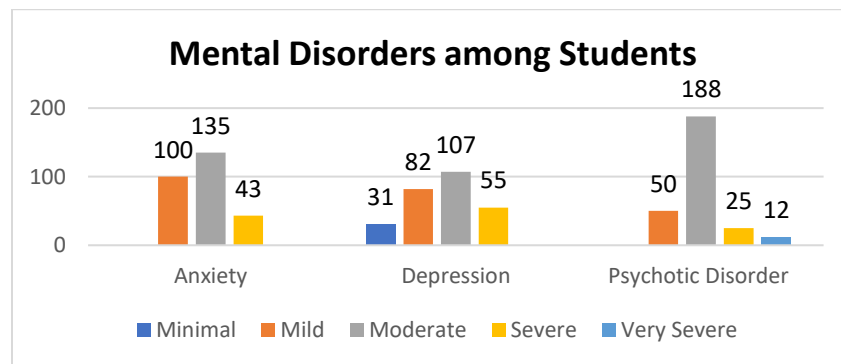


Figure 1 Level of Mental disorders among students

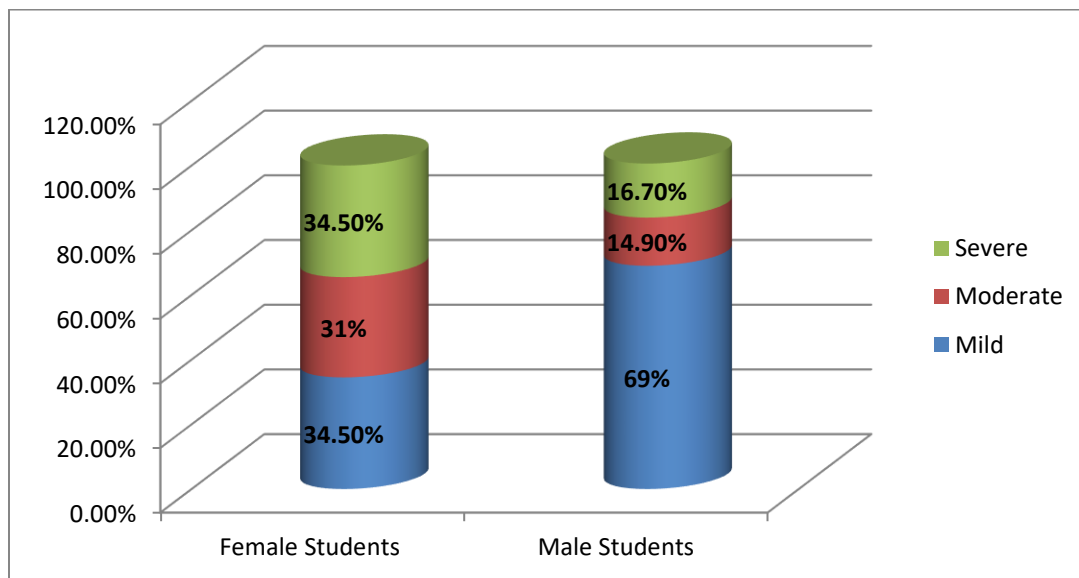


Figure 2 All Mental Disorder levels among male and female students

4. DISCUSSION

The prevalence of severe anxiety, depression, and psychotic disorder among students was 28%, 34.7% and 32% respectively. During the COVID-19 pandemic, most (58.7%) of the students were not satisfied with online classes. Depression, anxiety, and obsessive compulsive disorder were common predictors of student satisfaction. According to the findings of the study, students suffered from

a variety of mental disorders that affected their learning. This finding was consistent with other studies that found that during the SARS outbreak, health care providers, including students, experienced various forms of psychological distress. The basic cause of this issue is that they were working as front line workers. Other reasons included a feeling of vulnerability, concern for self health, or family health. Another predictable factor was the availability of personnel (including delivery, postal and store workers), if the supply of these personnel is short, the risk of health is high (Depierro et al., 2020).

The study discovered that females suffered more from depression, anxiety, and stress. This result was consistent with the findings of other studies (Kagstrom et al., 2019; JGao et al., 2020; WGao et al., 2020). The primary reason is that female students were more common in the medical profession than males, and those treating patients with COVID-19 were exposed during training. Another study conducted during the outbreak found that female students were more likely to develop psychological disorders compared to male students (Hao et al., 2020). Another finding from this study was that under graduate students were more likely to have psychological disorders than post graduate students. This finding was consistent with other research findings that showed undergraduate students suffered more from psychological disorders during the SARS pandemic. The main reason is that under graduate students were in experienced in such situations and struggled to cope during the pandemic (Hao et al., 2020).

This study's results found that anxiety, depression, and psychosis had a strong relationship with the satisfaction level of online education. The study depicted following results: Depression ($r=0.3$, $r=0.5$, $r=0.2$, $r=0.7$), mild to severe anxiety ($r=0.1$, $r=0.8$, $r=0.6$) and mild to very severe psychotic disorder ($r=0.5$, $r=0.9$, $r=0.8$, $r=0.7$). This result was consistent with other study findings, which indicated that psychological disorders were affecting online education because students were not concentrating on their studies and were concerned about their health, resulting in learning difficulties. Other result studies found that several types of online learning lead to confusion among students (Li et al., 2021). Another study found that different ways of online learning are difficult in different ways (Matthews et al., 2016). According to the study's observations, students in the South East Asian and Eastern Mediterranean regions were more likely to have psychological disorders and to engage in online learning. This finding was consistent with other research findings that showed that more Asian countries were affected by psychological disorders during the SARS pandemic. The main reason is that these countries have fewer resources and a less conducive environment for teaching (Patel et al., 2018). There were several limitations of this study. First, because it is a cross sectional study, it cannot determine the temporality of results. Second, the results could be skewed due to recall bias. The third issue is that the study had response bias because the majority of non respondents were stressed due to the pandemic.

5. CONCLUSION

This study concluded that students have a high prevalence of mental disorders, which is linked to dissatisfaction with online classes. Development of student counseling units to provide consultation services with the purpose of guidance and diminishing mental stress of students and family supervision combined with recommending parents to have a healthy relationship with their children are the major environmental factors responsible for reducing the tendency of students toward mental disorders.

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Authors' contribution

Conceptualization, Supervision, Methodology, Resources, Data Collection, Writing and Formal analysis: Noreen Maqbool Bokhari, Mubashir Zafar.

Writing, Investigation, Resources, Analysis, Draft preparation, Review and Editing: Muhammad Maaz Arif

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Supervision, Resources, Review and Editing: Khawaja Ghulam Mouinuddin

All authors have read and agreed to submit the manuscript.

Ethical approval

Research approved by the ethical review board of Jinnah Sind medical university and the approval number is 2021-5697123.

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Conflict of interest

The authors declare that there is no conflict of interests

Data and materials availability

All data associated with this study are present in the paper.

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