COVID-19 and subsequent lockdown: Adverse effects on psychological health of Indian women

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ABSTRACT

Context: COVID-19 pandemic and subsequent lockdown have led to adverse psychological outcomes in general population. Stress is mounting at an unbelievable pace and one gender is taking the brunt more than the other. While it's easy to understand the predicaments of working women and how stressful they are during the lockdown, what escapes the notice is the condition of homemaker women who face a lot of challenges as their workload has increased due to lack of house help. Hence the study was conducted to assess anxiety and stress related to problems arising out of COVID-19 and the subsequent lockdown among Indian women. **Methods and Material:** Cross-sectional study was carried out among women across India using snowball sampling technique. Data was collected by a semi-structured online questionnaire based on GAD-7 and PSS scales. It was done using STATA 10.1 and Spearman's correlation coefficient, Kendall's Tau, etc., were applied. **Results:** Majority of study participants mentioned either improvement or no change in their personal relations. Anxiety was present in 55.97% and moderate stress in 90.53% of the female participants. Mean GAD and PSS scores were 5.91 and 21.91 respectively. Anxiety and stress were found to be significantly related to getting help in the household work and occupational status. Watching movies and trying different recipes were the main destressors. **Conclusions:** More than half of the women are having anxiety and almost all have some form of stress due to COVID-19 pandemic and the subsequent lockdown.

Keywords: Anxiety, COVID-19, lockdown, psychological, women

Introduction

The coronavirus disease-2019 (COVID-19) first reported from China in December 2019, continues to surge through the continents affecting many countries worldwide, with the disease burden still burgeoning. With the expeditious spread of the novel SARS-CoV-2 challenging its very existence, human civilization is probably passing through the worst phase of this millennium.[1] A significantly large proportion of population is primarily restricted to their homes, owing to nationwide lockdown and home-confinement strategies.[2,3]

The pandemic and the subsequent lockdown have led to adverse psychological outcomes. Rapidly expanding scare and panic regarding COVID-19 may beget enduring psychological problems in public from all domains, which could potentially be even more detrimental in the long run than the virus itself.[4] The widespread fear and anxiety associated with the pandemic may negatively affect the psychological health of people who are already suffering from anxiety disorders requiring dose modifications and an increased number of physician consultations. Due to the inability and difficulties faced while contacting mental health professionals during lockdown, such individuals can seek advice from primary care physicians who can help them in appropriate management of mental health problems by early diagnosis and treatment.[5,6]

The pandemic and ongoing lockdown has made us face some harsh realities of life, among which one ugly truth is—while the

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stress surrounding our life is mounting at an unbelievable pace, one gender is taking the brunt more than the other. The reason behind this may be the added pressure of childcare, domestic duties, and professional work on women during the lockdown. Many working women are finding it especially difficult and stressful to be working from home as well as doing household chores and other activities without much support from their partners. While it's easy to understand the predicaments of working women, what escapes the notice is the condition of homemaker women who face a lot of challenges as their workload has increased due to lack of house help. With this background this study was carried out to assess the psychological health of women with special reference to anxiety and stress arising out of COVID-19 and the subsequent lockdown.

Subjects and Methods

This descriptive cross-sectional study was carried out during May 2020 when the lockdown was at its peak in India with complete restriction of movements and hardly any opportunity to interact in person. Data was collected using an online platform by a semi-structured questionnaire designed on Google forms, with a consent form appended to it. Females aged more than 18 years, able to understand English and interested in participating were included. Snowball sampling technique was used to recruit women across Maharashtra, a state of India. Approval from the ethics committee is obtained (vide letter number 2037 dated 4th May 2020).

Ethical clearance was obtained from the Institutional ethics committee. The nature and purpose of the study was apprised to the study participants by providing a brief description along with the consent form. There was no compulsion; subjects were encouraged to participate voluntarily and they were ensured of anonymity and confidentiality. The researchers shared the link of the questionnaire with their contacts through emails and various social media like WhatsApp, telegram, etc. The contacts were in turn requested to forward the link to their eligible contacts and in this way the snow ball sampling was achieved. Clicking the link led them to the informed consent form which was followed by the study questionnaire. The link was open to responses from May 15 to 20, 2020.

Till the time of planning the current study there was hardly any data available on impact of COVID-19 and lockdown on Indian population specifically among females. Hence the questionnaire was developed by reviewing the literature available on psychological impact of SARS and MERS. The questionnaire comprised of four sections one each on socio-demographic profile, impact of the pandemic and subsequent lockdown on various aspects of life, Generalized anxiety disorder (GAD-7) scale to assess and measure the severity of anxiety and Perceived stress scale (PSS) for measuring their perception of degree of stress. Cronbach's alpha among the items of the instrument was 0.8412 indicating a good internal consistency of the questionnaire. Some of the fields in the questionnaire were made mandatory so as to reduce nonuniformity and ensure completeness of the responses obtained.

The GAD-7 scale is a 7 item instrument each of which are scored from 0 to 3. Each item asks the individual to rate the severity of symptoms over the past two weeks. Response options include "not at all", "several days", "more than half the days" and "nearly every day" scored as 0, 1, 2 and 3 respectively. The whole scale score can range from 0 to 21 and cut-off scores for mild, moderate and severe anxiety symptoms are 5, 10 and 15 respectively. A score of less than 5 indicates no anxiety.[7]

The Perceived Stress Scale (PSS) is a widely used psychological instrument for measuring the perception of stress. The questions in the PSS ask about feelings and thoughts during the last month. Respondents are asked how often they felt a certain way. The scale consists of total 10 questions each with 5 options to be marked as never, almost never, sometimes, fairly often and very often scored as 0, 1, 2, 3, and 4, respectively. The score is in a range of 0 to 40. The perceived stress is considered as low for scores of 0 to 13, moderate for scores of 14 to 26 and high for scores of 27 to 40.[8]

A pilot study was carried out on a sample of 15 respondents to test the feasibility and validity of the questionnaire and necessary changes were made accordingly. These responses were excluded from the final analysis. The final sample size thus achieved was 243. Overall Kaiser-Meyer-Olkin- KMO = 0.8336 which indicated adequacy (meritorious or worthyness) of our sampling data.

The data obtained was cleaned, coded and further statistical analysis was done using STATA version 10.1 (2011) by STATA Corp, Texas (USA). Descriptive data was summarized using means, frequency and percentages. Appropriate statistical tests were applied like Pearson correlation coefficient, Spearman's rank-order correlation coefficient (Rho), Kendall's Tau, etc.

Results

In this study the age of the 243 study participants ranged between 19 to 70 years. Study participants in the age group of 31 to 50 years formed the majority accounting for 67.08% of the total. Mean age was 43.08 ± 10.12 years. Number of married respondents was 215 (88.48%), 19 (7.82%) were unmarried and remaining 9 (3.70%) were widow. Of the total study subjects 53 (21.81%) were homemakers, 51 (20.99%) were self-employed, 100 (41.15%) were employed in private sector, 31 (12.76%) were government employees and rest of the 8 (3.29%) were retired. Females not getting any help for household work were 38 (15.64%). In this study, 210 (86.42%) i.e., the majority of respondents spent 20–24 hours per day at home and 170 (69.96%) presented with good self-rated health status. Majority of respondents (>75%) were worried about their family members getting infected with COVID-19. Television and social media were the main sources of information for the participants.

The subjects were also enquired about the problems faced by them due to COVID-19 and the subsequent lockdown and their perceptions are depicted in Figure 1.

In a multiple response question, the participants were asked to describe their emotional status in the lockdown period. One hundred and twenty-one (49.79%) reported being worried, 69 (28.40%) experienced boredom, 63 (25.935) were frustrated, 61 (25.10%) were irritated, 46 (18.93%) were sad due to the current situation, 41 (16.87%) were feeling lonely and 35 (14.40%) were scared. The responses of the study subjects about how COVID-19 has affected their personal relations with various people are represented in Figure 2. Majority of the study participants mentioned either improvement or no change in their personal relations as a result of the current situation.

In response to a question regarding effect of lockdown on sleep, 81 (33.33%) complained of decrease in their regular sleep duration, 77 (31.69%) observed that it had increased and there was no change in remaining 85 (34.98%). Similarly, effect of lockdown on appetite was also assessed - 76 (31.28%) reported their appetite had decreased, 36 (14.81%) noted increased appetite whereas remaining 131 (53.91%) reported no change.

The assessment and quantification of anxiety was done using GAD-7 scale which revealed that anxiety was present in 136 (55.97%) respondents. Mean GAD score was 5.91 (SD = 4.95) with a minimum observed score of 0 and maximum of 20.

Stress as perceived by the study participants was assessed with the aid of PSS scale with observed score being in the range of 12 to 32 and mean of 21.91 (SD = 3.35) indicating presence of moderate stress in majority i.e., 220 (90.53%) of the female participants [Figure 3].

A weak, positive correlation could be established between anxiety and perceived stress on comparison of GAD and PSS scores (R = 0.3425 [P = 0.0001]) computed by Pearson correlation coefficient.

The correlation of age with GAD/PSS scores was analyzed using Spearman's rank-order correlation coefficient (Rho). A weak, negative correlation was observed between severity of anxiety/perceived degree of stress and age, indicating that anxiety/stress increased with decreasing age; however, the observed correlation was not statistically significant.

An attempt was also made to identify the role of various factors that influence the anxiety in Table 1. Degree of anxiety was significantly associated with occupational status as moderate or severe anxiety was more among home makers. Since the
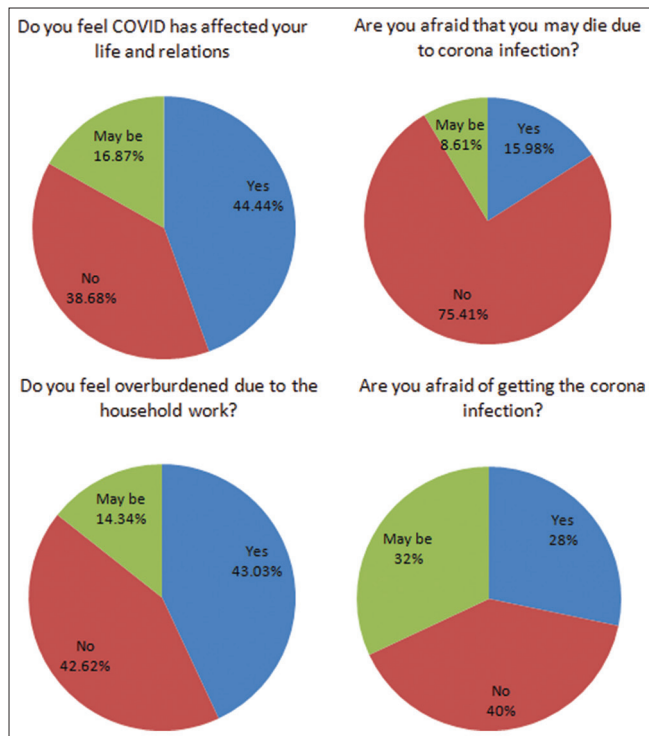

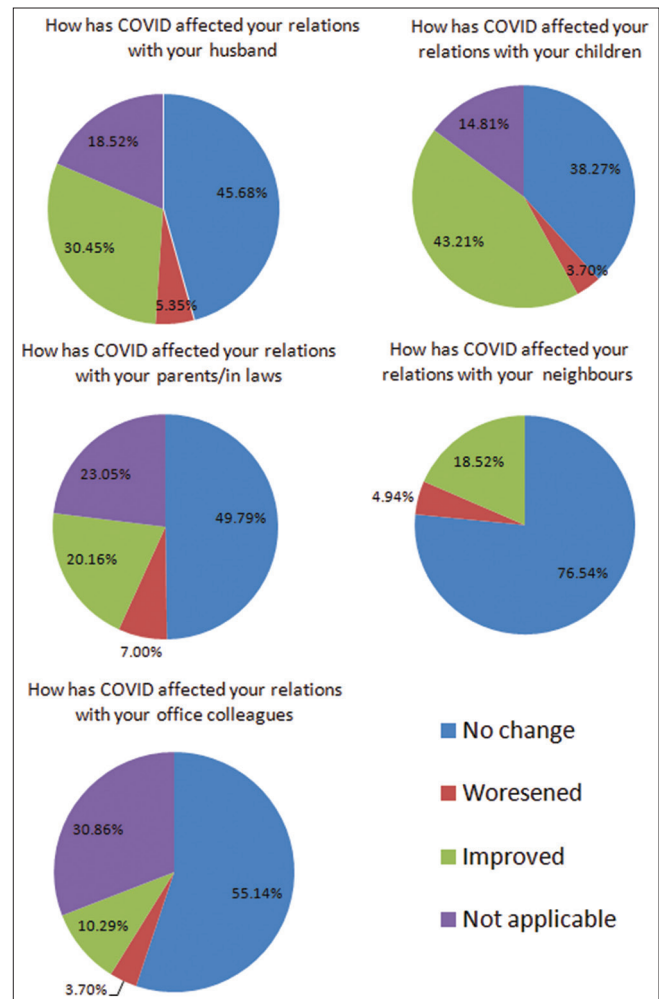**Figure 1:** Perception of problems due to COVID-19 and subsequent lockdown

Figure 2: Effect of COVID-19 on personal relations

| Factor	Anxiety					Kendall's tau (*P*)
	No. (%)	Mild no. (%)	Moderate *n*. (%)	Severe *n* (%)	Total *n* (%)	
Marital status						
Unmarried	3 (15.79)	8 (42.11)	6 (31.58)	2 (10.53)	19 (7.82)	-0.0911 (0.173)
Married	96 (47.29)	68 (33.50)	29 (14.29)	10 (4.93)	203 (83.54)	
Separated	3 (25)	6 (50)	2 (16.67)	1 (8.33)	12 (4.94)	
Widow	5 (55.56)	2 (22.22)	2 (22.22)	0	9 (3.70)	
Occupation						
Homemaker	15 (28.30)	23 (43.40)	11 (20.75)	4 (7.55)	53 (21.81)	-0.0881 (0.028*)
Self employed	27 (52.94)	18 (35.29)	2 (3.92)	4 (7.84)	51 (20.99)	
Employed in private sector	46 (46)	29 (29)	20 (20)	5 (5)	100 (41.15)	
Employed in government sector	14 (45.16)	13 (41.94)	4 (12.90)	0	31 (12.76)	
Retired	5 (62.50)	1 (12.50)	2 (25)	0	8 (3.29)	
Current status of work						
Not going to work	42 (43.75)	29 (30.21)	16 (16.67)	9 (9.38)	96 (39.51)	-0.0307 (0.206)
Working from home for few hours	25 (44.64)	17 (30.36)	12 (21.43)	2 (3.57)	56 (23.05)	
Working from home for usual hours	13 (48.15)	11 (40.74)	2 (7.41)	1 (3.70)	27 (11.11)	
Working from home for more than usual hours	16 (51.61)	11 (35.48)	3 (9.68)	1 (3.23)	31 (12.76)	
Going to work for few hours	9 (56.25)	5 (31.25)	2 (12.50)	0	16 (6.58)	
Going to work for usual hours	1 (16.67)	4 (66.67)	1 (16.67)	0	6 (2.47)	
Going to work for more than usual hours	1 (9.09)	7 (66.67)	3 (27.27)	0	11 (4.53)	
Help in household work						
None	11 (28.95)	16 (42.11)	9 (23.68)	2 (5.26)	38 (15.64)	-0.1128 (0.225)
Children	15 (57.69)	4 (15.38)	5 (19.23)	2 (7.69)	26 (10.70)	
Husband	16 (37.21)	18 (41.86)	5 (11.63)	4 (9.03)	43 (17.70)	
Parents in laws	7 (33.33)	9 (42.86)	4 (19.05)	1 (4.76)	21 (8.64)	
Maid servant	5 (38.46)	4 (30.77)	2 (15.38)	2 (15.38)	13 (5.35)	
All family member	47 (53.41)	27 (30.68)	13 (14.77)	1 (1.14)	88 (36.21)	
Family members and maid	6 (42.86)	6 (42.86)	1 (7.14)	1 (7.14)	14 (5.76)	
Total	107 (44.03)	84 (34.57)	39 (16.05)	13 (5.35)	243 (100)	

*Indicates significant *P*
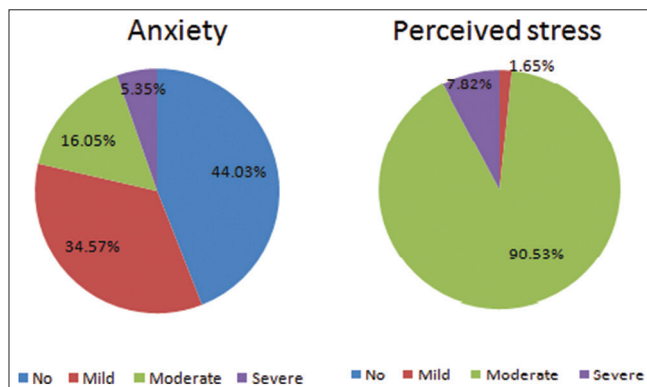
Figure 3: Distribution of study participants according to anxiety and perceived stress

interplay of factors with severity of anxiety could not be vividly established due to multiple categories with small frequencies, these factors were dichotomized (into nominal Yes/No categories) and further analysis was performed to detect the influence of these factors on anxiety [Table 2]. Except for working from home all other factors assessed like age, marital status, getting help in the household work and occupational status were found to be significant influencers in severity of anxiety.

The role of different factors that can contribute to stress is depicted in Table 3. Perceived stress was observed to have a statistically significant relation with current status of work as well as with getting help in household work. However, no significant association was observed between perceived stress and marital or occupational status.

In spite of the fact that anxiety and stress were rampant among the respondents; they were making an effort to overcome this problem with the help of various coping strategies. Watching movies/TV series (137, 56.38%) and trying different recopies (137, 56.38%) were the main destressors. Other coping mechanisms included social media usage by 126 (51.85%), listening to music in 99 (40.74%), physical exercise in 88 (36.21%), chatting with others in 87 (35.80%), reading books in 85 (34.88%), offering prayers in 65 (26.75%), yoga in 57 (23.46%), reviving hobbies like painting/singing 55 (22.63%), meditation in 51 (20.99%) and playing indoor games in 51 (20.99%). Spending quality time, gardening, and talking with kids were some of the other ways to tackle the emotional worries.

Discussion

Beyond the medical risk, COVID-19 pandemic is having enormous psychological and social impact. Literature review

Table 2: Univariate analysis of factors for anxiety among study participants				
Factors		**Anxiety**	**OR (95% CI)**	**Chi square (P)**
		Absent (*n*=107)	Present (*n*=136)		

Factors		Absent (*n*=107)	Present (*n*=136)	OR (95% CI)	Chi square (P)
Age	<40 years	31	57	1.77 (1.00-3.15)	4.34 (0.0352*)
	>40 years	76	79		
Marital status	Unmarried	3	16	4.62 (1.27-25.30)	6.62 (0.0098*)
	Ever married	104	120		
Getting help in household work	No	11	27	2.16 (0.97-5.08)	4.16 (0.0414*)
	Yes	96	109		
Occupational status	Home maker	15	38	2.38 (1.18-4.96)	6.81 (0.0091*)
	Ever employed	92	98		
Working from home	Yes	54	60	0.77 (0.45-1.33)	0.97 (0.3248)
	No/not employed	53	76		
Altered sleep	Yes	59	99	2.18 (1.27-3.72)	8.21 (0.004*)
	No	48	37		

*Indicates significant *P*

Table 3: Factors influencing perceived stress					
Factor	**Perceived stress**				**Kendall's tau (P)**
	Mild *n.* (%)	Moderate *n* (%)	Severe *n* (%)	Total *n* (%)	
Marital status					
Unmarried	0	17 (89.4)	2 (10.53)	19 (7.82)	0.0251
Married	4 (1.97)	185 (91.13)	14 (6.90)	203 (83.54)	0.367
Separated	0	9 (75)	3 (25)	12 (4.94)	
Widow	0	9 (100)	0	9 (3.70)	
Occupation					
Homemaker	0	46 (86.79)	7 (13.21)	53 (21.81)	-0.1325
Self employed	2 (3.92)	43 (84.31)	6 (11.76)	51 (20.99)	0.081
Employed in private sector	2 (2)	92 (92)	6 (6)	100 (41.15)	
Employed in government sector	0	31 (100)	0	31 (12.76)	
Retired	0	8 (100)	0	8 (3.29)	
Current status of work					
Not going to work	0	83 (86.46)	13 (13.54)	96 (39.51)	-0.1222
Working from home for few hours	2 (3.57)	52 (92.86)	2 (3.57)	56 (23.05)	0.04*
Working from home for usual hours	2 (7.41)	25 (92.59)	0	27 (11.11)	
Working from home for more than usual hours	0	29 (93.55)	2 (6.45)	31 (12.76)	
Going to work for few hours	0	16 (100)	0	16 (6.58)	
Going to work for usual hours	0	5 (83.33)	1 (16.67)	6 (2.47)	
Going to work for more than usual hours	0	10 (90.91)	1 (9.09)	11 (4.53)	
Help in household work					
None	0	34 (89.47)	4 (10.53)	38 (15.64)	-0.1183
Children	0	23 (88.46)	3 (11.54)	26 (10.70)	0.011*
Husband	1 (2.33)	41 (95.35)	1 (2.33)	43 (17.70)	
Parents in laws	0	15 (71.43)	6 (28.57)	21 (8.64)	
Maid servant	0	10 (76.92)	3 (23.08)	13 (5.35)	
All family member	3 (3.41)	83 (94.32)	2 (2.27)	88 (36.21)	
Family members and maid	0	14 (100.0)	0	14 (5.76)	
Total	4 (1.65)	220 (90.53)	19 (7.82)	243 (100)	

*Indicates significant *P*

revealed that previous studies have also discussed an intense and wide spectrum of psychosocial ramifications that pandemics can inflict on the general population.[9,10] This can be further intensified if families need separation due to lockdown, the uncertainty of disease progression, insufficient supply of basic essentials, financial losses, increased perception of risk, which usually get magnified by vague information and improper communications through media.[11] In an international public health emergency

like the one we are experiencing now, it thus becomes imperative to investigate the pandemic's psychological impact on actual populations in order to develop strategies to reduce symptoms during the crisis. In this context, this study attempted to assess the same among the general population particularly females in India.

It was observed that fear of acquiring coronavirus infection was present in more than half of the study participants and almost

one-fourth were afraid of dying due to COVID-19. These findings are in consensus with Bodrud-Doza M, *et al.*[12] The array of emotions experienced by the study participants varied from simple boredom to frustration, loneliness, and sadness. In spite of the emotional turmoil faced by them, the women in the current study reported either improvement or no change in their personal relations. In fact many of them were happy that they got to spend more quality time with their family members. This points towards the positive aspect of the COVID-19 pandemic and the subsequent lockdown. However, Grover S, *et al.*[13] have also reported similar findings.

Adequate sleep is an important factor affecting the general health and wellbeing of an individual. It was noted that around two-third of the study participants experienced alteration in sleep pattern, mainly the duration. Sleep disturbances in 33% of the participants were also reported by Chakraborty *et al.*[14] Ahmad *et al.*[15] found that 15% reported a lack of sleep during the lockdown. Similarly, change in appetite was also reported by almost half of the women in this study.

GAD is one of the most common mental disorder, and it often remains undetected.[16] GAD-7 has been shown to produce reliable and valid scores when used in medical and community settings to assess the severity of generalized anxiety.[17,18] It exhibits excellent and strong psychometric properties in terms of validity and internal consistency (Cronbach's alpha between 0.89 and 0.92).[19-21] Approximately 56% of the participants had anxiety of some or the other degree, this finding is tremendously greater than the general national estimated prevalence.[22] Similar findings have been reported by Ebrahim AH, *et al.*[23] and Grover S, *et al.*[13] who observed anxiety in approximately 54% and 70% respectively. However, a lesser prevalence of anxiety was reported by other researchers.[15,24-26]

PSS scale was preferred over other tools because it is a psychological instrument that measures the degree to how circumstances in one's life are perceived as stressful. It determines how unpredictable, uncontrollable, and overloaded respondents find their lives, which is ideal for this current situation. It was observed that most of the women had moderate stress with a mean PSS score of 21.91. Limcaoco *et al.*[27] reported a mean PSS score of 18.3 indicating moderate stress in majority of their female subjects. Whereas in a study done among general population by Grover S *et al.*[13] mean PSS score was found to be 16.56. Other studies by Verma *et al.*[28] in Indian population and Etxebarria *et al.*[29] in Spain have also suggested presence of stress in the general population. The higher GAD and PSS scores with more number of subjects having anxiety and stress in this study is because of the fact that it was carried out solely amongst females.

Positive correlation of GAD and PSS in this study is also supported by Baik *et al.*[30] who mentioned that scores on the PSS were significantly correlated with GAD score. Both anxiety and stress were observed to be lower in older individuals. This relation

of anxiety and age was found to be statistically significant in univariate analysis. This finding is in contrast to the general belief that older individuals are at a higher risk of anxiety and stress. Similar results were also quoted by Limcaoco *et al.*[27] Varshney M, *et al.*[31] and Huang Y, *et al.*[32] This can be explained by the fact that emotional maturity and the skills to handle difficult situations in life increase with age. However, findings of the current study are in contrast with those of Islam MS, *et al.*[26]

Ever married women, homemakers and those getting help in household work were observed to have significantly less anxiety. Probably this could be because of support provided by family in the Indian marriage system. This is in coherence with the observations of Ahmad A, *et al.*[15] Robinson S, *et al.*[33] and Niles A, *et al.*[34]

Sleep alterations were found to be significantly associated with anxiety in this study. This has also been suggested by another researcher in a study from India.[15] The chaos and uncertainty created by the COVID-19 pandemic in the general public has led to sleep disturbances which in turn can make people feel tired and anxious.

Due to fear and worry about one's own health and that of the loved ones, financial situation and loss of support services due to the stay-at-home orders by government authorities the levels of stress are increasing in the population.[29] This statement is reinforced by results of this study. Perceived stress was significantly influenced by status of work and help in household work by other family members.

Women in this study used a wide variety of coping mechanisms right from simple prayers and listening music to reviving hobbies and trying different recipes to tackle the anxiety and stress. Good coping skills prevent anxiety and stress from getting one down and help to thrive even in challenging situations. When it comes to stress, Indian women are always known for survival in adverse times as highlighted by the results of this study.

To summarize more than half of the women are having anxiety and almost all have some form of stress due to the pandemic and the subsequent lockdown. This study highlights that in the current stressful milieu making mental health services accessible to everyone becomes the need of the hour. Considering the impracticability of the face to face psychotherapy, use of various online platforms to meet this urgent unmet need of women is highly desirable. Primary care physicians can step in to provide mental health services for better psychological health of the community, particularly the women.

Limitations

Due to lockdown and heavy workload of COVID-19 patient care, the researchers could not go in person for data collection, so the next best possible option of collecting data by online survey was employed. Further, this being a cross-sectional study the

causal nature of factors responsible for anxiety and stress could not be ascertained. However, these limitations do not dilute the findings of this study which indicate that anxiety and stress are much rampant in the current scenario and interplay of various factors is responsible for the same.

Declaration of participants' consent

The authors certify that they have obtained all appropriate participant consent forms. In the form the participant(s) have given his/her/their consent for his/her/their images and other information to be reported in the journal. The participants understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Key Messages

COVID-19 has affected women more profoundly and overwrought all aspects of their life. Lockdown and forced quarantine have increased women's workload with many women working for home as well as from home. The negative psychological impact of the pandemic as implicated by the increased levels of anxiety and stress observed in our study is really worrisome with no end in sight.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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