

Original Research Article

Prevalence of distress symptoms during COVID-19 pandemic- a comparative community study from South India

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ABSTRACT

Background: After the reported first case of COVID-19, all the existed preventive measures were augmented in the country. The state had a lockdown from 23 March 2020 onwards with various phases of unlocking. The study aimed to compare the mental health symptoms among urban and rural populations experiencing the pandemic and lockdowns.

Methods: This was a community-based cross-sectional study done at Trichirapalli district in south India. 503 participants were selected by random sampling stratified for gender, rural area, urban area, and age. The study was done in June and July 2020 with the Depression anxiety stress scale (DASS21) questionnaire.

Results: The DASS21 questionnaire elicited depressive symptoms, anxiety symptoms, and stress symptoms. The prevalence of nil symptoms among the study population was 26.2%, 4.6% had any one symptom, 12.5% had any two symptoms, 56.7% had all three symptoms. Among the depressive symptoms, 8.3% had mild, 13.3% moderate, 6.6% severe, and 1.4% extremely severe symptoms. 10.5% had mild symptoms, 15.9% moderate, 4.6% severe, and 6% extremely severe anxiety symptoms. About 8% experienced mild symptoms, 5.2% moderate, 2.2% severe, and 0.2% extremely stress symptoms. Age less than or equal to 42 years had twice the odds OR 2.02, 95% CI (1.328 to 3.074) of having three symptoms. The rural population had twice OR 2.32, 95% CI (1.526 to 3.540) the odds of having all three symptoms. The upper socioeconomic status (SES) had 0.384 times lesser odds of developing all three symptoms and is a protective factor with OR 0.616, 95% CI (0.397 to 0.956).

Conclusions: The rural population, age less than or equal to 42 years had high odds of having all three symptoms of distress. The high-income group had less odds of having the symptoms compared to other income groups.

Keywords: Community study, Comparative community, COVID-19, DASS21, Depression, Psychological

INTRODUCTION

The study was done at Trichirapalli district, Tamil Nadu in south India. The World Health Organization (WHO) announced corona virus disease 2019 (COVID-19) as a Public Health Emergency of International Concern.¹ The state had about 9 cases as of 27 March 2020. The Trichirapalli district had its first set of cases of 51 numbers confirmed on 26 April 2020 from a single cluster.^{2,3} The necessary preventive actions to stop the spread of the disease like quarantine of travelers, isolation

of cases, and contact tracing and testing were augmented. The people of the district became familiar with containment zones, home quarantine, hospital isolation, and other preventive measures taken by the government. The district had its first set of cases reaching one hundred on 4th June 2020 and had 700+ confirmed cases after one month on 1 July 2020.³ The present study was carried out in June and July 2020 when an increased number of cases were getting reported. The state was under lockdown from March 23 onwards, and all the commercial establishments and public gatherings were closed except

for essential services. The unlock 1.0 was extended till July 31st 2020 in the state of Tamil Nadu due to rising number of cases. The shopping malls, gyms, swimming pools, theatres remained closed. The commercial establishments were allowed a limited time, offices functioned with limited people, public transport was stopped, and interstate travel and inter-district travel were under prior permission. There were reports of the psychological impact of the pandemic on people in the form of moderate to severe depression, moderate to severe anxiety from various countries like China and others.^{4,5} There was no published community study comparing rural and urban populations on symptoms of distress when this study was initiated. The study aimed to measure the psychological distress of people and factors associated with the distress among 15 to 70 years of age in the community during the initial stages of the pandemic of COVID19 at Trichirapalli district of Tamil Nadu state in India.

METHODS

The study was carried out at Trichirapalli district of Tamil Nadu in southern India by Athma Hospitals and Research private limited. This hospital caters to the mental health needs of people of all age groups within and around the district, all parts of India, and other countries. It provides a range of services on general psychiatry, adolescent and child psychiatric services, counseling services, detoxification, de-addiction, and rehabilitation. The study was carried over from 1st June to 31st July 2020. This was the time when the district started to have an increased caseload of COVID-19 and unlock 1.0 was in place with limited social mobilization of people. The estimated sample size was calculated with a 50% combined prevalence of depression, stress, and anxiety from previous literature with 5% precision and was arrived at 450.⁴ Allowing a 12% drop out rate the sample size arrived at 504 participants. The individuals above 15 years of age and below 70 years of age were included in the study. Those who had cognition deficits, mental retardation, and dementia were excluded from the study. The study was a cross-sectional study. Stratified random sampling was done with population stratified for urban, rural, gender, and age groups. Random samples were collected in urban and rural residential localities by visiting every third house. The total number of persons contacted for the study was 590. After fulfillment of inclusion and exclusion criteria, 503 persons agreed to participate in the study and were recruited in the study with informed consent. They were given the translated and validated depression, anxiety, and stress scales (DASS 21) questionnaire. The study was approved by the ethical committee of Athma Hospitals and Research with number 0051/01052020.

DASS 21 questionnaires were used to measure distress levels in the community in the axis of depression, anxiety, and stress.⁶ It is a self-administered questionnaire. This tool contains 21 statements that are to be marked by the participant in the range from 0 to 3 on the frequency of

occurrence over the past week. Apart from that, other basic demographic details were collected from the participants. The questions 3, 5, 10, 13, 16, 17 and 21 formed the depression axis, questions 2, 4, 7, 9, 15, 19 and 20 formed anxiety axis, questions 1, 6, 8, 11, 12, 14 and 18 formed stress axis. DASS 21 is not a diagnostic scale for depression, anxiety, or stress, instead, it identifies the individuals who happen to have considerable symptoms of depression, anxiety, and stress and who may have a risk of further problems. The outcome of the questionnaire is eliciting individuals with normal mild, moderate, severe and extremely severe categories of depression, anxiety, and stress symptoms. The data was entered in Epidata version 3.0 and analysis was done using SPSS 16. The scores of the participant were added according to the domains measured by the questionnaire. Means were compared by 't' tests and proportions compared by Chi-square tests, Kendall-Tau-b tests. Univariate and multivariate analysis (logistic regression) was done for the association of factor.

RESULTS

The total number of persons who participated in the study were 503. Among them 256 were males and 247 were females. The ages of participants varied from a minimum of 15 years to a maximum of 80 years. Among the study participants, 285 and 218 were from rural and urban places of residence respectively. The age and gender distribution are depicted in Figure 1.

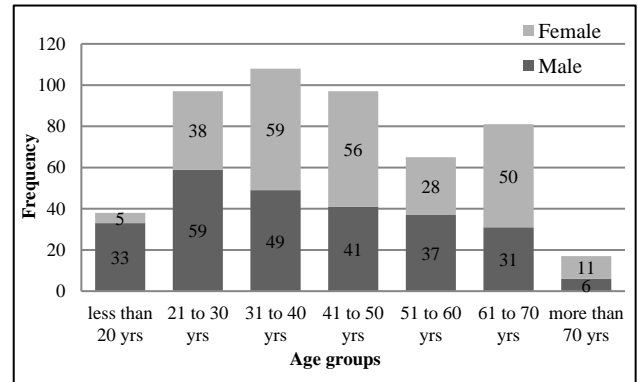


Figure 1: Age and gender distribution of study participants (n=503).

The mean age was 43 years and the median age was 42 years. Among 503 participants 132 had no symptoms of distress. Others had one or more than one symptom of distress represented in (Table 1). Among the participants, 285 had all three symptoms. The DASS21 questionnaire categorizes the individuals according to the severity of depressive, anxiety, and stress symptoms. The number of participants who had various levels of symptom severity is shown in Table 2. The symptom severity levels of the participants were compared with the number of symptoms reported by them. It was found that those who reported all three symptoms had more severe and extremely severe

levels of distress symptoms than those who reported one or two symptoms (Table 3).

Table 1: Prevalence of symptoms of depression, anxiety, and stress among the study participants (n=503).

Symptoms	N (%)
No symptoms	132 (26.2)
Anyone symptom	23 (4.57)
Any two symptoms	63 (12.5)
All three symptoms	285 (56.7)

Table 2: Categories of symptoms and severity levels among participants (n=503).

Variables	Depressive symptoms (%)	Anxiety symptoms (%)	Stress symptoms (%)
Normal	354 (70.4)	317 (63)	425 (84.4)
Mild	42 (8.3)	53 (10.5)	40 (8)
Moderate	67 (13.3)	80 (15.9)	26 (5.2)
Severe	33 (6.6)	23 (4.6)	11 (2.2)
Extremely severe	7 (1.4)	30 (6)	1 (0.2)

Those who exhibited no symptoms of distress were compared with those who had anyone symptom, any two symptoms, and all three symptoms. The social factors of age, gender, place of residence, number of family members, and socioeconomic status were assessed for association with prevalence of symptoms. These factors were not significantly associated when comparing participants with anyone symptom, any two symptoms with no symptoms. Compared with participants who had no symptoms certain factors were found to be statistically associated with those who had all three symptoms. The median age was 42 years. Those who were less than or equal to 42 years of age had a statistically significant association with the manifestation of all three symptoms of distress when compared with the no symptoms group. The average family size of Indian population is of 4 members.⁷ The families having less than or equal to 4 members had no significant association on comparison of no symptoms group with all three symptoms group. The rural population had higher odds of having all three types of symptoms when compared with the no symptoms group. Upper socioeconomic status by B.G. Prasad scale had lesser odds of having all three symptoms compared with lower socio-economic status (Table 4).⁸

Table 3: Types with severity of distress symptoms among study participants.

Category of symptoms	Depressive symptoms (%)					P value	Anxiety symptoms (%)					P Value	Stress symptoms (%)					P value
	Normal	Mild	Moderate	Severe	Extremely severe		Normal	Mild	Moderate	Severe	Extremely severe		Normal	Mild	Moderate	Severe	Extremely severe	
No symptoms (132)	132 (100)	0 (0)	0 (0)	0 (0)	0 (0)		132 (100)	0 (0)	0 (0)	0 (0)	0 (0)		132 (100)	0 (0)	0 (0)	0 (0)	0 (0)	
Any one symptom (23)	23 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0.000*	22 (95.7)	1 (4.3)	0 (0)	0 (0)	0 (0)	0.000*	23 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0.000*
Any two symptoms (63)	60 (95.2)	2 (3.2)	1 (1.6)	0 (0)	0 (0)		55 (87.3)	6 (9.5)	2 (3.2)	0 (0)	0 (0)		63 (100)	0 (0)	0 (0)	0 (0)	0 (0)	
All three symptoms (285)	139 (48.8)	40 (14)	66 (23.2)	33 (11.6)	7 (2.5)		108 (37.9)	46 (16.1)	78 (27.4)	23 (8.1)	30 (10.5)		207 (72.6)	40 (14)	26 (9.1)	11 (3.9)	1 (0.4)	

*Statistically significant; Kendall s Tau- b test

Table 4: Comparison of no symptom group with group with all three symptoms and factors associated (n=503).

	No symptoms (n=132) N (%)	All three symptoms (n=285) N (%)	P value; OR (95% CI)
Age			
≤42 years	53 (24.4)	164 (75.6%)	0.001*;
>42 years	79 (39.5)	121 (60.5%)	OR 2.02 (1.328 to 3.074)**
Male	67 (30.6%)	152 (69.4)	0.67;
Female	65 (32.8%)	133 (67.2)	OR 1.10 (0.734 to 1.676)
Rural	58 (24%)	184 (76)	0.000*;
Urban	74 (42.3%)	101 (57.7)	OR 2.32 (1.526 to 3.540)**
Family ≤4 members	96 (34.3%)	184 (65.7)	0.117;
Family >4 members	36 (26.3%)	101 (73.7)	OR 1.464 (0.930 to 2.304)
Upper SES	83 (19.9%)	209 (71.6)	0.038*;
Lower SES	49 (11.7%)	76 (60.8%)	OR=0.616 (0.397 to 0.956)**

*Statistically significant, **Statistically significant; SES- Socio economic status

DISCUSSION

The study was done in June and July 2020 when COVID-19 cases had started to increase in the district. The state of Tamil Nadu was in complete lockdown from 23 March 2020 onwards except for essential services like health care. The state was in unlock phase 1.0 from June onwards which was extended till July 31st due to a rising number of cases. The districts with the higher number of cases were isolated from other districts. Shops with essential goods were allowed to be opened with limited time and there was no public transport. Schools and colleges remained closed and all Sundays were complete lockdown throughout the state. At this juncture, the general public had job loss, economic loss, the stress of pandemic, less accessibility of health care services. The DASS 21 study was done to assess the burden of distress and to address them. The DASS21 tool is not a diagnostic scale. But it screens the burden of distress through symptoms of depression, anxiety, and stress. People who have above the normal scores exhibit symptoms of distress. In the future, they might turn into a major depression, anxiety, and other stress disorders.

The prevalence of no symptoms of distress among the study population was 26.2%, 4.6% had any one symptom, 12.5% had any two symptoms, and 56.7% had all three symptoms. The present study showed an 8.3% prevalence of mild depressive symptoms, 13.3% moderate, 6.6% severe, and 1.4% extremely severe depressive symptoms. There was a 10.5% prevalence of mild anxiety symptoms, 15.9% moderate, 4.6% severe, and 6% extremely severe anxiety symptoms. About 8% experienced mild stress symptoms, 5.2% moderate stress, 2.2% severe, and 0.2% extremely stress symptoms. In a study done in China during the start of the pandemic with DASS21 had a prevalence of depression 16.8%, 28.8% anxiety, and 8.1% stress.⁴ The higher rates could be the existing socio-cultural differences between the countries.

The most striking factors significantly associated with all the three symptoms of distress are the higher Odds among the young age and rural residence. The primary work of rural people of the district is agriculture, construction labour work, skilled industrial jobs, and unskilled jobs in general engineering works.⁹ The workers of the above sectors were badly hit due to a lack of transport facilities to market their produce, lack of manpower, shut down of industries and construction works. In rural India, males are the primary breadwinner of the family, and women used to manage household works and agricultural works. Males had income loss, economic uncertainties, insecurity, rising expenses, debts to be repaid, financial, occupational extraordinary circumstances to be faced during the lockdown. The burden of financial loss is experienced by men first hand in patriarchal families and this could be the reason for rural residence and young aged having a 2 times risk of depression, anxiety, and stress symptoms than others during a pandemic. A study correlating labor statistics and a cohort study which had long follow up of fragile families and children found that

intimate partner violence and controlling behavior of males on mothers of children and female partners increased during the great recession of 2007-2009 in USA.¹⁰ In 1940 during the great depression studies which strongly influenced later developments was done by Komarovsky in which the effect of unemployment of male members of the family on family dynamics was documented. The author observed that the unemployment of husbands leads to loss of authority and control in patriarchal families and husbands fight hard to retain their authority by ways of more enforcement and verbal influence.¹¹ In a country like India which has a patriarchal society, this gets reflected in increased physical, sexual and verbal abuses. The National Family Health Survey-4 (NFHS) 2015-16 showed that 30% of women of India and 40% of women in Tamil Nadu state experienced domestic violence from spouse.⁷ At times of economic insecurity in the family, the psychological distress in males gets reflected in increased domestic violence which became evident from the fact that the national commission for women of the country had received more domestic violence complaints during the initial 68 days of lockdown than previous 10 years.¹²

The mean scores of depression, anxiety, and stress were more in younger age groups rather than the middle age. A study done in April 2020 at Tamil Nadu through online mode had similar results of younger age people having more psychological stress than older people.¹³ The young and middle age had higher scores of distress in a study done in Australia using DASS21 during the start of the pandemic.¹⁴ The Normative aging study (NAS) explains the possible reasons for this observation.¹⁵ The coping strategy called threat minimization doesn't differ significantly between middle age and old age but an appraisal of stressors as a threat, challenge, and annoyance decreases as age advances which could be the reason for fewer distress scores among the aged in the present study.

The socio-economic status of the population shows clear higher scores of distress in the low-income group as per the B.G. Prasad scale used in the study.⁸ Various studies around the world had found the association between low and high-income groups and psychological impact.^{16,17} But during COVID-19 times all the economic groups particularly the low and middle-income group had higher stress levels which are evident from a study done in Tamil Nadu in April 2020.¹³

Similar to that in the present study, the high-income group had fewer odds of having symptoms of distress than other income groups. This could be due to the presence of economic insecurities in the middle and low-income groups more than other income groups.

CONCLUSION

Overall, younger age and rural residence emerged as independent factors associated with symptoms of depression, anxiety, and stress. Upper socioeconomic

status acts as a protective factor against the development of all three symptoms. The preventive and mental health promotive, curative programs towards addressing the mental health problems during covid times could be targeted on the above groups.

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