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The psychological impact of the COVID-19 pandemic and associated risk factors during the initial stage among the general population in India

Abstract

Background: In the absence of treatment and unclear prognosis, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) itself, and public health measures like lockdown enforced by the government to limit the spread of the virus poses a threat to the psychological health of the general population. **Aim:** To assess the psychological status of the Indian population during the initial phase of lockdown. **Method:** It was a cross-sectional online survey where the questionnaire was disbursed by snowballing. The link to the survey was shared in different social networking platforms between 6th and 22nd of April 2020. The questionnaire collected responses related to the sociodemographic variables, exposure history, precautionary measures used, and the Depression, Anxiety, and Stress Scale (DASS-21) score. **Results:** A total of 541 participants responded to the questionnaire. Only 422 respondents' responses from 23 states of India who completed the questionnaire were included for assessment. The mean age of the participants was 30.5 (SD=10.9) years. Female constituted 60.4% (n=255) of the respondents. The pre-existing medical illness that the respondents had were diabetes mellitus, four per cent (n=17), hypertension, five per cent (n=21), thyroid dysfunction, nine per cent (n=38), and mental illness, five per cent (n=21). The median (IQR) of the DASS-21 item scale was found to be 16 (4-32). The percentage of the respondents who reported stress was 35.5% (n=149), anxiety, 32% (n=135), and depression, 34.7% (n=146). Respondents with sociodemographic variables like being single, student status, competed education till graduation, homemakers, working in public sector, and history of mental illness were more likely to experience stress, anxiety, and depression. A majority of the respondents were practicing hand hygiene and social distancing. Respondents who were unaware of their exposure status were more likely to have depression. **Conclusion:** The Indian population is experiencing the psychological impact of the coronavirus disease 2019 (COVID-19), which may increase with the spread of the infection. India needs to gear up to face mental health consequences. People with a pre-existing physical and psychological illness needs extra care and precaution to prevent any relapse or development of complications.

Keywords: SARS-CoV-2. Depression. Anxiety. Mental Health. Public Health.

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INTRODUCTION

The World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) as pandemic on the 11th of March 2020.[1] Globally, as on the 4th of June 2020, there are 6,416,828 confirmed cases, including 382,867 deaths.[2] On the same day, India reported 106737 active cases and 6075 deaths.[3] During an infectious disease pandemic, when there is ambiguity regarding the treatment and uncertainty about the prognosis, people usually suffer anxiety. These uncertainties, along with the loss of personal freedom, financial loss, and loss of contact with social support because of lockdown, may result in despair.[4] The loneliness resulting from decreased or no contact with family members and friends, resulting from the enforcement of lockdown, may heighten the perception of stress, and worsen the anxiety and depression of many.[5] The Indian government, to control the spread, started its first phase of countrywide lockdown from the 25th of March 2020, and then phase-wise, it kept extending. Currently, at the time of writing this report, we are in the fifth phase, which applies to the containment zones but also includes other zones where restricted movement is allowed.[6] We wanted to evaluate the psychological effect of the COVID-19 among the Indian population who were contacted during the initial phase of lockdown. This research aimed to assess the anxiety, depression, and stress that the Indian population was experiencing during the initial period of lockdown, which is meant to control the spread of the infection.

MATERIAL AND METHOD

Study design and setting

It was a cross-sectional online survey which started on the 6th of April and continued till 22nd of April 2020. The survey was conducted using the snowball technique. The initial point of disbursement of the link to the survey was social network platforms like WhatsApp, Instagram, and Facebook. The participants responded from 23 out of 29 states and seven union territories of India.

Data collection

The online survey form had three sections. First was the informed consent part. The respondents could proceed further to the second part only after they click on the informed consent. The second part was related to the sociodemographic data, contact history, and precautionary measures used, and the third part was the Depression, Anxiety, and Stress Scale (DASS-21). DASS-21 is a validated tool to measure depression, anxiety, and stress/tension.[7]

Ethical consideration

Institutional Ethics Committee of Gauahati Medical College Hospital, Guwahati, Assam, India, approved the study. All the participants gave informed consent, which was obtained before they clicked on the main questionnaires for the survey.

Statistical analysis

Sociodemographic, contact history, and precautionary measure variables were calculated with descriptive statistics. Shapiro-Wilk test was used to check the normality of data. Continuous variables were presented as mean and standard deviation (SD) or median (interquartile ranges [IQR]) as were appropriate. Mann-Whitney test was used to find the difference in the subscale scores of DASS-21 items between the two genders. Kruskal-Wallis tested the difference in subscale scores across different categories of a variable. A post hoc analysis was done with Bonferroni correction to minimise type 1 error to find a significant difference across the different categories of a variable. A p-value of <0.05 was considered significant for all the tests. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) statistics 20 (IBM SPSS Statistics, New York, United States).

RESULTS

Participants' characteristics

A total of 541 respondents participated in the survey, out of which 119 did not complete the questionnaire. Finally, 422 respondents were included from 23 states of India. The mean age of the respondents was 30.5 years (SD=10.9). Females constituted 60.4% (n=255) of the respondents. Majority, 56.4% (n=238), of the participants were single, 72.5% (n=306) belonged to nuclear family, 83.2% (n=351) were from middle socioeconomic status, and 74.6% (n=315) of the respondents hailed from urban locality. The percentage of the participants who had completed graduations was 44.5% (n=188) and 41% (n=173) of the respondents were students. The pre-existing medical illness that the respondents had diabetes mellitus, four per cent (n=17), hypertension, five per cent (n=21), thyroid dysfunction, nine per cent (n=38), and five per cent (n=21) had a past history of mental illness. The treatment modality that the respondents were using during the lockdown is shown in Table 1.

DASS-21 items score among the respondents

The median (IQR) of the depression, anxiety, and stress subscales, in the DASS-21 item scale was found to be 16 (4-32). The median (IQR) for males was 12 (4-28) and for females it was 20 (4-38). The percentage of the respondents who reported stress was 35.5% (n=149), anxiety, 32% (n=135), and depression, 34.7% (n=146).

Sociodemographic factors affecting stress, anxiety, and depression

In bivariate analysis, we evaluated the effect of the sociodemographic variables on the stress, anxiety, and depression subscale scores of DASS-21. A Mann-Whitney U test did not reveal any significant difference in the mean ranks for stress, anxiety, and depression scores across the two genders (p>0.05).

Marital status was found to be significantly associated with the difference in the mean rank scores of the three subscales (Table 2). Respondents who were single had the highest mean ranks compared to married and divorced respondents (p<0.001) (adjusted for pairwise comparison) for stress, anxiety, and depression. The education of the respondents was also found to have an association with a difference in the mean ranks for stress (p=0.006) and depression (p=0.002) but not anxiety scores. Respondents who were graduates had the highest mean rank scores, followed by postgraduates and others, for stress and depression. In pairwise comparison for the stress mean rank scores, there was a significant difference in the mean ranks of graduate

Table 1: Pre-existing medical conditions and treatment modality

Pre-existing medical condition	Self-medication n (%)	Tele medicine n (%)	Not taking any treatment n (%)
Diabetes mellitus	6 (35.3)	6 (35.3)	5 (29.4)
Hypertension	8 (38.1)	7 (33.3)	6 (28.6)
Hypo/hyperthyroidism	15 (39.5)	10 (26.3)	13 (34.2)
Mental illness	6 (28.6)	6 (28.6)	9 (42.9)

Table 2: Difference of DASS-21 subscale scores across the two genders

DASS-21 subscale	Male (n=167)	Female (n=255)	U	z	p
	Mean rank	Mean rank			
Stress	198.68	219.90	19151	-1.761	0.078
Anxiety	207.12	214.37	20560	-0.610	0.542
Depression	200.39	218.77	19437	-1.54	0.123

and postgraduates (adjusted p=0.02) also between graduates and others (adjusted p=0.026), but there was no difference between postgraduates and others. The mean rank score of graduates was significantly higher than the postgraduates for depression (adjusted p=0.001).

Stress, anxiety, and depression differed among different occupations. The mean rank of the respondents working in the public sector was higher than others for stress scores. A significant difference was found between the homemaker and students' mean ranks with the homemakers having a higher mean rank (adjusted p=0.002) on the stress score.

The mean rank of the students was higher for anxiety when compared to others. Again a significant difference was found between students and homemakers (adjusted p=0.01) with students having a higher mean rank. We found the students had the highest mean rank for the depression score among the different occupations. A significant difference was found in the pairwise comparison between student and homemakers (adjusted p<0.001) with students having a higher mean rank. Respondents who had a past history of mental illness had a higher mean rank for all - stress, anxiety, and depression scores (p<0.001). Table 3 shows the stress, depression, and anxiety across different sociodemographic variables.

Respondents who were taking the help of telemedicine for their past illness were found to have a significantly higher mean rank for anxiety when compared to those who were self-medicating or not taking any medicine (p=0.002).

Exposure variable and stress, anxiety, and depression

We found that respondents who were not aware of their exposure status or contact with COVID-19 patients scored a higher mean rank for depression when compared to respondents who were confident that they were not exposed (p=0.031).

Precautionary variables

Respondents who wore mask always was 46.4% (n=196), sometimes was 48.1% (n=203). The percentage of the respondents who were frequently washing their hands was 88.4% (n=373), and those who were strictly maintaining social distance was 89.6% (n=378). There was no significant difference in the mean ranks of stress, anxiety, and depression score with regards to precautionary variables.

DISCUSSION

Lockdown is a public health precautionary measure undertaken by the government to limit the spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Family and friends are the usual source of emotional support and guidance, and their presence nearby play a significant role in mitigating the effect of stressors.[8] During the lockdown when these sources of support cannot be utilised, it may precipitate or worsen psychiatric conditions.

Though the impact of the disease was first felt in China and 53.8% of the participants in a survey reported having a psychological impact,[9] and till the virus reached India it was not something new and unknown, but still, the impact was quite significant as 35.5% were experiencing stress, 32% were anxious, and 34.7% was showing features of depression. The recent National Mental Health Survey of India had reported the overall weighted current prevalence of depression to be 2.7%, and for neurotic and stress-related disorder it was 3.5%, which include generalized anxiety disorder (0.6%).[10] Thus, our findings shows that there is considerable amount of increment in the anxiety and depression in the general population.

Females are more likely to suffer the psychological impact of a pandemic like that caused by SARS-CoV-2 and because of the lockdown imposed to limit its spread.[9,11] Though we did not find any statistically significant difference in the DASS-21 items scores but female had higher values when we calculated the central tendency. In India, working women uses the Internet most[12] and the response to the survey questionnaire was sent by those who were internet user. As such the females from the rural areas or those not employed did not have adequate representation in this survey which may be the reason for not finding the significant statistical difference between the two genders. In a review done by Kuehner,[13] it was found that females have greater number of stressors and are more susceptible to stress when compared to males, and absence of social support predicts reaction to stress and depression in females.[13] We found in congruence to this that the homemakers had higher rank in stress score.

We found that students were having anxiety and depression which is in line with findings of other surveys [9,11,14] During the lockdown, educational institutions are also closed resulting in inability to participate in learning activities and also decreased their social interaction with peers which may be responsible for increased anxiety and depression.[14] Respondents working in public sector reported higher stress when compared to others. Many public sector employees remain in official tours and during the initial phase of lockdown, they were not able to join their duty and there was no clear directives for people stuck outside in tours or on sanctioned leaves. Also, worries related to losing perks because of possibility of diversion of fund for management of pandemic by the government may be the few other possible reasons for the stress respondents working in public sector were experiencing.

Interestingly we found that one-third of patients with mental illness were self-medicating, similar numbers were using telemedicine, and almost 43% of the respondents with mental illness were not taking any medicine, which may result in relapse. Beside the increase odd of relapse, people with mental illness have little awareness about risk of contacting the virus and reduced efforts to practice precautionary measures.[15]

Regarding precautionary variables, good number of respondent were maintaining social distance and practicing hand washing, though wearing mask was less frequent. This suggests that the respondents were anxious which motivated hand washing and maintaining social distance, and there is a need to make face mask available to the general population in an adequate number also with increasing awareness among

Table 3: Stress, depression, and anxiety across different sociodemographic variables

Sociodemographic variables		n	Stress			Anxiety			Depression		
			Mean rank	Kruskal-Wallis chi-square	p	Mean rank	Kruskal-Wallis chi-square	p	Mean rank	Kruskal-Wallis chi-square	p
Marital status	Single	238	236.75	23.89	<0.001	231.49	18.95	<0.001	243.58	39.25	<0.001
	Married	171	177.92			180.98			169.10		
	Divorced	13	190.92			246.88			182		
Family type	Nuclear	306	216.11	2.27	0.32	216.04	2.08	0.353	217.39	2.95	0.228
	Extended	19	219.97			216.82			183.05		
	Joint	97	195.29			196.13			198.48		
Socioeconomic status	Lower	8	163.44	1.29	0.524	180.63	2.94	0.230	132.06	3.60	0.165
	Middle	351	212.65			215.95			213.35		
	Upper	63	211.21			190.63			211.26		
Locality	Urban	315	214.36	1.34	0.511	211.02	0.046	0.977	211.42	0.971	0.615
	Semi-urban	77	197.31			207.91			214.39		
	Rural	28	203.38			211.80			189.46		
Level of education	Graduates	188	232.58	10.39	0.006	223.87	3.86	0.145	230.72	12.85	0.002
	Postgraduates	149	196.56			204.39			184.03		
	Others	85	191.08			196.61			217.14		
Occupation	Student	173	240.12	24.30	<0.001	227.18	16.39	0.006	252.79	39.66	<0.001
	Public sector	67	214.33			214.43			199.66		
	Private sector	82	198.22			220.39			186.30		
	Self-employed	52	186.63			196.81			180.35		
	Homemaker	30	147.60			147.60			142.40		
	Unemployed	18	158.94			158.36			178.64		
Medical condition	Diabetes mellitus	17	223.91	26.03	<0.001	248.53	24.35	<0.001	200.47	33.32	<0.001
	Hypertension	21	217.38			228.88			213.07		
	Thyroid condition	38	179.99			179.89			161.71		
	Mental illness	21	337			324.05			346.07		
	No illness	325	206.05			204.86			209.10		

public regarding all the modes of transmission of SARS-CoV-2. Respondents who were unaware of their exposure status were showing more stress. Similar finding was reported where respondents who were not aware of their exposure status or who were not sure of their doctor's ability to clearly identify the respondents' status were showing higher scores in all the subscales of DASS-21.[9]

Limitations

As mentioned earlier, being an online survey, sampling bias will be there, resulting in responses from people who are a regular internet user. There is also a possibility of social desirability while responding to questions related to psychiatric issues.

Conclusion

In a vast country like India, the initial impact on psychological health are similar to other countries. Despite adhering to the precautionary measures, the Indian population is experiencing stress, anxiety, and depression. Factors like being single, student status, prior physical and mental illness, being uncertain about exposure status may act as predisposing factors. It is the responsibility of everyone to focus on one's mental health along with the preventive measures of COVID-19 to remain functional and prevent oneself from chronic physical and psychiatric illnesses. As a mental health worker, we have to be aware of the mental health impact of the pandemic and extend our support to the needy through remote assessment and management which has been proved feasible and rated satisfactory by service users.[16]

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AUTHOR CONTRIBUTIONS

MH: Concept and designing, critical appraisal of the manuscript and revising the manuscript; SD: Concept and designing, initial drafting of manuscript, critical appraisal of the manuscript and revising the manuscript; SSB: Statistical analysis and interpretation, drafting of the manuscript and revision of manuscript; PS: Critical appraisal of manuscript, interpretation of analysis, review of manuscript.

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