Assessment of Mental Health Status of Public of Pakistan during the Corona Virus Pandemic

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Abstract

Abstract Background: The corona (COVID-19) pandemic has become a global concern and has impacted the people worldwide. The research data is needed to formulate psychological interventions to lower the anxiety. The aim of the study was to assess the anxiety and stress levels among the general public of Karachi during COVID-pandemic. Method: From 2020/04/29 to 2020/05/03 we collected data through online survey. Mental health status was assessed by the Depression, Anxiety and Stress Scale (DASS-21). Results: This study included 281 respondents from Karachi. In total 37.91% of respondents reported sever to extremely severe anxiety symptoms and 23.13% reported severe to extremely severe stress symptoms. Conclusion: During the outbreak of corona pandemic, more than one-third respondents reported severe to extremely severe anxiety and more than one fifth reported severe to extremely severe stress. Male gender, housewives, undergraduate education level was associated with high anxiety and stress wherever Awareness related to COVID, Specific up-to-date and accurate health information and applying certain precautionary measures were associated with lower levels of stress, anxiety and depression. Our findings will help to formulate psychological interventions to improve the mental health of vulnerable groups and lower the psychological impact of the outbreak.

Keywords: Mental health, Anxiety, Stress, Psychological interventions.

Accepted on March 29, 2021

Introduction

In December 2019, a novel virus named SARS-CoV-2 occurred in Wuhan, China. From there it has spread with a high rate of infectivity and is now a global concern. This pandemic has been classified as public health emergency by World Health Organization (WHO) which named it as "Severe acute respiratory tract coronavirus-2(SARS-CoV-2); The case fertility rate (CFR) is lower than that of SARS but greater than that of Influenza.[1,2] Every day, new cases are being detected and constant efforts are being made to prevent the transmission of novel SARS CoV-2; Overall mortality rate is less than 2% to 3%. [3]

On 26 February 2020, the Pakistan Federal Health Minister confirmed the first two cases of COVID-19 in Karachi and Islamabad. Corona virus pandemic has not only affected the world economically but it has affected the people mentally as well [4]. A study conducted in China showed that people developed psychological impact of outbreak, depression and anxiety of moderate to severe level [5]. Pakistan is suffering from similar situation; It has also led to anxiety among the health workers of Pakistan [6].

This study is aimed to determine anxiety and stress among the people of Pakistan as information related to the anxiety and stress during COVID -19 pandemic is not enough. These findings will help to formulate psychological interventions to improve the mental health of vulnerable groups and lower the psychological impact of the outbreak.

Research Methodology

Setting and Participants

The cross-sectional survey was conducted to assess the anxiety and stress levels among the general public of Karachi during epidemic of COVID-19 by using an anonymous online questionnaire. The simple random strategy was applied and online survey was first disseminated to university students and who were encouraged to pass it to others. The sample size comprised of 281 individuals. As the Pakistan's government recommended people to minimize close contact and isolate themselves at home. Therefore, respondents were invited electronically. Respondents completed the questionnaire in English and consent was taken from all the participants. The collection of data was completed in three days; from 2020/04/29 to 2020/05/03.

Survey development

The survey consisted of several questions that included (1) Demographic data (2) Presence of physical symptoms at present and in the past 14 days like fever, dizziness etc. (3) Knowledge and concerns about COVID-19 (4) Precautionary measures against COVID-19 in the past 14 days (5) Additional information required with respect to COVID-19 (7) mental health status.

Sociodemographic data were collected to obtain gender, age, education level, province and profession. Physical symptom variables in the past 14 days included fever, cough, and dizziness.

The respondents were asked to rate their physical health status as well. The knowledge and concern about COVID-19 variables included awareness, concern and satisfaction. In Precautionary measures the respondents were asked did they took precautionary measures or not, type of precautionary measure they applied the most and the average number of hours staying at home per day to avoid COVID-19. Moreover, participants were asked whether they themselves are tested for COVID-19 or knew someone who has been tested for COVID-19.

In addition to that, mental health status was measured through Depression, Anxiety and Stress Scale (DASS-21). The total anxiety subscale score was divided into normal anxiety (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19) and extremely severe anxiety (20–42). The total stress subscale score was divided into normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42).

Survey respondents

A total of 281 responses out of 338 were completed hence the completion rate was 82.3%. Table 1 represents the anxiety subscale where 138 individuals forming 49.1% have been found to have normal (N) score. In addition to this, 10 individuals forming 3.6% have been found to have mild (MI) anxiety and 29 participants or 10.3% of total sample population have been suffering from moderate (MO) anxiety. Furthermore, Severe (S) and extremely severe (ES) anxiety levels were observed as 27 individuals or 9.6% and 77 individuals or 27.4% respectively (Figure 1).

The Table 2 represents the stress subscale where 175 individuals meaning that 62.3% have been found to have normal (N) score. In addition to this, 20 individuals forming 7.1% have been found to have mild stress and 21 individuals or 7.5% of total sample population have been suffering from moderate stress. Furthermore, severe and extremely severe stress levels were observed as 32 individuals or 11.4% and 77 individuals or 11.7% respectively (Figure 2).

The Tables 3 and 4 shows mean and standard deviation of anxiety and stress DASS subscales (Figure 3).

Data analysis

Descriptive statistics was calculated for sociodemographic variables, Precautionary variables, knowledge and concern related to COVID variables, Physical symptoms and health information variables. Percentages of response were calculated according to the number of respondents per response with respect to the number of total responses of a question. We also calculated mean and standard deviation of DASS subscale. General linear model was used to calculate the univariate associations between sociodemographic characteristics, physical symptoms, knowledge and concern related to COVID, precautionary measures, additional health information, health information satisfaction and the subscales of the DASS. Statistical analysis was performed using SPSS Statistic 21.0 (IBM SPSS Statistics, New York, United States).

Results

Socio-demographic variables stress and anxiety

Table 1. *Percentages and frequency of different anxiety levels reported by respondents.*

Variables		Frequency	Percent
Valid	N	138	49.1
	MI	10	3.6
	MO	29	10.3
	S	27	9.6
	ES	77	27.4
	Total	281	100

N = Normal; MI = Mild; MO = Moderate; S = Severe; ES = Extremely severe

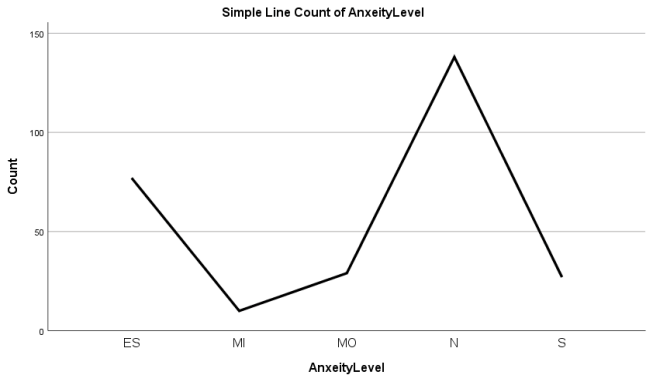

Figure 1. *The line graph of anxeity levels reported by respondents.*

- N = Normal
- S = Severe
- MO = Moderate
- MI = Mild
- ES = Extremely severe

Table 2. *Frequency and percentages of stress levels of respondents.*

Variables		Frequency	Percent
Valid	N	175	62.3
	MI	20	7.1
	MO	21	7.5
	S	32	11.4
	ES	33	11.7

N = Normal; MI = Mild; MO = Moderate; S = Severe; ES = Extremely severe

Figure 2. *The line graph of stress level of respondents.*

- N = Normal
- S = Severe
- MO = Moderate
- MI = Mild
- ES = Extremely severe

Table 3. *The mean and standard deviation of anxiety level of respondents.*

DASS scores* Anxiety Level			
DASS scores			
Anxiety Level	**Mean**	**N**	**Std. Deviation**
N	3.4203	138	3.64644
MI	9.3	10	1.41814
MO	11.7241	29	1.66683
S	16.8519	27	4.40021
ES	31.4935	77	6.37764
Total	13.4698	281	12.6821

Table 4. *The mean and standard deviation of stress levels of respondents.*

DASS scores * Stress Level			
DASS scores			
Stress Level	**Mean**	**N**	**Std. Deviation**
N	4.8971	175	4.03587
MI	15.5	20	3.84571
MO	21.4286	21	2.46113
S	29.7188	32	3.76944
ES	36.8788	33	4.15149
Total	13.4698	281	12.6821
N = Normal; MI = Mild; MO = Moderate; S = Severe; ES = Extremely severe			

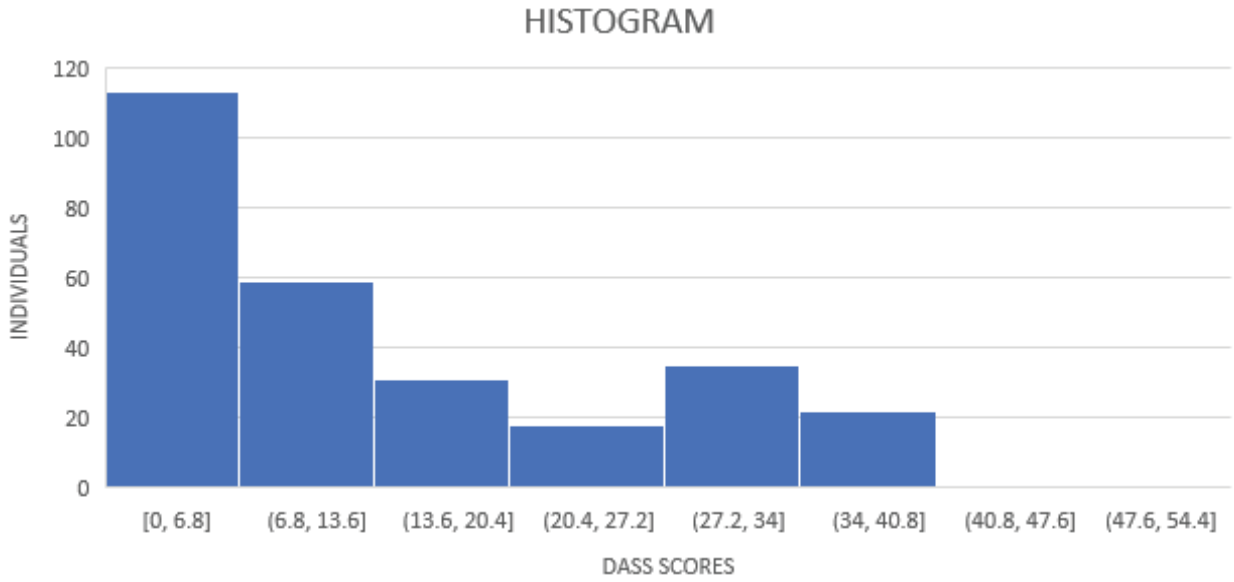

Figure 3. *Histogram representing DASS scores of the respondents.*

Sociodemographic characteristics are shown in Tables 5 and 6. Majority of respondents were female (81.8%), aged 20 to 30 years (70.1%), students (85.76%), well educated (undergraduate degree=75.44%). Male gender was significantly associated with high scores in the DASS anxiety and stress subscales (95% Confidence Interval=12.216 to 19.705). Furthermore, housewives were associated with high scores in DASS anxiety and stress subscales (95% CI=1.295 to 17.371). Related to profession, undergraduate education level was associated with high scores in DASS anxiety and stress subscales (95% CI=12.798 to 16.261). Moreover, age 20 to 30 was significantly associated with high scores in DASS anxiety and stress subscales (95% CI=13.435 to 17.194).

Physical symptoms, stress and anxiety

For physical symptoms, Table 7 shows that 92.5% reported present physical symptoms like cough, fever, dizziness. Furthermore, 96.7% showed physical symptoms like cough, fever in past 14 days. Univariate analysis showed having physical symptoms was significantly associated with low scores in DASS stress and anxiety subscales (95% CI=11.442 to 12.511). Moreover, having symptoms like fever, cough in past 14 days was also associated with low scores in DASS anxiety and stress scales (95% CI=11.968 to 14.995).

Health status, COVID testing, stress and anxiety

Table 8 shows that around 1.06% showed poor health status related to COVID testing. Table 4 shows 1.06% of respondents tested themselves for COVID-19 while 33.09% knew someone who has been tested for COVID-19. General linear model showed knowing about someone who has been tested with COVID-19 was associated with low scores in DASS anxiety

Table 5. *Shows association of demographic data with DASS scores.*

Variables	N(%)	R2	AR2	Confidence Interval
Age	< 20 60(21.35%)	0.5	0.44	6.257 to 11.276
	20-30 197(70.01%)			13.435 to 17.194
	> 30 24(8.54%)			Reference
Gender	Male 51(18.149%)	0.009	0.005	12.216 to 19.705
	Female 20(81.85%)			Reference

Table 6. *Shows association between demographic data and DASS scores.*

Variables	N (%)	R2	AR2	Confidence Interval
Profession	Businessman 1(0.35%)	0.024	0.003	
	Corporate-Sector 4(14.28%)			-8.469 to 30.969
	Government-Sector 3(1.06%)			-5.458 to 22.792
	Helath Sector 16(5.69%)			3.943 to 15.556
	House Wife 6(2.13%)			1.295 to 17.371
	Student 241(85.76%)			12.5711 to 15.885
	Self Employed 10(3.55%)			Reference
Education	Postgraduate 34(12.09%)	0.40	0.30	5.296 to 11.468
	Inter 31(11.035%)			6.411 to 14.1039
	Undergraduate 212(75.44%)			12.798 to 16.361
	Matric 4(1.423%)			Reference

and stress subscales (95% CI=8.62 to 13.121). However, health status and being tested positive for COVID-19 was not associated with DASS anxiety and stress subscales.

Knowledge and concern about COVID-19, stress and anxiety

Regarding knowledge, Tables 9 and 10 shows that 96.4% were aware about COVID-19. Around 87.9% shows concern and were worry about COVID-19. Furthermore, 92.88% were aware about the health information available. Majority of respondents (81.8%) were satisfied with health information available. Univariate analysis showed that awareness related to COVID-19 was associated with low scores in DASS anxiety and stress subscales (confidence Interval=11.956 to 14.956). Moreover, Concern about COVID-19 was also significantly associated with high scorers in DASS anxiety and stress subscales (95% CI=12.461 to 15.709). Satisfaction regarding health information available was significantly associated low scores in DASS anxiety and stress subscales (95% CI=11.785 to 15.153). Awareness regarding health information was significantly not associated with anxiety and stress.

Precautionary measures, stress and anxiety

Related to precautionary measures, Table 11 shows 98.2% people took precautionary measures like wearing masks and using hand sanitizers. Regarding type of precautionary measures: 44.5% of people avoided going out, 35.58% did social distancing, 12.09% people used hand sanitizer, 6.7% wore masks. Univariate analysis showed taking precautionary measures was significantly associated with low scores in DASS anxiety and stress subscales (95% CI=11.956 to 14.956). Moreover, Avoiding going out was associated with low scores in DASS anxiety and stress subscales (95% CI=8.331 to 11.934) while social distancing (95% CI=14.962 to 20.75) is significantly associated with high scores in DASS anxiety and stress subscales. Related to hours spend at home 20 to 24 hours were significantly associated with low scores in DASS anxiety and stress subscales.

Table 7. *Shows association between physical symptoms and DASS scores.*

Variables	N (%)		R2	AR2	Confidence Interval
Do you have any past physical symptoms?	Yes	9(3.202%)	0.000	-0.004	11.968 to 14.995
	No	272(96.79%)			Reference
Do you have any present physical symptoms?	Yes	21(7.47%)	0.019	0.015	11.442 to 12.511
	No	26(92.52%)			Reference

Table 8. *Shows association between health status, COVID testing and DASS scores.*

Variables	N (%)		R2	AR2	Confidence Interval
Are you tested positive for COVID?	Yes	3(1.06%)	0.000	-0.003	-29.994 to 54.661
	No	278(98.9%)			Reference
Do you know some-one who has been tested for COVID	Yes	93(33.09%)	0.021	0.017	8.62 to 13.121
	No	188(66.90%)			Reference
What is your health status?	Poor	278(98.9%)	0.000	-0.004	-23.593 to 49.593
	good	3(1.06%)			Reference

Table 9. *Shows association of knowledge and concern related to COVID-19 with DASS scores.*

Variables	N (%)		R2	AR2	Confidence Interval
Are you aware of COVID?	Yes	278(98.93%)	0.000	-0.004	11.956 to14.956
	No	3(1.067%)			Reference
Are you worried About your family Members getting COVID	Yes	247 (87.9%)	0.017	0.014	12.461 to15.709
	No	34(12.09%)			Reference

Discussion

We collected responses from general public of Karachi from 29/04/2020 to 03/05/2020 and our findings suggests the following results: For the anxiety subscale 49.1% were considered to have normal score, 3.6% were having mild anxiety, 10.3% were suffering from moderate anxiety, Severe and extreme severe anxiety were rated as 9.6% and 27.4% respectively. For the stress subscale 62.3% were considered to

Table 10. *Shows association of knowledge and concern related to COVID-19 with DASS scores.*

Variables	N (%)	R2	AR2	Confidence Interval
Are you satisfied with Health information Available?	Yes 230(81.85%)	0.000	-0.004	11.785 to 15.153
	No 51(18.149%)			Reference
Are you aware of health information available?	Yes 261(92.88%)	0.003	0.000	12.106 to 15.242
	No 20(7.117%)			Reference

Table 11. *Shows association of precautionary measures with DASS scores.*

Variables	N (%)	R2	AR2	Confidence Interval
Do you take precautionary measures?	Yes 276(98.22%)	0.000	-0.004	11.956 to 14.956
	No 5(1.77%)			Reference
Types of precautionary measures	Going out 128 (45.55%)	0.075	0.065	8.331 to 11.934
	Using Hand Sanitizers 34(12.09%)			9.552 to 17.312
	Social distancing 100(35.58%)			14.962 to 20.75
	Wearing masks 19(6.76%)			Reference
How many hours Do you spend at Home?	< 10 (20.711%)	0.32	0.22	2.0 to 2.0
	15 to 20 16(5.69%)			3.073 to 8.551
	20 to 24 255(90.75%)			12.563 to 15.758
	10 to 15 8(2.845%)			Reference

have normal stress, 7.1% were having mild stress, 7.5% were suffering from moderate stress, severe and extreme severe stress were rated as 32% and 27.4% respectively.

In our study, the majority of our respondents: around 90.4% spent 20 to 24 hours per day, 92.52% did not reported any physical symptoms like dizziness and fatigue, 98.9% did reported good health status. Furthermore, very few respondents were tested positive for COVID-19 around 1.06%. Moreover, 1.06% was unaware about the COVID-19. The majority of respondents were worried about their family members getting COVID-19. In our study, nearly all respondents were satisfied with health information available and were aware of health information related to treatment and outbreak.

Previous researchers found female gender were at high risks of depression [7]. Our research shows opposite trend; Male gender was significantly associated with high anxiety and stress. In our study, anxiety levels were positively associated with housewives and undergraduate students belonging to age group of 20 to 30. Due to COVID-19 pandemic government has closed all the educational institutions which have affected the students academically; this might be a reason which may lead anxiety among students.

Secondly, knowledge and awareness related to COVID-19 were protective factor related to anxiety among the respondents. Media plays a very important role in making people aware about COVID-19. Government should promote media to aware the people about COVID-19 and should keep a check and balance on it so that inappropriate or violent content should be restricted. Government and health authorities should provide accurate health information to reduce the impact of rumors; as higher satisfaction related to health information available was associated with low anxiety. Moreover, related to physical

symptoms, our study contradicts with the previous researchers' results which indicate its association with high anxiety [8] but in our study Physical symptoms were associated with low anxiety and stress.

Thirdly, our study indicates, showing concern related to COVID-19 was associated risk factor related to anxiety and stress among the respondents. Government should introduce online relaxation activities to reduce panic and worry among the people. Furthermore, other researchers found applying precautionary measures were protected factor related to high anxiety and stress among the people [9]. Our findings correspond to it. Applying precautionary measures especially maintaining social distancing was associated risk factor related to stress and anxiety among the respondents while avoiding going out was a protective factor related to anxiety hence government should recommend people to stay at home.

Fourthly, in our study majority of respondents spent 20 to 24 hours at home. Previous researches suggest spending 20 to 24 hours at home was associated with high anxiety [10] because people isolated themselves at home wherever our study shows opposite trend; People who spent 20 to 24 hours at home reported low anxiety. Going out may cause panic among the people as COVID pandemic is worsening day by day. Government should ensure that people stay at home and should introduce different online courses, activities, psychological policies to divert people attention and decrease mental stress caused by pandemic.

Our study has several limitations. Firstly, due to ethical reasons we were unable to collect the name and contact details so that we can aware our participants about their mental health status. Secondly, there was an oversampling of a particular network of peers (e.g., students), leading to selection bias. As a result, the conclusion was less generalizable to the entire population, particularly less educated people. Despite of above limitations our findings still provides important information related to mental health status of public of Pakistan which can be used to identify the vulnerable groups and can be used to formulate the psychological policies.

Conclusion

During the outbreak of corona pandemic, more than one-third respondents reported severe to extremely severe anxiety and more than one fifth reported severe to extremely severe stress. Male gender, housewives, undergraduate education level was associated with high anxiety and stress wherever Awareness related to COVID, Specific up-to-date and accurate health information and applying certain precautionary measures were associated with lower levels of stress, anxiety, and depression. Our findings will help to formulate psychological interventions to improve the mental health of vulnerable groups and lower the psychological impact of the outbreak.

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