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Original Article

Community Section

An Observational Study to Assess Anxiety Disorder among Women during COVID-19 Pandemic

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ABSTRACT

Introduction: World Health Organisation (WHO) declared 2019 Coronavirus Disease (COVID-19) infection as a pandemic. Government of India imposed a nationwide lockdown to break the chain of transmission in the community to halt the pandemic. The unprecedented measure led to severe emotional distress among the general population, especially women.

Aim: To assess the burden of anxiety disorder perceived by women during the COVID-19 pandemic and their precipitating factors.

Materials and Methods: An observational cross-sectional study was conducted among the women residing in West Bengal for more than six months and has access to electronic media, internet services, and/or with an account in any social media. The online survey was conducted via electronic communication and the snowball sampling method was used to recruit 980 study participants. An electronic version of a semi-structured questionnaire was developed with a consent form attached to it and the link of the questionnaire was sent through e-mails, WhatsApp, and other social media to the contacts of the researcher. A self-administered questionnaire obtained information regarding socio-demographic features, personal history, past history of chronic morbidity, family history, and anxiety disorder by Generalised Anxiety Disorder-7 item (GAD-7) scale. Chi-square test and multiple logistic regression were used as a test of significance. The data was compiled, analysed, and presented.

Results: Around 203 (20.7%) adult women were suffering from reasonable anxiety. Socio-demographic factors like residence, religion, education, and profession were more significantly associated but age, family type, and marital status were not significantly associated. Addiction, chronic morbidity, and experience of recurrent non-specific signs and symptoms had a significant association with reasonable anxiety. The regression model explained that working women had less chance and those with recurrent non-specific symptoms had more chance to suffer from reasonable anxiety.

Conclusion: The study assessed the burden of anxiety disorder faced by women during the pandemic. It has provided further insight into the risk factors associated with it and a person's vulnerability to anxiety disorder. Thus, it helped in developing targeted intervention strategies for the vulnerable segment of the population.

Keywords: Coronavirus disease, Generalised anxiety disorder, Psychological disorder

INTRODUCTION

World Health Organisation (WHO) declared COVID-19 infection is as an infectious disease caused by a newly discovered coronavirus. Geriatric patients and patients with co-morbidities required special attention whereas others recovered with symptomatic management. At present, there is no specific treatment for COVID-19 infection. Thus, the best way to prevent it is by maintaining personal hygiene, hand hygiene, respiratory etiquette, social distancing for all people, and self-isolation for those with minor illnesses along with other measures and now vaccine [1].

In India, the first case of coronavirus outbreak was on 30th January 2020. Since then there was a continuous rise of COVID-19 cases with a case fatality rate of 3.91% as of 20th March 2020. This steep rise of the COVID-19 epidemic curve resulted in lockdown as the only feasible policy. Government of India imposed a nationwide lockdown on 24th March 2020 to break the chain of transmission in the community [2]. This strict imposition of lockdown along with social distancing was the primary measure to contain the community transmission. However, the unprecedented measure led to severe emotional distress among the general population, especially women [3,4]. Several studies found that the male gender was protective from psychological distress. Emotional distress was found to be more common owing to a family problem, anxiety about the future, poor health status and uncertainty about the present situation, etc., [5,6]. In this phase, widespread lockdown would inevitably have a psychological effect. People especially women had a sense of loss of control and a sense of getting trapped which could increase the anxiety among the people [7]. The prevalence of anxiety was found to be in the range of 7.8% to 87.7% [8-11]. Wang C et al., conducted research on immediate psychological responses and associated factors during the initial stage of the COVID-19 epidemic among the general population in China. But it was found that 28.8% were suffering from moderate to severe anxiety [12].

Prolong anxiety state could have a consequence on a person's physical and mental state. Female gender and lower age group were more vulnerable. There might be a sense of hysteria, which could lead to people's sense of insecurity and negative affective state. The impaired psychological function led to people's fear, distrust and intolerance towards others. Media played a vital role by repeated emphasis on daily updates of the pandemic situation [4,5]. Simultaneously social media spreads misconception, fear, and panic among people over the internet. Communication of wrong information led to mass hysteria and stigmatisation. Thus those issues were to be addressed to prevent people's feelings of insecurity, especially among women. Prioritisation of this vulnerable group of women and effective intervention of this susceptible group was need of the hour [4,5,10,11]. Thus, the study aimed to assess the burden of emotional effects perceived by women during the pandemic and their precipitating factors.

MATERIALS AND METHODS

An observational cross-sectional study was conducted in the Department of Community Medicine, Nilratan Sircar Medical College and Hospital, Kolkata, West Bengal, India, over one

month (September 2020 to October 2020). Ethical permission was obtained from Institutional Ethics Committee (N0/NMC/3724 dated 09.09.2020).

Inclusion and Exclusion criteria: The women residing in West Bengal for more than six months period, more than 18 years of age, having access to electronic media, internet services, and/or with an account in any social media were approached for an online survey through the social network. Those who did not have an account in social media were approached through e-mails and short message services. Women not willing to participate in the study were excluded. Those participants already suffering from any psychological illness were excluded from the research based on past history.

Sample size calculation: Taking prevalence of moderate to severe anxiety of 28.8% [12], the sample size was calculated by the formula, $N=Z^2pq/L^2$; where N=sample size, p=prevalence, q=100-p, Z=standard normal deviate=1.96, L=allowable error=10%. The sample size was estimated at 979. Thus final sample size was calculated as 980.

The electronic version of a semi-structured questionnaire was developed with a consent form attached to it. Initially, contacts of the researchers were requested for verbal consent for participation in the study. The link of the questionnaire was sent through e-mails, WhatsApp, and other social media to the contacts of the researcher. The participants were then asked to forward the questionnaire to the adult female contacts who were residents of West Bengal for atleast six months. The snowball sampling method was used to recruit participants further till the desirable study population was achieved. Those fulfilling the inclusion criteria were considered as the study population. It was an anonymous survey and data confidentiality was assured. All eligible participants were required to fill up all the sections of the link form and submit it online.

The self-reported questionnaire collected information regarding socio-demographic features, personal characteristics, past episodes of chronic morbidity, present complain of any significant symptoms, family history of a major illness or non-communicable disease, and their anxiety disorder was assessed by Generalised Anxiety Disorder-7 item (GAD-7) scale [13]. The reliability along with criterion, construct, factorial, and procedural validity of the GAD scale to measure anxiety was evident in the general population [14,15]. The scale had an optimised sensitivity of 89% and specificity of 82%. The total GAD-7 score was calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of "not at all," "several days," "more than half the days," and "nearly every day." GAD-7 total score for the seven items ranges from 0 to 21. A score of 0-4 as minimum anxiety, 5-9 as mild anxiety, 10-14 as moderate anxiety, and 15-21 was considered as severe anxiety. A score of 10 or greater on the GAD-7 scale represented reasonable anxiety among the study subjects [15,16]. No identifiable information was collected. At the end of the questionnaire, the method of scoring was described and asked the participants to seek medical attention if the score was above the cut-off value of 10. Data were compiled after data collection.

STATISTICAL ANALYSIS

The analysis was done with help of Microsoft Excel 8.0, Epi Info: Version: 7.2.2.6/February 2, 2018, and Statistical Package for the Social Sciences (SPSS) version 16.0 (IBM). Results were presented as percentages and proportions and the Chi-square test along with Multiple Logistic Regression analysis were applied as the tests of significance. A p-value less than 0.05 considered significant.

RESULTS

In the present study, 980 women participated by filling up the electronic version of the questionnaire in Google forms. Age varied from 21-78 years with a mean of 34.12 years, median 30 years, mode of 23 years, and standard deviation was of 12.84. The majority of the study population (830, 84.7%) were from urban areas, 198 (20.2%) were professionally qualified, 385 (39.3%) postgraduate and 214 (21.8%) of study subjects were graduate [Table/Fig-1]. Among the study population, 96 (9.8%) were addicted to smoking, 52 (5.3%) to chewing tobacco, and 73 (7.4%) were addicted to alcohol. About 556 (56.7%) of the study population were suffering from any form of chronic morbidity. The co-morbidity found were hypertension (183, 18.7%), thyroid disorder (146, 14.9%), diabetes mellitus (130, 13.3%), and others like ischemic heart disease, Chronic Obstructive Lung Disease, liver disease, stomach ulcer, arthritis and psoriasis were present in 242 (24.69%) of study population. About 713 (72.8%) of the study subjects were suffering from any form of recurring symptoms like non-specific aches and pains, fatigue, restlessness, headache, indigestion, palpitation, etc., in last 14 days.

Socio-demographic factors	Reasonable anxiety		Total (No, %)
	Present (N1=203) (No, %)	Absent (N2=777) (No, %)	
Age (years)			
18-25	66 (19.5)	272 (80.5)	338 (100)
25-60	124 (21.2)	461 (78.8)	585 (100)
>60 years	13 (22.8)	44 (77.2)	57 (100)
χ^2=0.525 p=0.769			
Residence			
Rural	18 (12.0)	132 (88.0)	150 (100)
Urban	185 (22.3)	645 (77.7)	830 (100)
χ^2=8.198 p=0.004			
Educational status			
Up to higher secondary	40 (21.9)	143 (78.1)	183 (100)
Graduate	30 (14.0)	184 (86)	214 (100)
PG and above	81 (21.0)	304 (79)	385 (100)
Professional	52 (26.3)	146 (73.7)	198 (100)
χ^2=9.723 p=0.021			
Occupation			
Working	54 (16.9)	265 (83.1)	319 (100)
Homemaker	149 (22.5)	512 (77.5)	661 (100)
χ^2=4.129 p=0.042			
Family type			
Nuclear	156 (22.2)	547 (77.8)	703 (100)
Joint	47 (17)	230 (83)	277 (100)
χ^2=3.301, p=0.069			
Marital status			
Single	86 (21.2)	319 (78.8)	405 (100)
Married	117 (20.3)	458 (79.7)	575 (100)
χ^2=0.114, p=0.736			
Religion			
Hindu	163 (22.4)	564 (77.6)	727 (100)
Muslim	30 (13.6)	190 (86.4)	220 (100)
Others	10 (30.3)	23 (69.7)	33 (100)
χ^2=15.118 p=0.019			

[Table/Fig-1]: Distribution of study population acc to socio-demographic factors and reasonable anxiety (N=980).
χ^2: Chi-square test; p-value less than 0.05 significant

It was found that 203 (20.7%) of the study population was suffering from reasonable anxiety, 459 (46.9%) of minimum to 318 (32.4%) of mild; 150 (15.3%) of moderate to 53 (5.4%) of severe form of anxiety disorder. The range of GAD score among the study population was 0-21. A mean score of 5.73, a median of 5.0, and a mode of 0 were found among the study population with a standard deviation of 4.647.

Among the socio-demographic factors, it was found that urban population, other minority religion followers like Christianity, Sikh,

Jainism, Buddhism, etc., professionally educated and homemakers were more significantly susceptible to reasonable anxiety. Age, family type, and marital status did not contribute to the reasonable anxiety status of study subjects significantly [Table/Fig-1].

The present study found that women who were addicted to tobacco and alcohol, suffering from chronic morbidity, and experienced recurrent non-specific signs and symptoms were significantly prone to reasonable anxiety. It could not elicit any significant association with having any leisure activity [Table/Fig-2].

Other attributes	Reasonable anxiety		Total (No, %)
	Present (N1=203) (No, %)	Absent (N2=777) (No, %)	
Addiction			
Present	63 (29.7)	149 (70.3)	212 (100)
Absent	140 (18.2)	628 (81.8)	768 (100)
χ^2=13.350 p=0.001			
Chronic morbidity			
Present	146 (26.3)	410 (73.7)	556 (100)
Absent	57 (13.4)	367 (86.6)	424 (100)
χ^2=58.787 p=0.0004			
Recent onset of recurring symptoms			
Present	191 (26.8)	522 (73.2)	713 (100)
Absent	12 (4.5)	255 (95.5)	267 (100)
χ^2=58.787 p=0.001			
Leisure activity			
Present	198 (20.9)	750 (79.1)	948 (100)
Absent	5 (15.6)	27 (84.4)	32 (100)
χ^2=0.522 p=0.470			

[Table/Fig-2]: Distribution of study population acc to other attributes and reasonable anxiety (N=980).
χ^2: Chi-square test; p-value <0.05 considered significant

A multiple logistic regression was performed to assess the effects of non-modifiable risk factors like occupation, addiction, associated chronic morbidity, leisure activity, and recurrent non-specific symptoms on the likelihood of suffering from reasonable anxiety. The logistic regression model explained 13.9% variability in the outcome variable i.e. anxiety disorder. The model explained that working women had 0.545 times less chance of suffering and those with recurrent non-specific symptoms were a 6.993 times more chance of suffering from reasonable anxiety. No significant association was found between addiction to tobacco and alcohol, associated chronic morbidity, presence of leisure activity with reasonable anxiety [Table/Fig-3].

Variables	AOR	p-value
Occupation	0.545	<0.001
Addiction	1.354	0.113
Associated chronic morbidity	1.372	0.109
Leisure activity	0.892	0.828
Recurrent non-specific symptoms	6.993	<0.001

[Table/Fig-3]: Table showing association of various attributes with reasonable anxiety (logistic regression analysis) (N=980).
AOR: Adjusted odds ratios

DISCUSSION

The present study was conducted among 980 adult women to assess their general anxiety status by GAD scale. It was found that 20.7% of the eligible women were suffering from reasonable anxiety. Other studies found variable prevalence, when conducted among the general population. It was observed as low as 7.8% by a study conducted among women attending a primary care clinic in Malaysia [8] to as high as 87.7% as found by a study to assess depression and anxiety among university students during the COVID-19 pandemic in Bangladesh [11].

Several studies proclaimed that the prevalence of anxiety disorder increased during COVID-19 pandemic, especially among the young females and students. These groups were more vulnerable and hence, the prevalence also increased compared to the pre-COVID era. Higher prevalence was also noted among university students which may be due to their career-related anxiety [Table/Fig-4].

Author	Place and Year	Study population	Scale used	Anxiety prevalence
Sidik SM et al., [8]	Malaysia, 2012	Women attending a primary care clinic	GAD scale	7.8% among mothers
Gualano MR et al., [4]	Italy, 2020	Residents of Italy during lockdown	GAD scale PHQ (Patient Health Questionnaire) 9 ISI (Insomnia Severity Index)	26.8% among females
Dawson DL and Golijani-MN, [17]	United Kingdom, 2020	General population of UK during the COVID-19 pandemic	CompACT 8 (Comprehensive Assessment of Acceptance and Commitment Therapy Process)	27% of clinical anxiety
Verma S and Mishra A, [18]	India, 2020	Indian population during the lockdown to contain the spread of COVID-19	DASS-21 (Depression Anxiety and Stress Scale)	28% of Indian population
Wang C et al., [12]	China, 2020	General population in China during COVID-19) epidemic	DASS-21 (Depression Anxiety and Stress Scale)	28.8% of moderate to severe anxiety symptoms
Patel PA et al., [9]	India, 2017	Indian women	Spielberg's State and Trait Anxiety Inventory Scale	35% women on impact of occupation on stress
Özdin S and Özdin ŞB [10]	Turkey, 2020	Turkish population of aged above 18 living in various provinces of Turkey during COVID-19 pandemic	HADS (Hospital Anxiety and Depression Scale) HAI (Health Anxiety Inventory)	45.1% of Turkish society
Islam MA et al., [11]	Bangladesh, 2020	University students during the COVID-19 pandemic	GAD scale PHQ 9	87.7% among female students
Present study	India, 2021	Adult female population residing in West Bengal	GAD scale	20.7%, among women

[Table/Fig-4]: Table showing prevalence of anxiety among different population as shown by different studies.

The present study found that 32.4% of women were suffering from mild anxiety, 15.3% from moderate anxiety, and 5.4% from a severe form of anxiety disorder. But Mazza C et al., in a nationwide survey of psychological distress among Italian people during the COVID-19 pandemic in terms of immediate psychological responses and associated factors found that women were more stressed. Study found that 81.3% were suffering from average level anxiety, 7.2% from high anxiety and11.5% suffered from extremely high anxiety [19]. This can be contributed to the fact that the COVID-19 pandemic had hit Italy at a quick pace and devastated the country in a short period compared to India.

In the present study, socio-demographic factors like rural population, other minority religion followers like Christianity, Sikh, Jainism, Buddhism, etc., professionally educated and homemakers were more significantly susceptible to reasonable anxiety, whereas age, family type and marital status did not contribute to reasonable anxiety status significantly. Similar to our study, age was not

found to be significantly associated with an anxiety disorder as found by Xiao H et al., in a study on the effect of social distancing among the students [20]. Gualano MR et al., observed effects of COVID-19 lockdown on mental health and sleep disturbances in Italy. Unlike the present study, they found that median age was significantly lower in participants with an anxiety disorder (p-value <0.001) [4]. Özdin S and Özdin SB, also found that younger age had a significant association [10], as well as Wang C et al., and Hyland P et al., [12,21]. Probably this is due to the anxiety related to education and career among the lower age group than the higher ages who were already economically stable. Anxiety disorder was significantly associated with the place of residence of the participants, which may be due to the disadvantaged position of the study participants. But this was not consistent with the findings by Özdin S and Özdin SB, educational status was observed to be significantly associated with the prevalence of anxiety disorder in the present study [10], which was also evident in a research by Gualano MR et al., (p=0.046) [4]. Similarly, a study conducted among the general population in China during the COVID epidemic by Wang C et al., noticed that educational status did contribute to the anxiety score of the participants [12]. It was also evident in case of employment status of the participants like the present study. Verma S and Mishra A in their study on depression, anxiety, and stress, and socio-demographic correlates among the general Indian public during COVID-19 pandemic found that those who were employed, were likely to be anxious (OR=1.77) [19]. Hyland P et al., observed that socio-demographic risk factor like income was significantly associated with screening positive for GAD [21]. Özdin S and Özdin SB, found that marital status had no significant association with participant's anxiety status [10], comparable to the finding of the present study. Similarly, Wang C et al., conducted a research and noted that marital status, household size were not associated with the score for anxiety of the population [12]. However, Gualano MR et al., reported that marital status was significantly associated with the prevalence of anxiety (p-value <0.001) [4].

The present study found that addiction, suffering from chronic morbidity, and experience of recurrent non-specific signs and symptoms were significantly associated to reasonable anxiety but no significant association with leisure activity. Verma S and Mishra A in their study on depression, anxiety, and stress during COVID-19 pandemic found that those who were addicted to binge drinking (OR=2.62) were more than two times likely to be anxious [19]. The present study also elicited a highly significant association between addiction and anxiety disorder. Addiction might be a sequel to anxiety disorder. Gualano MR et al., found that chronic morbidity did not contribute significantly to the participant's anxiety status [4], unlike the highly significant finding by the current study. Analogous to it, Özdin S and Özdin SB, found that accompanying chronic disease did not contribute to the participant's anxiety level [10] but the present study elaborated significant association. Although the present study could not elicit a relation between leisure activity and anxiety disorder, but Cheval B et al., found that increased leisure-time physical activity during the COVID epidemic was associated with better physical and also mental health [22]. Variables independently associated with anxiety among women were identified after controlling the confounding factors by multivariable logistic regression. It was found in the present study that working women were less likely to suffer from anxiety during the pandemic. This can be due to the reason that the working women have got some time for relaxation due to lockdown. They may have more friends and colleagues to share their worries as well. It was also detected in the present study that those with recurrent non-specific symptoms were at more risk of suffering from anxiety. This may be due to the reason that because of nonspecific symptoms, diagnosis and treatment of specific disease was hampered increasing their anxiety.

There is sparse research on the psychological impact of COVID-19 pandemic on women in India. In this regard, the present study unearthed the impact of pandemic along with lockdown and social distancing on the female population in India. Although, it could assess the impact on the psychological status of an individual by the cross-sectional design long-term effects could only be assessed by longitudinal studies.

Limitation(s)

The limitation of the study was selection bias. Because of lockdown and social distancing, the research was conducted among those literate individuals who had access to the internet, smartphone, and social media. Respondents could not be traced back as anonymity and confidentiality were ensured due to ethical issues. Interpretation of the total score was mentioned at the end of the questionnaire and they could self-report to seek medical help if necessary.

CONCLUSION(S)

The study assessed the burden of anxiety disorder faced by women during the pandemic. It has provided further insight into the risk factors associated with it and a person's vulnerability to anxiety disorder. Thereby, it has helped to develop targeted intervention strategies for the vulnerable segment of the population. At the end of the questionnaire, participants were informed about the calculation of GAD scale score. Women with a total score of >10 were considered to have reasonable anxiety. Those screened positive women were advised to self-report to the health facility if they need help. They may require further investigation to confirm GAD diagnosis. As the current scenario of the pandemic was having a greater effect on women, priority must be given to this group with psychological support and necessary intervention to prevent further worsening of the condition.

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