

Mental Health in the after math of COVID-19 Lockdowns: A Cross-Sectional Study in Pakistan

Running Title: Mental Health Post COVID-19 Lockdowns

Dr. Muhammad Moaz Bin Khalid M.B.B.S¹, Dr. Dr. Farsom Ayub M.B.B.S¹, Dr. Hafiz Zeyad², Ayisha Ayub MS^{3*}, Dr. Muhammad Ibrahim⁴

¹Primary and secondary health department, Medical Officer, Basic Health Unit, 171/M District Bahawalnagar, Dahranwala 62380, Pakistan

²Primary and secondary health department, Medical Officer, Rural Health Center, Chung Lahore 54950, Pakistan

³Molecular Biology, Department of Research and Development, Ayesha Bashir Hospital, Gujrat 50700, Pakistan

⁴Orthopedic department, Postgraduate MS, Services Hospital, Lahore 54000, Pakistan

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***Corresponding author:** Ayisha Ayub, MS Molecular Biology, Department of Research and Development, Ayesha Bashir Hospital, Gujrat 50700, Pakistan, Tel: +923320708784, E-mail: ayishasayz@gmail.com

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ABSTRACT

Background & objectives: Many studies on the instantaneous effect of Covid-19 on mental health and well being have been published since the Covid-19 outbreak but little work has been done on its possible after effects. Our study aims to survey the degree of psychological impact after pandemic lockdowns in Pakistan.

Methods: An online survey was conducted. Information regarding socio-demographic variables, psychological impact, and mental health status of the participants was collected along with WHO-5 well being index and the Depression, Anxiety, and Stress Scale (DASS-21).

Results: Among 493 participants, 29.4% reported poor well being while 4.9%, 9.9% and 11.3% reported mild to severe stress, anxiety, and depressive symptoms, respectively. Females were more stressed compared to males. Individuals between the 25-34 years age group, those who were married, had low education, were living alone and had a poor self-reported health status showed poor mental health across all DASS subscales and well being. Exercising and going out with friends and family demonstrated a protective effect against stress, anxiety, and depression.

Interpretation & conclusions: Studies show that Covid-19 has induced post traumatic stress among individuals even after the pandemic. Our study also revealed mental stress in the general population and can be used to design public mental health strategies and psychosocial issues following pandemic.

Keywords: Covid-19; Stress; Mental health; Pandemic; Anxiety; Depression; Psychological impact; Survey

1. Introduction

Coronavirus (SARS-CoV-2), the name given by the International Committee on Taxonomy of Viruses, is an

organism responsible for corona disease leading to severe acute respiratory distress and death in extreme cases. This disease was first reported by China in a city named Wuhan as pneumonia

of unknown etiology in December 2019. After being announced as a public health emergency of international concern, it was declared a pandemic by WHO On March 11, 2020¹.

First confirmed case of covid-19 in Pakistan appeared on 26 Feb 2020 when a student returned to Karachi from Iran along with a second case in Islamabad territory². To date, 1,496,693 Coronavirus Cases have been reported in the country. Among these, 1,396,218 recovered from the disease and more than 30,000 died from the infection³.

All over the world, various lockdown and community mitigation strategies were imposed to fight the spread of the virus which enormously affected the economy and quality of life among general population⁴. Pakistan also implemented lockdown across the country in the third week of March 2020 to control the serious situation. In compliance with lockdown procedures, educational organizations, public attractions like shopping malls, mosques and other worship places, and eateries, along with major industries were closed across the country. The Covid-19 incidence peaked in various waves around the world and every time, different lockdown strategies were used to contain the spread of the disease⁵.

COVID-19 was not only responsible for serious physical health risks but also impacted negatively on the social, psychological as well as mental health of people worldwide⁶. A study conducted in Bahrain population showed that 40% of the participants suffered from depression⁷. Pakistani population has also been tremendously impacted by the disease as people give special importance to socialization and social interactions. Lockdown and social distancing interrupted with almost all the major routine life activities of people, thereby increasing the psychological stress. A study conducted in March 2020 in Karachi, Pakistan, showed increased anxiety levels and fear in people because of the pandemic⁸. Pakistani economy reported GDP's negative growth (-0.05) for the first time over the last 60 years in 2020 because of the disease, which resulted in massive financial crisis⁹. This imposed additional financial constraints and burdens on people which resulted in increased suicide cases¹⁰.

Studies show that psychological problems extend even after pandemics and outbreaks are over. After a thorough literature review regarding Covid-19 and its impact on mental health, this study was designed to investigate the after effects of lockdown and its continued impact on the well being of the Pakistani population. To date, no study has explored post lock down and Covid-19 effects in Pakistan. We hope that findings of the study will be helpful in targeting people whose mental health has been compromised and need support as well as designing an updated nationwide plan to deal with the after effects of this crisis.

2. Materials and Methods

2.1 Study design and participants

A cross-sectional, web-based survey method was used for data collection in this study. Data was collected from the adult population (18 years and above) of different regions of Pakistan from January 5 to February 15, 2022. A Google form was prepared and sent through different online mediums including email, WhatsApp, and Facebook groups to the contact list of the authors. Then, these groups and contacts were further requested to share the form in order to guarantee a large-scale recruitment of participants. Thus, the snowball sampling technique was followed to get a quicker sample. The psychological impact of COVID-19 and lock down among adults was measured on

the Depression, Anxiety and Stress Scale - 21 Items (DASS-21)¹¹ along with the WHO-5 Well-being Index derived from the WHO-10¹².

An information sheet regarding the purpose of the study and a consent form were available in the first section of the questionnaire. Participants were free to withdraw from the study at any time without giving explanations and the questionnaire was filled anonymously to retain information confidentiality. No incentive was given for participation in the study. The system of Google Forms only provides responses for questionnaires with 100% completion rate so complete responses were downloaded as an Excel file. The present study followed the ethical code for web-based research^{13,14} and conforms to the principles embodied in the Declaration of Helsinki¹⁵.

2.2 Survey questionnaire

Information regarding the socio-demographic characteristics of the participants was collected including age, gender, city of residence, education level, employment status, marital status, and joint or nuclear family setting.

2.2.1 Life during lock down

This section focused on information regarding lockdown in the participant's area of living. It included questions like duration of lock down, how many times lockdown was implemented, activities during lock down, whether the participant lived alone, with friends or with family during lock down and whether they worked out or not.

2.2.2 Depression, Anxiety and Stress Scale - 21 Items (DASS-21)

The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress.

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. This 21-item scale is easy to apply in both clinical and non-clinical settings and is used to measure the negative emotions of individuals in the past two weeks. Participants were asked to respond on how closely the item applied to them in the past week. The scale uses the Likert four-level scoring system, with 0 to 3 points where 0 representing does not apply to me at all and 3 representing applies to me very much. Higher scores point towards higher levels of stress, anxiety and depression.

2.2.3 WHO-5 Well-being Index

The World Health Organization- Five Well-Being Index (WHO-5) is a short self-reported measure of current mental wellbeing of a person. The index uses the Likert six-level scoring system, with 0 to 5 points where 0 stands for "at no time" and 5 stands for "all of the time". The score ranges from 0-25 with 0 representing the worst imaginable well-being and 25 representing the best imaginable well-being.

2.2.4 Covid-19 information and trust in government

The last section covered some basic questions to gather knowledge of the participants regarding covid-19 and their satisfaction with the measures taken by the government to fight the disease like has the government fought well with covid-19, are you satisfied with the measures taken to combat the virus and in government policies. A 5 point scale from 1-5 was used with 1 representing completely disagree and 5 representing completely agree.

2.3 Statistical analysis

Descriptive statistics were used for the sociodemographic characteristics and results were reported as numbers and percentages for categorical variables and means and standard deviations for continuous variables where the total sample (n = 493) was used as the base. The psychological status of individuals after lock downs of the COVID 19 pandemic was measured using scores on the WHO-5 well being index and the three subscales of the DASS-21; results presented in means and standard deviation. A Univariate analysis was used to determine the associations between individual variables and scores on each of the four scales (WHO-5 well being index, DASS-stress, DASS-anxiety, and DASS-depression). A p-value of 0.05 and 95% confidence Interval were considered significant.

3. Results

3.1 Demographic characteristics

A total of 493 complete questionnaires were filled and submitted. The socio-demographic characteristics of the study population are presented in (Table 1). There was a male dominance in the study population with 58.6% males filling the survey. The majority of surveyed individuals were aged 25-34 years (40.9%), were single (70.7%), 66.1% had a university level education, were students (47.6%), were working or studying from home (52.6%), 87.2% living with their families during and after lockdown and were residing in the Punjab province (94.1%). The average household size was 6.26 (SD = 3.01), average number of times lockdown was implemented to be 2.92 (SD = 1.1) and average lockdown duration being 10.9 days (SD = 4.48).

Table 1: Socio-demographic characteristics of study population.

Variables	n (%)
Gender	
Females	204 (41.3)
Males	289 (58.6)
Age (years)	
18	110 (22.3)
18-24	143 (29)
25-34	202 (40.9)
35-44	28 (5.6)
45-54	5 (1)
55+	5 (1)
Marital status	
Single	349 (70.7)
In a relationship	25 (5)
Married	117 (23.7)
Divorced	1 (0.2)
Widowed	1 (0.2)
Education level	
Primary	14 (2.8)
Secondary	16 (3.2)
College	133 (26.9)
University	326 (66.1)

No education	4 (0.8)
Employment status	
Essential worker	65 (13.1)

Health worker	140 (28.3)
Non-essential	9 (1.8)
Non-Essential worker (with work at home)	13 (2.6)
Non-essential worker (with no work from home)	5 (1)
Student	235 (47.6)
Unemployed	12 (2.4)
Housewife	14 (2.8)
Residence	
Rural	88 (17.8)
Urban	405 (82.1)
Province	
Gilgit	2 (0.4)
Sindh	8 (1.6)
Punjab	464 (94.1)
KPK	6 (1.2)
Kashmir	2 (0.4)
ICT	11 (2.2)
Living	
With family	430 (87.2)
Alone	45 (9.1)
With friends	(3.6)

3.2 Mental health burden of COVID-19 after lockdowns

The overall mean score of anxiety was 5.87, depression was 7.17, and stress was 8.69. There were 27 (5.47%) participants who suffered from moderate to severe depression, 27 (5.47%) participants who suffered from moderate to extremely severe anxiety, and 25 (5%) participants who reported mild stress levels (Table 2).

Table 2: Frequency of stress, anxiety and depression in participants.

DASS - 21	Stress n (%)	Anxiety n (%)	Depression n (%)
Normal	469 (95.1)	444 (90)	438 (88.8)
Mild	24 (4.9)	22 (4.5)	29 (5.8)
Moderate	0	18 (3.6)	16 (3.2)
Severe	0	9 (1.8)	6 (1.2)
Extremely severe	0	0	5 (1)

(Table 3) shows the WHO-5 well being index scores of the study participants. A well being score of below 13 was considered poor, between 13 and 20 was considered average well being while a score of 21 and above shows good well being. Upon investigation, it was found that 29.4% of the participants were not satisfied with their quality of life and suffering from poor well being.

Table 3: Well-being status of participants.

Well being index	n (%)
Poor	145 (29.4)
Average	245 (49.6)
Good	(19.8)

3.3 Socio-demographic characteristics and influence on mental health after lockdowns

The female gender was associated with higher scores in well being index (p-value: 0.03), stress (p-value: 0.02) and anxiety (p-value: 0.03) sub-scales of the DASS-21 scale (Table 4). With respect to age, those between 18 and 24 years are more susceptible to adverse mental health outcomes (DASS-anxiety =0.01, DASS-Depression <0.001, well being =0.04). Participants with only a primary or secondary level education were more likely to have higher scores on all three subscales of the DASS as well as poor score in the well being index (DASS-stress <0.001, DASS-anxiety =0.002, DASS-Depression <0.001, well being =0.02). Employment status did not have significant affect on DASS and well being index. Being a student was significantly associated with higher scores across all three subscales of the DASS but did not have significant affect on the individual well being (DASS-stress =0.03, DASS-anxiety =0.001, DASS-Depression =0.09, well being =0.26). Poor health status was also associated with increased scores on stress and anxiety subscales of DASS (DASS-stress <0.001, DASS-anxiety=0.03) along with lower well being score (p-value =0.01). No work out during or after lockdown increased the scores on stress and depression sub scales of DASS followed by a decreased well being index. Similarly, participants living alone were more likely to have higher scores across all DASS subscales (DASS-stress <0.001, DASS-anxiety <0.001, DASS-Depression <0.001) and poor quality of life (p-value =0.01).

Table 4: Socio-demographic characteristics and influence on mental health and well-being.

Variable	D A S S - stress (p-value)	D A S S - anxiety (p-value)	D A S S - depression (p-value)	Well-being index (p-value)
Gender				
Females	0.02	0.03	0.31	0.03
Males	Reference			
Age (years)				
18	0.03	0.03	0.99	0.68
18-24	0.15	0.008	<0.001	0.38
25-34	0.08	0.01	<0.001	0.04
35-44	0.73	0.99	0.993	0.88
45-54	0.85	0.99	0.997	0.99
55+	Reference			
Marital status				
Single	0.82	0.93	0.99	0.97
In a relationship	0.94	0.994	0.98	0.98
Married	0.05	0.08	<0.001	0.02
Divorced	0.06	0.993	1.0	0.99
Widowed	Reference			
Education level				
Primary	<0.001	0.08	<0.001	0.01
Secondary	<0.001	0.002	<0.001	0.02
College	0.71	0.79	1.0	0.03
No education	0.05	0.000	1.0	0.96
University	Reference			
Employment status				
Essential worker	0.08	1.0	0.3	0.88
Health worker	0.08	1.0	0.98	0.72

Non-essential	0.17	0.99	0.94	0.59
Non-Essential worker (with work athome)	0.2	0.993	0.95	0.34
Non-essential worker (with no work from home)	0.99	0.994	0.99	0.22
Student	0.03	<0.001	0.09	0.26
Housewife	0.47	0.99	0.94	0.05
Unemployed	Reference			
Residence				
Rural	0.18	0.42	0.00	0.21
Urban	Reference			
Living				
With family	0.001	<0.001	1.0	0.3
Alone	<0.001	<0.001	<0.001	0.01
With friends	Reference			
Work out during lockdown				
No	0.02	0.47	<0.001	0.002
Sometimes	0.59	0.17	0.74	0.44
Yes	Reference			
Work out after lockdown				
No	0.06	0.39	<0.001	0.007
Sometimes	1.0	0.32	0.99	0.9
Yes	Reference			
Working themselves/ family member in medical field				
No	0.132	0.03	0.51	0.41
Going out				
No	0.106	0.38	0.07	0.2
Sometimes	0.56	<0.001	0.76	0.4
Yes	Reference			
Health status				
Poor	<0.001	0.03	0.99	0.01
Average	0.005	0.59	0.97	0.003
Good	Reference			

Factors which were found to be significant in the development of stress, anxiety and depression along with the well being index were further evaluated to get a quantitative estimate of the relation between these factors and they affect the mental health. Being a female increased the odds of stress by 2.6. Age between 25-34 years was associated with 6 and 2.9 times more odds of suffering from anxiety and depression respectively. Similarly, poor health status and no work out was also associated with 2.6 and 5.5 times more odds of anxiety, 5.4 and 1.3 times increased odds of stress respectively. Being a student increased the odds of anxiety by 3.3.

Apart from this, 73% of the participants felt informed about Covid-19 and its treatment. 74.4% of the participants thought that the government took proper measures to fight Covid-19 and felt satisfied with its policies.

4. Discussion

The main aims of this study were to explore post lock down and Covid-19 affects in Pakistan. Our study is the first to find out the after effects of Covid-19 and its long term impact on mental health using DASS-21 scale and WHO well being index. Our results suggest that among respondents 4.9% have mild stress, 9.9 % have mild to severe anxiety and 11.2% have mild to severe depression. These results show a lower rate compared

to other studie^{1,16}. largely because other studies were conducted during the pandemic when stress level was high and our study was conducted after lock downs when life was somewhat back to normal. So a difference in timing of the study could attribute to this difference in results.

Table 5: Association of DASS and well being index with significant factors.

Variables	DASS-stress (Exp-B)	DASS-anxiety (Exp-B)	DASS-depression (Exp-B)	Well-being index (Exp-B)
Gender				
Female	2.64	0.18	1.2	0.64
Education level				
Primary	2.6	0.13	1	3.1
Secondary	4.3	0.06	1	2.2
Marital status				
Married	0.6	0.9	1.7	0.98
Student	0.15	3.3	1.1	1.3
Age				
18	0.05	2	1.2	0.68
18-24	0.17	6	2.9	0.38
25-34	0.12	1.4	1.9	0.99
Health status				
Poor	5.4	2.6	1.1	0.13
Average	1.7	1.8	0.9	0.42
No workout during lockdown	5.5	0.9	1.6	0.43
No workout after lockdown	1.0	0.98	1.3	0.48

Respondents in our study were usually single with a percentage of 70.7% and 28.7% were either married or in a relationship, among these participants only married ones have a statistically significant value of 0.05 against DASS-stress and <0.001 against DASS-depression. These results are consistent with another study conducted in Spain that showed higher depression in married people¹⁷. Additionally, we found that females and students showed higher scores across all DASS subscales, which is consistent with previous studies conducted in China and Saudi Arabia^{18,1}.

Among the respondents, the majority was single but those who lived alone had a strong impact on their mental health as assessed by DASS-21 score compared to the ones living with friends or family. Being alone is one of the risk factors for bad mental health so it will be valuable to disseminate among the public to keep in touch with their loved ones to realize the value of connecting with the families in the time of need while maintaining the SOPs of social distancing and personal hygiene¹⁹. The ones affected or suspected to have Covid-19 should be isolated physically, but keeping contact with them in other ways would be sufficient to have a good impact on their psychological well being.

Studies show that physical exercise has positive effects on the overall mental health of individuals²⁰. Our study also assessed the effect of workout on psychological health and well being of individuals. Results showed that participants who did not work out after the lockdown have greater probability to be depressed as compared to the ones who did physical exercise during and after Covid lock downs which is consistent with a

Chinese study conducted in 2021²¹.

This predicts that people who are eager to maintain their health status are much better able to cope with stress, anxiety and less likely to be depressed as compared to other respondents.

Our study has certain limitations. Firstly, the survey was circulated widely in all possible social media platforms; however the response rate was low compared to the wide participation expected. Secondly, more than half of the participants were graduates, suggesting that the survey did not have the desired snowballing effect, as expected. Additionally, the survey was available to those with a smartphone device and hence the study participants may not fully represent people from different areas of the country. However, it was the best possible method to reach maximum people in order to gain insight regarding the psychological impact.

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None received

7. Conflicts of Interest

None declared

8. References

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