Psychological impacts among university students due to COVID-19 Pandemic in Pakistan using Generalized Anxiety Disorder(GDA) -7 Scale

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Abstract- The Current Pandemic of COVID-19 has affected the mental health of university students. Students worldwide are badly harmed both physically and mentally and suffer from anxiety. Layer three of the current pandemic (COVID-19) has badly affected the university students in Pakistan. In this study, we aim to investigate the occurrence and anxiety levels among university students in Pakistan. The data were collected through an online survey using google drive from March 15, 2021, to June 10, 2021. They received 400 (80%) completed and valid responses from 500 sample questionnaires distributed among university students in Pakistan. The GDA (7-Item generalized anxiety disorder scale) questionnaire was used to assess the respondents' anxiety levels. The 5-point Likert Scale ranged from strongly disagree (1) to strongly agree (5). The e-questionnaires were composed of two parts. The first part contains the demographic details, and the second part comprises the mental health problems regarding anxiety. The demographic information was presented in N (%). To test the questionnaire's reliability, we used Cronbach's Alpha and McDonald's Omega. The anxiety scores were presented with mean and standard deviation (S.D.). The relationship between anxiety level and socio-demographic characteristics was assessed using mean ± S.D. The Chi-Square independence test was employed to analyze the association between the anxiety scores and socio-demographic characteristics. The data were analyzed using IBM SPSS Statistics 23.0. The anxiety scores of 400 respondents showed normal 174 (43.50%), mild 62 (15.50%), moderate 114 (28.50%), and severe 50 (12.50%), respectively. Age, education level, and marital status were statistically significant at ($P<0.001$). The current study's findings indicate significant differences in anxiety levels in different age groups, educational levels, and the marital status during the third layer of the pandemic of COVID-19 in university students.

Index Terms- COVID-19, Pandemic, Anxiety, GAD-7

I. INTRODUCTION

The Covid-19 pandemic significantly impacts human well-being worldwide by means of socio-economic, public health, and safety implications [1,2]. Various countries adopted a common response to prevent contagious infection from person to [3]. Such as closing the transit networks, restrictions on public gathering, and travel restrictions for foreigners [4,5], as well as major lockdown and social distancing. Furthermore, daily-based work and educational activities have become online efforts with indecisive impacts on people's mental and physical health. This novel practice of home quarantine and social distancing under lockdown impacts the student's mental health regarding stress, anxiety, and depression. The world health organization (WHO) has recognized the plausible corrosion of mental health fettle due to Covid-19 [6]. For instance, Canadian research found high levels of anxiety and depression in students affected by the serve

acute respiratory syndrome (SARS) pandemic and who experienced a long period of quarantine [7].

Moreover, around 25% of college students in P.R. China have a mild experience level of anxiety due to the Covid-19 pandemic [8]. Similar results were found in other countries. Kumar and Nayer [9] contended that fear is a multi-layered component that could be a pivotal factor in crippling human well-being and mental health conditions. Covid-19 is producing emotional and psychologically chaotic situations as countries reported a rapid increase in mental health issues, such as stress, anxiety, fear, and depression among the citizens [10]. Coakley et al. [11] reported that over half of the U.S. university students showed moderate to severe anxiety symptoms during COVID-19. A recent study of university students in nine countries reported that despite the globalization of a homogeneous student population, the study showed varied mental health predictors concerning cultural, political, and economic situations in a country [12]. The mental health status of university students has been affected during the COVID-19 pandemic, with a high prevalence of depressive symptoms, anxiety symptoms, and suicidal ideation [13]. In a recent study, over half of the university students suffered from anxiety symptoms during the COVID-19 outbreak [14]. The first confirmed case of Covid-19 was reported on February 26, 2020, in Karachi, Pakistan, and within a month, several cases were reported across the country. The government of Pakistan put a smart lockdown strategy from March 2020 to January 2021 to implement the protection protocols regarding Covid-19, such as wearing a mask, home quarantine, and social distancing [15,16,17]. It is difficult to realize the mental health condition regarding the anxiety and stress level of university students in Pakistan, particularly in the epoch of Covid-19. We hypothesized mental health problems due to Covid-19, such as anxiety, stress, and depression use among university students of Pakistan those considerably linked to their background characteristics. We used the 7-item generalized anxiety disorder scale (GAD-7) model to find and screening the university students' anxiety level in Pakistan. The GAD-7 model is commonly used in clinical practice to detect and evaluate anxiety disorders. The diagnostic credibility and proficiency of GAD-7 are famous for assessing the severity of anxiety and stress disorder [15,16]. This research aims to address the anxiety problem experienced by university students in Pakistan. This study is anticipated to examine the mental health impacts (anxiety) of an unexpected situation on university students and articulate a strategy to minimize the anxiety problem of university students in Pakistan.

II. MATERIALS AND METHODS

We conducted an online survey using google drive/form and distributed a total of 500 e-questionnaires among university students in Pakistan. We received 400 completed and valid responses with a response ratio of 80%. The GAD-7 comprises seven indications and queries that rate by which respondents are anxious and nervous from these symptoms [16]. The GAD-7 is perfectly proved to have internal consistency and screening reliability. The GDA-7 is a reliable instrument for assessing university students' generalized anxiety symptoms [18]. We used a 5-point Likert scale, ranging from strongly disagree (1) to agree (5) strongly. The e-questionnaires were composed of two parts. The first part contains the demographic details, and the second part consists of the mental health problems regarding anxiety. The received data were analyzed using IBM SPSS Statistics 23.0. To perform the reliability analysis and check the overall reliability, we used McDonald's Omega and Cronbach's Alpha and expressed its result in table 1. The respondents' demographic details were evaluated with the help of descriptive statistics, and presented the obtained results in table 2 and table 3—the (ratios, percentages, and 5-point summaries). The anxiety scores were examined in table 4, and chi-square tests based on p-values were used to explore the significant relation within/between the respondent's socio-demographic characteristics and anxiety level/stress level due to the Covid-19 pandemic, furnished the corresponding results in table 5.

Table 1: Reliability Statistics

Reliability Statistics

Number of Items	7
Cronbach's Alpha	0.835
Omega Alpha	0.835

III. RESULTS AND DISCUSSIONS

After distributing a total of five hundred e-questionnaires via Google drive/forms through emails and other social media platforms, to the university students of Pakistan, we received a total of four hundred completed and valid responses; those have been evaluated in our final analysis for this research activity. The findings/results of our research study regarding various desired thematic areas have been furnished in the following, under their corresponding subsections.

3.1. Demography and composition of the sample

The basic information about the targeted population's demographic characteristics and other desired attributes has been furnished in table 2 and table 3. From table 2 and table 3, it is clear that, out of 400 sample respondents, 67.5% (270) were male students with an average anxiety score of 7.84, having a standard deviation (S.D.) of 5.31 with a maximum value of 21 and 0 as minimum level and the rest of sample segment comprising 32.5 % (130), was of female university students having 8.13 as a mean anxiety level with 5.04 SD and 17 as maximum and 0 as a minimum level (Table 3).

With respect to regional distribution, 51.5 % (206) of the respondents belong to rural areas with mean anxiety of 7.72, having 5.15 as a S.D. and a maximum value of 21 and 0 as a minimum value. The rest of 48.5 % (194) are urban regions with 8.14 as their average anxiety level with an SD of 5.28, a maximum value of 21, and a minimum of 0.

While seeking the distribution of respondents concerning their marital status, we found that 24.25 % (97) were married with 1 as a minimum value, a maximum value of 21, and an average level of anxiety, having 4.89 as a S.D. On the other hand, 75.75 % (303) of the sample comprises unmarried university students with a maximum anxiety level of 21, 0 as a minimum value, and 7.87 as a mean with SD of 5.32. While assessing the respondents with respect to the age groups, it can be seen from table 2 and table 4 that 16.25 % (65) respondents have an age of less than 19, have an average anxiety level of 8.22 with a SD of 6.13, and 21 as a maximum and 2 as a minimum value. A

major portion, 48.5% (194) of respondents, falls in the age group 19-23 with a minimum level of anxiety 1 a maximum value of 18, having an average value of 7.27, and a SD of 4.99. The respondents within the age group 24-27 have a percentage of 16.25% (65) with an average level of anxiety of 8.51 with SD of 5.03 having a minimum, and maximum values are 2 and 16, respectively. A small amount, 4% (16) of the respondents, have an age group 28-31 with 2, 7.95, and 16 as minimum, maximum and average values of anxiety level, respectively, having a SD of 5.68. The respondents over 31 have a percentage contribution of 15% (60) in the sample with an average anxiety level of 7.62, SD of 6.61, minimum level of anxiety of 1, and maximum value of anxiety of 16.

On evaluating the sample, keeping in view the educational level, our results showed that 60.25% (241) of the respondents have 14 years' university-level education (B.A./ BSc/ B.Ed.) with an average anxiety level of 7.96 having 5.36 as a SD, 0 and 21 as a minimum and maximum level respectively. While, the 17.25% (69) segment of the sample comprises students with sixteen years of university education (M.Sc. /M. A), having a maximum anxiety level of 18 and a minimum value of 1 with an average value of 8.33, having 5.30 as their S.D. The respondents having eighteen years of education (M.S./M.Phil.) are 13.75% (55) in total, having 7.75 levels of anxiety on average with a SD of 4.87, maximum and minimum values of 17 and 1, respectively. The rest of the 8.75 % (35) sample comprises Ph.D./Post-Doc students with 3 and 17 as a minimum and maximum level of anxiety with an average value of 7.53 having 4.45 as a S.D.

While classifying the respondents from their income status, 23.5% (94) of students indicated a low-income level. They have an average level of anxiety of 8.61 with a SD of 5.52 and have minimum and maximum values of 2 and 21, respectively. While a significant portion of respondents highlighted their income level as moderate and their minimum level of anxiety is 0, the maximum value is 21; the average value is 7.69, and a SD of 5.13. A small segment of the sample, 5.5 % (22), comprises university students with a high-income level with an average anxiety level of 8.42 with 5.03 as a S.D. and a minimum value of 2 and a maximum weight of 18.

Table 2: Frequency distribution of variables under consideration with N=400

Variables	N (%)

Gender	
Male	270(67.50)
Female	130(32.50)
Age	
<20	65(16.25)
20-23	194(48.5)
24-27	65(16.25)
28-31	16(4.00)
>31	60(15.00)
Educational level	
BS	241(60.25)
Master	69(17.25)
M.S./MPhil	55(13.75)
Ph.D./Post-Doc	35(8.75)
Income status	
Low	94(23.50)
Moderate	284(71.00)
High	22(5.50)
Marital status	
Married	97(24.25)
Unmarried	303(75.75)
Region	
Rural	206(51.50)
Urban	194(48.50)

Table 3: Descriptive statistics regarding anxiety score of respondents

Variables	Minimum	Mean	SD	Maximum
Gender				
Male	0	7.84	5.31	21
Female	0	8.13	5.04	17
Age				
<20	2	8.22	6.13	21
20-23	1	7.27	4.99	18
24-27	2	8.51	5.03	16
28-31	2	7.95	5.68	16
> 31	1	7.62	6.61	16
Region				
Urban	0	7.72	5.15	21
Rural	0	8.14	5.28	21
Education				
BS	0	7.96	5.36	21
Master	1	8.33	5.3	18
M.S./MPhil	1	7.75	4.87	17
Ph.D./Post-Doc	3	7.53	4.45	17
Marital Status				
Single	0	7.87	5.32	21
Married	1	8.15	4.89	21
Income level				
Low	2	8.61	5.52	21
Moderate	0	7.69	5.13	21
High	2	8.42	5.03	18

3.2. Anxiety level of university students during the Covid-19 outbreak

The findings of this research activity regarding the level of anxiety among the university students of Pakistan during the outbreak of the Covid-19 pandemic have been endowed in the following table 4. It can be seen that out of four hundred respondents, 43.5 % (174) are normal and have no anxiety, while 15.5 % (62) of the respondents indicated that they had a mild level of anxiety during the outbreak of Covid-19. Furthermore, 28.5% (114) of the respondents have a moderate level of anxiety, and 12.5% (50) of the sample comprises university students with severe anxiety levels. In addition, table 4 also shows that the overall level of anxiety has a mean score of 7.94 ± 5.22. The overall reliability has been evaluated with the help of Cronbach's Alpha and McDonald's omega, showing excellent percentage reliability of 83.4 % and 83.5 %, respectively. These results endorse and validate the sufficiency of the sample size and the reliability of the overall methodology.

Table 4: Distribution of participants concerning their anxiety score

Variable	Rate/Level	Frequency (%)	Mean ± SD
Anxiety Level	Normal	174 (43.5)	7.94 ± 5.22
	Mild	62 (15.5)	
	Moderate	114 (28.5)	
	Severe	50 (12.5)	

3.3. Analysis of anxiety within variable (Socio-demographic characteristics)

It can be seen that the female gender has a high level of anxiety on average (8.13) with a smaller maximum level (17) and SD (5.04) as compared to those of the

male gender (i.e., 7.84, 21, and 5.31, respectively). Considering the geographical regions, it is clear that respondents from rural areas have a higher level of average anxiety (8.14) with a greater SD (5.28) as compared to the respondents of urban regions having an average (7.72) and SD of 5.15. in comparison, both the urban and rural area respondents have an equal minimum and maximum value of anxiety. Keeping in view the marital status, we can see that the respondents having married status have higher values of anxiety on average (8.15), minimum (1) with less SD (4.89) as compared to those of unmarried respondents (i.e., 7.87, 0.0 and 5.32) but both categories have same values of their maximum level of anxiety. Looking into the educational level of respondents, it is evident from the results that the students having sixteen years' education (Masters) have the highest level of anxiety on average (8.33) with SD (5.30) and a maximum value of 18, followed by those having 14 years' university education (B.A./ B.Sc. /B.Ed.) with an average level of anxiety (7.96) having S.D. of (5.36) and (21) as a maximum value with 0 as the minimum value. The respondents having eighteen years of education (MS. / M.Phil.) are in the 3rd position to have an average level of anxiety (7.75) with a SD (4.87), a minimum anxiety level of (1), and a maximum value of (17). While on the 4th position is the respondent had the highest level of education (PhD), having a minimum level of anxiety as (3), maximum value as (17), and an average value of (7.53) with a S.D. of (4.45). While performing a comparison within the variable of income status, respondents having low-income levels have the highest value of average anxiety (8.61) with a S.D. of (5.52) and a minimum level of (2) with a maximum anxiety level of (21). While the respondents with a high-income level have the 2nd highest average level of anxiety (8.42) with a S.D. of (5.03), a minimum value of (2), and a maximum value of (18). On the other hand, respondents having moderate-income levels are those who have the least anxiety level on average (7.69) with a S.D. of (5.13), a minimum level of (0), and a maximum level of anxiety of (21).

3.4. Association between anxiety level and Socio-demographic characteristics

This subsection demonstrates the relationship between the respondents' socio-demographic characteristics and anxiety levels. After implementing the chi-square text on the collected data, we found (from table 3) that among the socio-demographic characteristics

understudy, factors having the most significant effect on the level of anxiety are age, education, and marital status. If we consider a 10% level of significance, then gender is also significantly affecting the anxiety level of respondents. At the same time, the region and income level have a very negligible association with the anxiety level of the respondents.

Table 5: Relationship between anxiety level and Socio-demographic characteristics of respondents

Socio-demographic Characteristics	Level of anxiety				Mean ± S.D.	P-value
	Normal	**Mild**	**Moderate**	**Severe**		
Gender						
Male	122	43	67	38	7.84±5.31	0.071
Female	52	19	47	12	8.13±5.04	
Age						
<20	25	7	19	14	8.22±6.13	<0.001
20-23	87	27	59	21	7.27±4.99	
24-27	26	13	18	8	8.51±5.03	
28-31	9	2	3	2	7.95±5.68	
>31	27	13	15	5	7.62±4.56	
Region						
Urban	90	29	55	20	7.72±5.15	0.542
Rural	84	33	59	30	8.14±5.28	
Educational level						
BS	107	32	72	30	7.96±5.36	<0.001
Master	27	10	21	11	8.33±5.30	
M.S./MPhil	24	10	15	6	7.75±4.87	
Ph.D./Post-Doc	16	10	6	3	7.53±4.45	
Marital Status						
Single	136	41	84	42	7.87±5.32	<0.001
Married	38	21	30	8	8.15±4.89	
Income Level						
Low	37	16	24	17	8.61±5.52	0.319
Moderate	128	42	83	31	7.69±5.13	
High	9	4	7	2	8.42±5.03	

IV.CONCLUSION

This study aimed to evaluate the level of anxiety among university students in Pakistan during the Covid-19 outbreak. After a thorough analysis and evaluation of the results, it has been found that 56.5 % of the respondent had reported that they had experienced anxiety during the outbreak of Covid-19. Out of this percentage, a segment of the respondents, 15.5%, had reported a mild level of anxiety, 28.5 % had experienced a moderate level of anxiety, while 12.5% respondent was experiencing a severe level of anxiety. Furthermore, females have reported a higher anxiety level than male respondents. Similar results were also reported in a study by Amendola. et al. [19]. Among the age groups, respondents aged <19 have the highest percentage (61.5%) of within-group anxiety rate as compared to other age groups, and the age group 24-27 has the highest level of anxiety on an average basis,

whereas the respondents having age between 20-23 has the lowest level of anxiety on average. However, the region has no significant contribution to the general anxiety level of the respondents. However, analyzing inter-region comparison, respondents from rural areas have a higher percentage rate of anxiety (59.2%) as well as the level of average anxiety (8.14) than those from urban regions (i.e., 53.6 % and 7.72). The highest percentage of respondents (60.9%) with anxiety among groups of different educational levels is those with sixteen years of education. The lowest percentage (54.3%) is the respondents with Ph.D. level education. So it can be concluded that with an increase in respondents' educational level, their anxiety level decreases. Regarding marital status, respondents having married life have a higher level of anxiety, and a higher percentage (60.8%) of respondents have anxiety compared to that unmarried ones. As per the results, the significance of the income level of respondents is not that much higher in general, but on comparing various categories within income level, respondents having low income have the highest percentage (60.6%) and the highest level of anxiety. While the respondents with middle-level income have the lowest anxiety on average, and those with a higher level of income have the second-highest anxiety on average. Previous studies witnessed similar results [20,21,22]. The results show that, among the socio-demographic characteristics of the respondents, the most significant factors are age, education, and marital status, which affect the anxiety level of the respondents.

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