



# Prevalence of Anxiety, Depression and Self-Care Behaviour during the Covid-19 Pandemic in the General Population

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## ABSTRACT

**Introduction:** SARS-CoV-2 has affected not only physical health but also devastated mental wellbeing. The government of India ordered a nationwide lockdown limiting movement of the entire 1.3 billion populations. The impact of the pandemic on depression, anxiety and self-care behaviour among the general population was investigated.

**Methods:** An online cross-sectional survey was carried out with an anonymous questionnaire using validated instruments. Multivariable linear regression analysis was carried out to find the role of each variable in determining the relevant scores.

**Result:** The mean age of the 1052 participants was 30.52 (SD ± 13.42) years. The mean score of depression and anxiety was 5.96 and 5.27 respectively. Moderate to severe depression was noted among 18.68% and moderate to severe anxiety was noted among 16.1% of the respondents. Gender was a significant predictor of all three (depression, anxiety, and coping) scores, while the civil status predicted both depression and anxiety scores and age predicted only the depression score.

**Conclusion:** A considerable proportion of the surveyed population in our setting has manifested symptoms of anxiety and depression. Gender, civil status and age predicted various scores.

**Keywords:** Mental health, Coping, Psychological problems, Generalized Anxiety Disorder-7, Patient Health Questionnaire 9

## INTRODUCTION

An acute respiratory disease, caused by a novel strain of Corona virus, SARS-CoV-2 was first reported from China in December 2019.<sup>1</sup> On 30th January 2020 the first case of Covid-19 was detected in India.<sup>2</sup> Soon, the World Health Organization declared a global pandemic in March 2020<sup>3</sup>. Given the magnitude of the pandemic, most countries implemented lockdown as a control strategy. A nationwide lockdown in four phases (25 March – 31 May 2020) was regimented by the Government of India<sup>2</sup>. This has af-

ected all sections of society irrespective of their age, gender, economic status and profession affecting both physical and mental health due to unpredictability, uncertainty, unemployment, social seclusion, and restricted access to essential services.<sup>4-11</sup> Varied intensities of distress have been reported among people who suffered from COVID-19 infection and those under quarantine.<sup>12</sup> This pandemic has also jeopardized the academic world by putting the career of students at stake and pushing their future and expectations into darkness. The children and students were forced to stay confined in their homes as

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a result of which they were under serious mental pressure.<sup>6,8</sup> There was an increasing trend of stress, anxiety, depression among the frontline warriors as they were unable to meet their families with the fear of spreading the deadly virus to them.<sup>5</sup> Verma et al have reported stress and anxiety including depression among the general population in India with their associated socio-demographic correlates.<sup>13</sup>

Since, identification of individuals with psychological distress in the early stages makes intervention strategies more effective<sup>14</sup>, we investigated the influence of the Covid-19 pandemic on the psychological health (depression and anxiety) and self-care behaviour among the general population.

## METHODS

Through an online survey using snowball sampling, data were collected from 12<sup>th</sup> to 25<sup>th</sup> September 2020 using a Google form, which was circulated through social platforms among the general population. Those who agreed to participate were included, while participants with a known history of psychiatric illnesses were excluded from the study. The anonymous questionnaire contained 4 sections: demographic data, "PHQ9 (Patient Health Questionnaire) questionnaire", "GAD7 (Generalized Anxiety Disorder) questionnaire" and a section that dealt with the questions related to self-care behaviour and coping strategies.

Demographic data included age in completed years, gender, marital status, occupation (front line workers, employee/ self-employed, unemployed/ retired, homemaker, students), history of chronic illness, history of any psychiatric illness and Covid Status.

PHQ9 developed by K. Kroenke et al.<sup>15</sup> is a validated questionnaire having 9 criteria, based on the diagnosis of depressive disorders under DSM-IV with the dual purpose of establishing the severity and the diagnosis of depressive symptoms. Each of the 9 criteria was provided with 4 choices. Each choice was assigned with a particular score (0 for not at all, 1 for some days, 2 for more than half the days and 3 for nearly every day) and the total score of all the 9-questions ranged from 0-27 to determine the severity of depression, classified as no (0 to 4), mild (5 to 9), moderate (10 to 14), moderately severe (15 to 19) and severe depression (20 to 27).

GAD-7, a validated scale developed by Spitzer et al<sup>16</sup> to assess anxiety symptoms. There were 7 questions with each having 4 choices (0 for not at all, 1 for some days, 2 for more than half the days and 3 for nearly every day) and the total score of all the 7-questions ranged from 0-21 to determine the severity of anxiety, classified as no (0 to 4), mild (5 to 9), moderate (10 to 14) and severe anxiety (15 to 21).

Self-care behaviour was assessed by VAS (Visual Analogue Scale), where 0 referred to "I don't follow the recommendation", while 10 referred to "I

strongly follow the recommendation all the time". To assess the coping strategies of the participants, 7 questions were asked with each response having 4 options (nearly every day, more than half of the days, some days and not at all)<sup>7</sup>.

Data analysis: The data were analysed using SPSS v20. Mean and the standard deviation of mean was used to describe continuous variables, while percentages were used to express categorical variables. The normality of variables was checked by the Kolmogorov-Smirnov goodness of fit test. The Chi-square test was used to find the association between the categorical variables. Spearman's rho correlation was used to test the association between continuous variables. Stepwise multivariable linear regression analysis determined the contribution of each significant variable to the relevant scores. Statistical significance was set at a p-value of less than 0.5.

## RESULTS

The total number of respondents was 1052 and 40 (3.8%) responses were excluded from the analysis due to self-reported psychiatric illness. The mean age was 30.52 (SD ± 13.42) years with the lowest and the highest age being 13 and 85 years respectively. Females constituted 50.49% (n = 511) of the respondents. Most of the respondents were single (64.42%), most of the respondents were students (51.38%) and 74.90% were not tested for Covid at the time of the survey. No chronic disease was reported by 85.57% of the respondents.

The mean depression score was 5.96 and the mean anxiety score was 5.27. Moderate to severe depression was noted among 18.68% (n = 189) and moderate to severe anxiety was noted among 16.1% (n = 163) of the respondents. Univariate analysis revealed that male respondents, married individuals, employed persons and homemakers had a significantly lower level of anxiety or depression (p<0.0001). Age was negatively correlated with depression (r = -0.336) and anxiety (r = -0.264) score (p<0.0001). Having any chronic illness or Covid status was not associated with depression or anxiety (Table 1 & 2).

Self-care behaviour practices revealed that adherence to the recommendations was good with 67.2% of the respondents avoided attending social gatherings, 78.4% of the respondents washed or disinfected hands frequently, 64.7% of the respondents maintained a social distance of at least 6 ft away from other people and 72.3% preferred to stay at home.

A review of the coping strategies (Table 3) revealed that about 84% of the respondents were either not worried at all or worried on a few days about getting sick of Covid 19. Only about 14% of the respondents were continually analysing and interpreting bodily sensations as symptoms of the disease.

**Table 1: Association of socio demographic variables with symptoms of depression (n = 1012)**

Variable	Depression_PHQ9					Total	P Value
	None	Mild	Moderate	Moderately Severe	Severe		
<b>Gender</b>							
Male	270 (53.9)	154 (30.7)	51 (10.2)	21 (4.2)	5(1.0)	501	<0.0001
Female	196 (38.4)	203 (39.7)	75 (14.7)	24 (4.7)	13 (2.5)	511	
<b>Civil status</b>							
Single	229 (35.1)	257 (39.4)	107 (16.4)	43 (6.6)	16 (2.5)	652	<0.0001
Married	234 (66.5)	96 (27.3)	18 (5.1)	2 (0.6)	2 (0.6)	352	
Widow/Separated/divorced	3 (37.5)	4 (50.0)	1 (12.5)	0 (0.0)	0 (0.0)	8	
<b>Occupation</b>							
Frontline worker	29 (46.0)	28 (44.4)	4 (6.3)	1 (1.6)	1 (1.6)	63	<0.0001
Employee/Self-employed	218 (64.7)	84 (24.9)	28 (8.3)	6 (1.8)	1 (0.3)	337	
Unemployed/Retired	18 (50.0)	12 (33.3)	3 (8.3)	2 (5.6)	1 (2.8)	36	
Homemaker	31 (55.4)	19 (33.9)	4 (7.1)	0 (0.0)	2 (3.6)	56	
Student	170 (32.7)	214 (41.2)	87 (16.7)	36 (6.9)	13 (2.5)	520	
<b>Chronic illness</b>							
No	402 (46.4)	303 (35.0)	103 (11.9)	41 (4.7)	17 (2.0)	866	<0.395
Any Chronic illness	64 (43.8)	54 (37.0)	23 (15.8)	4 (2.7)	1 (0.7)	146	
<b>Covid status</b>							
Not tested	331 (43.7)	282 (37.2)	97 (12.8)	37 (4.9)	11 (1.5)	758	<0.165
Negative	125 (53.4)	70 (29.9)	24 (10.3)	8 (3.4)	7 (3.0)	234	
Positive in the past	9 (50.0)	5 (27.8)	4 (22.2)	0 (0.0)	0 (0.0)	18	
Currently positive	1 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	2	
<b>Total</b>	466 (46.0)	357 (35.3)	126 (12.5)	45 (4.4)	18 (1.8)	1012	

**Table 2: Association of socio demographic variables with symptoms of anxiety (n = 1012)**

Variable	Anxiety_GAD7				Total	P Value
	No or Minimal	Mild	Moderate	Severe		
<b>Gender</b>						
Male	310 (61.9)	130 (25.9)	40 (8.0)	21 (4.2)	501	<0.0001
Female	211 (41.3)	198 (38.7)	69 (13.5)	33 (6.5)	511	
<b>Civil status</b>						
Single	281 (43.1)	231 (35.4)	92 (14.1)	48 (7.4)	652	<0.0001
Married	238 (67.6)	92 (26.1)	16 (4.5)	6 (1.7)	352	
Widow/Separated/divorced	2 (25.0)	5 (62.5)	1 (12.5)	0 (0.0)	8	
<b>Occupation</b>						
Frontline worker	33 (52.4)	24 (38.1)	4 (6.3)	2 (3.2)	63	<0.0001
Employee / Self-employed	220 (65.3)	96 (28.5)	12 (3.6)	9 (2.7)	337	
Unemployed / Retired	21 (58.3)	7 (19.4)	7 (19.4)	1 (2.8)	36	
Homemaker	31 (55.4)	14 (25.0)	9 (16.1)	2 (3.6)	56	
Student	216 (41.5)	187 (36.0)	77 (14.8)	40 (7.7)	520	
<b>Chronic illness</b>						
No	442 (51.0)	286 (33.0)	91 (10.5)	47 (5.4)	866	<0.704
Any Chronic illness	79 (54.1)	42 (28.8)	18 (12.3)	7 (4.8)	146	
<b>Covid status</b>						
Not tested	378 (49.9)	256 (33.8)	88 (11.6)	36 (4.7)	758	<0.418
Negative	134 (57.3)	65 (27.8)	19 (8.1)	16 (6.8)	234	
Positive in the past	8 (44.4)	6 (33.3)	2 (11.1)	2 (11.1)	18	
Currently positive	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	2	
<b>Total</b>	521 (51.5)	328 (32.4)	109 (10.8)	54 (5.3)	1012	

**Table 3: Coping and self-care behaviour among the respondents about the symptoms of depression and anxiety (n = 1012)**

	Not at all	Some days	More than half of days	Nearly every day
How often do you worry about getting COVID-19?	370 (36.6)	482 (47.6)	66 (6.5)	94 (9.3)
Are you continually analysing and interpreting your bodily sensations as symptoms of illness?	493 (48.7)	379 (37.5)	63 (6.2)	77 (7.6)
Are you frustrated by the effects COVID-19 has had on your life?	330 (32.6)	399 (39.4)	115 (11.4)	168 (16.6)
When you are afraid, do you rely on the experiences you have had in similar situations to reduce fear?	408 (40.3)	455 (45.0)	81 (8.0)	68 (6.7)
Make a list of daily activities and try to keep yourself busy?	317 (31.3)	271 (26.8)	141 (13.9)	283 (28.0)
Maintain an optimistic and objective attitude towards the situation?	157 (15.5)	293 (29.0)	182 (18.0)	380 (37.5)
Have someone you can lean on or can talk about your problems with?	232 (22.9)	326 (32.2)	124 (12.3)	330 (32.6)

**Table 4: Multivariable linear regression analysis of the association of depression (PHQ-9), Anxiety (GAD-7) and Coping scores with socio-demographic among respondents.**

	B	Standardized Beta	p-value	95.0% CI of B		R <sup>2</sup>
<b>Depression (PHQ9) score</b>						
(Constant)	6.852		.000	5.047	8.656	.128
Gender	1.158	.123	.000	.599	1.717	
Age	-.048	-.137	.012	-.085	-.010	
Civil status	-1.422	-.151	.007	-2.457	-.388	
Occupation	.211	.068	.089	-.032	.454	
<b>Anxiety (GAD7) score</b>						
(Constant)	4.693		.000	2.941	6.445	.103
Gender	1.580	.176	.000	1.037	2.123	
Age	-.023	-.067	.223	-.059	.014	
Civil status	-1.322	-.146	.010	-2.326	-.318	
Occupation	.192	.065	.111	-.044	.428	
<b>Coping score</b>						
(Constant)	5.909		.000	4.339	7.480	.023
Gender	.993	.129	.000	.506	1.480	
Age	.008	.028	.625	-.024	.041	
Civil status	-.045	-.006	.922	-.945	.855	
Occupation	.182	.072	.091	-.029	.393	

Just about less than a third (28%) of the respondents expressed frustration by the effects of COVID-19, while 68% of the respondents made a list of daily activities and tried to keep themselves busy. Less than 15% of the respondents used past stress experience strategies to reduce fear. Close to 85% of the respondents maintained an optimistic and objective attitude towards the situation. More than two-thirds (77%) of the respondents expressed that they had support networks to talk about the problems.

Table 4 describes the findings of regression, which indicates all the three (depression, anxiety and coping) scores were associated with gender at a significant level, while the civil status predicted both depression and anxiety scores and age predicted only the depression score. The regression model explained only 12.8% of depression, 10.3% of anxiety and 2.3% of stress.

## DISCUSSION

In the past, psychological health has been affected by several outbreaks resulting in substantial psychiatric illnesses, adverse emotions, poor coping responses and constant fear of catching the disease.<sup>10</sup> Covid-19 pandemic has once again reiterated the despair in an unprecedented manner. Apart from the high mortality, populations across the world have also been distressed from agonizing psychological outcomes.<sup>6</sup> The only method to contain the spread of COVID-19 is through adequate self-care behaviour and adhering to the lockdown guidelines imposed by the Government. We estimated the prevalence of depression, anxiety and self-care behaviour among the Indian population, at a time when the country saw its highest peak of cases, adding 41% of cases and 34% of deaths as reported by the Times of India.<sup>17</sup>

We observed that a considerable proportion of the surveyed population in our study have manifested

depressive and anxiety symptoms. However, a systematic review has shown a much higher proportion of depression (32.9%) and anxiety (35.3%) in the Asian subcontinent<sup>14</sup> and China (Depression, 34.7%; Anxiety, 19.6%)<sup>12</sup>. Similarly, a study in the Spanish population has reported higher depression (27.5%) and anxiety (20.8%). Verma et al have also reported a higher prevalence of depression (25%) and anxiety (28%) in the general population, though using a different study instrument.<sup>13</sup> Compared to the findings of the other studies in India<sup>18</sup>, the lower prevalence of depression and anxiety could also be attributed to the timeline of the data collection towards the latter part of the pandemic.

In our study, females were having a higher level of depression, anxiety with lesser coping skills at a significant level, which is consistent with the results of the National mental health survey of India 2015-16 and a systematic review.<sup>14,19</sup> This may be because they are generally more sensitive and tend to ruminate about life stressors, which may increase depression and anxiety.<sup>18</sup> Though advanced age is associated with higher Covid-19 mortality, our study showed reduced levels of depression and anxiety scores as the age advanced. A statistically significant association between age and depression scores was especially observed in the regression analysis. The younger age with higher depression scores could be attributed to the uncertainty of the future and the economic challenges combined with infodemic due to overwhelming news headlines through social media.<sup>7,11,14</sup> The respondents, who were unmarried or single due to being widowed /separated/divorced had relatively higher scores of depression and anxiety. This finding is in sync with what has been noted by other researchers, though being married per se may not always be protective, rather the quality of the relationship and mutual support is more important.<sup>18,20</sup>

Self-care and coping strategies by the surveyed population was most encouraging as compared to other studies.<sup>7</sup> Literature suggests coping is a learned pattern of behaviour that develops over a while<sup>10</sup> and when the threat perception is higher, the public engages with a greater coping behaviour.<sup>21</sup>

In conclusion, a psychological problem during pandemics like Covid-19 is common. The need to understand the same and institute appropriate measures is a challenge to the public health system.

## CONCLUSION

A considerable proportion of the surveyed population in our setting have manifested symptoms of anxiety and depression. Moderate to severe depression was noted among 18.68% and moderate to severe anxiety was noted among 16.1% of the respondents. Gender was a significant predictor of all the three (depression, anxiety and coping) scores, while the civil status predicted both depression and anxiety scores and age predicted only the depression score.

## LIMITATIONS

The causality is difficult to establish due to the inherent study design (cross-sectional). The data was collected through electronic mode by convenience sampling which has limited generalisability. Reporting bias cannot be ruled out because of the self-administered nature of the questionnaire; however anonymous data collection method might have reduced the reporting bias.

Disorder, VAS: Visual Analogue Scale, SPSS: Statistical Package for social sciences, SD: Standard deviation.

**Data availability statement:** Data will be made available on request.

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