

Effect of COVID-19 Pandemic on the Mental Health of the General Population: Role of Gender

Shravani Javadekar¹, Archana Javadekar², Aakanksha Arya³,
Suprakash Chaudhury⁴, Daniel Saldanha⁵

ABSTRACT

Background: There has been an unprecedented effect of COVID-19 pandemic on the lives of the common people all over the world. Following the sudden lockdown, there has been a sea change in the lives of the general population. The populace faced tremendous hardship in managing their work, home and children's education. It is no surprise, therefore, that the people may suffer from psychological states including anxiety, depression, and disturbances in sleep after contending with this colossal change. With this in mind, a study was planned to assess its impact in causing depression, anxiety, stress, and sleep disturbances between males and females. Aim of the study was to evaluate stress, anxiety, depression, and sleep disturbances during COVID-19 pandemic in male and female subjects. **Methods:** This study was undertaken in the month of September 2020. Institutional ethical committee permission was obtained. All participants gave informed consent. The participants completed basic sociodemographic questionnaire, and two standardized questionnaires: Depression Anxiety Stress Scale 21 (DASS21) and Athens insomnia scale on google forms. **Results:** A total of 143 subjects from the general population were included in the study comprising of 86 (60.14%) females, and 57 (39.86%) males. On DASS-21, anxiety and stress was significantly higher in female than male general population. On the Athens Insomnia Scale, 37.06% reported insomnia. Sleep disturbances were more common in females than males, but the difference was not statistically significant. Anxiety, stress and sleep were significant predictors of depression. **Conclusion:** Females in general population have significantly more anxious and stressed than their male counterparts.

Keywords: COVID 19; Pandemic; Anxiety, Depression, Sleep

¹Medical Student, B. J. Govt. Medical College and Sassoon General Hospital, Pune, Maharashtra, India, ²Professor, ³Junior Resident, ⁴Professor & HOD, ⁵Professor Emeritus, Department of Psychiatry, Dr. D. Y. Patil Medical College, Hospital & Research Centre, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India

Corresponding Author: Dr. Archana Javadekar, Department of Psychiatry, Dr. D. Y. Patil Medical College, Hospital & Research Centre, Dr. D. Y. Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India

e-mail: suprakashch@gmail.com

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Introduction

The COVID 19 pandemic and the subsequent national lockdown created havoc which was unprecedented to date [1-4]. The brunt of these adverse changes on their daily lives was faced by ordinary people, especially women. Even carrying out basic activities of daily living became a challenge. This sudden change in the lives of ordinary people who were literally prisoners in their own house was very stressful. While many faced financial hardships, many women who supplemented their family income by working at houses suddenly became jobless. It was particularly problematic for children who were neither able to attend schools nor go out to play. Understandably these events cumulatively led to

increased psychological stress along with anxiety and depression [5-7]. Some studies related to psychological impact of the pandemic reported higher stress, anxiety and depression in females compared to males [7,8]. This was probably caused by the fact that the pandemic had a greater effect on the lives of women. It probably did not reflect any major differences between the sexes [9]. Studies in Spain, Peru, yielded similar results wherein it showed that women had more symptoms of anxiety or depression [10-13]. The present study was undertaken in this context to evaluate the effect of gender differences on the psychological health of the general population.

Materials and Methods

This cross sectional, analytical study was undertaken in the early phase COVID-19 pandemic using Google form. Subjects were residents of the urban and suburban areas of Pune. The project was submitted to the Institutional Ethics committee and permission obtained before beginning the study. Link to the Google form was forwarded to the general population via social media during September 2020. Informed consent from the subjects was obtained via google form. Participation in the study was anonymous and voluntary.

Study Sample

Subjects from the general population fulfilling the inclusion and exclusion criteria were included

Inclusion Criteria

- 1) Age of 18 years or more
- 2) Consenting to take part in the study

Exclusion Criteria

- 1) Subjects with chronic medical or psychiatric disorders.

Measures

The survey questionnaire could be filled up in 10-12 minutes. The participants completed basic sociodemographic questionnaire, and two validated scales as described below.

Basic sociodemographic data along with informed consent.

Depression, Anxiety, Stress Scale- 21 (DASS-21)

This scale comprises of 3 subscales. Each of the three DASS-21 subscales contains 7 items which assess anxiety, depression and stress respectively [14].

Athens Insomnia Scale

This eight-item questionnaire evaluates sleep quality [15].

Statistical Analysis

The data was statistically analysed using SPSS 20 (IBM, USA). Appropriate parametric and nonparametric tests were applied.

Results

Participants' Characteristics

Of the 143 general population participants, 86 were females (60.14%) and 57 were males (39.86%). Most of the participants (99%) were from urban setups in both the groups, and all were graduates. Demographic characteristics of subjects included in the study is shown in Table 1.

Depression Anxiety Stress Scale

In comparison to males the females had significantly greater

anxiety and stress. However, on depression there was no significant difference between the sexes (Table 2).

Athens Insomnia Scale

In the general population 37.06% participants suffered from insomnia. But there was no significant difference in insomnia scores of males and females (Table 2).

Multiple Regression Analysis for Predictors of Depression

A multiple regression analysis was carried out to determine the forecasters of depression. Adjusted R^2 of our model is 0.644 with the $R^2 = 0.654$. The Durbin-Watson $d = 1.552$. The F-test is highly significant (Table 3). Anxiety, stress and sleep were significant predictors of depression. It is also seen that Stress has a higher impact than sleep by comparing the standardized coefficients ($b = 0.856$ versus $b = 0.169$) (Table 4).

Discussion

The COVID-19 Pandemic has greatly affected the lives of the rich and poor all over the globe. The present study was aimed to evaluate the gender differences in stress, anxiety, depression and sleep. The project was undertaken in the initial phase of the pandemic, when there was widespread fear and panic not only as a result of the actual events but the sensational reporting on the electronic media which was the sole source of information in the absence of the print media. This was worsened by exaggerated reports on the social media. In addition, there was a dearth of Indian studies which had evaluated the psychological effect of the pandemic on the ordinary citizens of the country. Pandemics in the past have also affected the mental health of the population. Evaluation of disaster survivors have reported that 75% of those having PTSD immediately after a disaster continue to be symptomatic one year later [16]. Early identification of individuals with a psychiatric disorder makes the intervention more effective.

Our results showed significantly higher anxiety and stress in females than their male counterparts. Similarly, a study in China with 3063 participants observed that depression and anxiety was present in 14.14% and 13.25% of the subjects, respectively. A major finding of our study was that men appeared more resilient to stress while females had higher levels of stress and anxiety. They also deciphered that the severity of depression would reduce with increasing age. Higher levels of depression would be found in individuals who are unemployed, more stressed and are less adapted [17]. In an online study conducted by Hodes et.al., total of 3088 subjects from 32 provinces in China were evaluated. They observed that as compared to men, women had greater frequency and severity of depression, anxiety and

Table 1: Characteristics of male and female participants in the study

		Male (N=57)	Female (N=86)	p
Age	Mean(\pm SD)	40.37	38.94	0.516
	Range	22-65	20-64	
Age distribution	21-30	20	32	0.815
	31-40	7	12	
	41-50	14	24	
	51-60	14	14	
	61-70	2	4	
Monthly income	<60000	16	47	0.000
	60000-<90000	5	17	
	90000- <1,20,000	9	11	
	120000& above	27	11	

*T test/chi square test

Table 2: Comparison of Depression, Anxiety, Stress and sleep scores of male and female general populations

		Male subjects (N=57)	Female subjects (N=86)	p value
Depression	Mean(\pm SD)	6.84	9.14	0.074
	Range	0-40	0-40	
Anxiety	Mean(\pm SD)	3.89	7.28	0.001
	Range	0-34	0-36	
Stress	Mean(\pm SD)	7.02	10.91	0.005
	Range	0-42	0-38	
Sleep	Mean(\pm SD)	5.12	5.19	0.903
	Range	0-20	0-16	

Table 3: Multiple regression analysis for predictors of depression: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	P value
Residual	5435.663	13	39.389		
Total	15712.839	14			
		2			

a. Dependent Variable: Depression

b. Predictors: (Constant), Sleep, Age, Anxiety, Stress

Table 4: Multiple regression analysis for predictors of depression: Coefficients^a

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	P value
1 (Constant)	1.284	2.043		0.531
Age	-0.050	0.043	-0.061	0.249
Anxiety	-0.292	0.119	-0.235	0.015
Stress	0.933	0.106	0.856	0.000
Sleep	0.372	0.158	0.169	0.020

a. Dependent Variable: Depression

posttraumatic symptoms [18]. In another study where anxiety, stress and depression were assessed among men and women. Males had significant lower anxiety and depression scores than females [19].

In the present study insomnia was reported by 37.06% of the

subjects on Athen's insomnia scale (AIS>6) which is in agreement with the 36.1% insomnia rate reported by an earlier study [20]. Similarly, insomnia prevalence was estimated in five studies and the pooled prevalence was 34.32% [21]. Sleep disturbances were more common in females than males,

the difference was not statistically significant [20,22]. Similar findings have been reported in many other investigations done in different nations. Due to the plethora of hormonal differences and societal expectations, it is established that women and men exhibit different reactions to crisis situations. It has been proposed that the gender differences in response to pandemic stress may be related to the dissimilar immune response in men and women, with a dissimilar pattern of the ACE 2 receptors which is the binding site of the coronavirus, and may also be due to effects of oestrogens [23]. Further work is required to confirm the findings from this study, which will help protect female from undesired impact of pandemic stress on their mental health and wellbeing.

Limitations

Due to the ongoing pandemic data was collected using Google forms and face to face interviews were not conducted. Data was collected from one city only which limits generalizability of the findings.

Conclusion

We can conclude that the COVID-19 pandemic produced significantly higher anxiety and stress among females in general population as compared to their male counterparts.

Conflict of Interest:	All authors declare no COI
Ethics:	There is no ethical violation as it is based on voluntary anonymous interviews
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