Perceived Stress Levels and Associated Factors Among SARS-CoV-2-Affected Young Adults Under Home Isolation—A Cross-Sectional Study From Kerala, India

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Abstract

Introduction: The impact of SARS-CoV-2 is not only on physical health but also on mental health. This pandemic raised concerns of fear, anxiety, and stress among patients affected with the disease. Quarantine and home isolation might have created psychological distress and helplessness in patients due to social and economic reasons. This study aimed in assessing the level of perceived stress and factors associated with it among SARS-CoV-2-affected young adults who were under home isolation.

Methodology: A cross-sectional study was conducted among 147 SARS-CoV-2-affected young adults who were under home isolation during June 2021 to August 2021. A semi-structured proforma was created using KoBo Toolbox for humanitarian response for data collection. Perceived Stress Scale (PSS-10) was used for measurement of stress among COVID-19 patients. The questionnaire was shared in online platform. Data was analyzed using Statistical Package for Social Sciences version 23.0. Significance of association was tested using chi square test and independent sample t test. Logistic regression was done to predict the factors associated with perceived stress.

Results: Out of the 147 study participants, 56.5% were females and 43.5% were males. Symptoms were present in 94 (63.9%) of patients. The mean age of the study participants was 26 (10.5) years. The mean PSS score was 17.5 (6.4). Among the cases under home isolation, 24.5% had low stress levels, 68% had moderate stress levels, and 7.5% had severe stress levels. Feeling of loneliness during home isolation (odds ratio [OR]: 4.7, 95% confidence interval [CI] [1.9-11.63], \(P = .008\)), presence of elderly or under-5 children in the same house (OR: 15.45, 95% CI [2.03-117.5], \(P = .001\)), and presence of cough (\(P = .05\)) were found to be significantly associated with higher PSS scores. Age and sleep were negatively correlated with stress score.

Conclusion: One-third of the study participants had moderate to severe levels of perceived stress. Age, sleep hours, presence of cough, presence of under-5 children or elderly in the same house, and feeling of loneliness during home isolation were found to be significantly associated with high perceived stress level scores.

Keywords
Perceived stress, SARS-CoV-2, home isolation, Kerala

Introduction

SARS-CoV-2 (COVID-19) emerged in Wuhan, the capital of Hubei province of Central China and spread throughout the world, is a respiratory infection that presents with fever, cough, rhinitis, sore throat, shortness of breath, and fatigue.\(^1\) It has been associated with post-COVID complications affecting respiratory cardiovascular, hepatic, renal, gastrointestinal, and musculoskeletal systems. Apart from physical pathologies, COVID-19 has raised the burden of mental health problems, the most important being stress, followed by depression and anxiety.\(^2,4\) SARS-CoV-2 pandemic created psychological stress among patients due to unpredictability of the disease and unexpected deaths happening across different age groups.\(^5\) This pandemic raised concerns of fear, anxiety, and stress among patients.\(^6\) Psychological impact of nationwide...
lockdown was high among Indian population, the reasons being fear about contracting COVID-19, inability to execute routine activities, financial constraints, and fear about future. Excessive concern on physical health might have neglected the burden of psychological issues that COVID-19 has made in human lives.

The impact of SARS-CoV-2 is not only on physical health but also on mental health. Excessive screen time and over exposure to social media creates a state of perceived social isolation. Pandemic situation pressurizes the health system with the emergence of more psychological issues amidst existing health problems. Quarantine and home isolation might have created psychological distress and helplessness in patients due to social and economic reasons. The patients under home isolation may face excess stress than those who are hospitalized. Only few studies have looked into the psychological impact of COVID-19 especially among those under home isolation. This study aimed in assessing the level of perceived stress and factors associated with it among SARS-CoV-2-affected individuals who were under home isolation.

Methodology

A cross-sectional study was conducted from June 2021 to August 2021. A semi-structured proforma was created using KoBo Toolbox for humanitarian response for data collection. Perceived Stress Scale (PSS-10) was used for measurement of stress among COVID-19 patients. PSS-10 is a widely used self-report tool to assess the perceived stress, the original version of PSS-14 includes 14 items, while the short form PSS-10 is a 10-item questionnaire (6 negatively stated and 4 positively stated). Each item, scored on a 5-point Likert scale ranging from 0 (never) to 4 (very often), investigates stressful experiences and responses to stress over the previous 4 weeks. The questionnaire was shared on online platform.

Inclusion Criteria

Patients less than 45 years of age who are tested positive for COVID-19 either by reverse transcription-polymerase chain reaction or rapid antigen test and those patients who opt for home isolation.

Exclusion Criteria

Those not willing to participate in the study.

Sample size was calculated using prevalence of perceived stress in previous studies. The participants were selected from the registers of test positives and were followed up through contact numbers available. The participants were asked to share the online questionnaire to their friends and relatives who were tested positive for COVID-19 and were under home isolation. Altogether, 147 participants were selected by snowball sampling. After ensuring that all of them were under home isolation, online questionnaire was administered via KoBo Toolbox for humanitarian response survey form shared via WhatsApp. If the participant was not available through WhatsApp media, he was interviewed by telephonic interviewers by making calls. After introducing the purpose and the procedure of the research, participants were requested to give their informed verbal consent. They were informed that their responses would be anonymous and that they could withdraw from the study at any moment without giving any justification. No incentives were provided to the survey participants. Stress level was measured using PSS-10 validated tool. Sociodemographic data, symptoms of clinical presentation, COVID-19 vaccination status, hours of screen time, duration of sleep, addictions, and comorbidities were asked.

Data Analysis

Data was analyzed using Statistical Package for Social Sciences version 23.0 (IBM Corp). Continuous measurements were presented as mean (standard deviation) if they were normally distributed or median (interquartile range) if they were not, and categorical variables as proportions. Significance of association was tested using chi square test and independent sample t test. Logistic regression was done to predict the factors associated with perceived stress.

Ethical Considerations

Ethical clearance for study was obtained from Human Ethics Committee of Sree Uthradom Thirunal Academy of Medical Sciences, Vencode, Thiruvananthapuram. Before administering the questionnaire, informed verbal consent was obtained by phone call and was recorded. Confidentiality of data was maintained throughout the study.

Results

The mean age of 147 study participants was 26 (10.5) years. Minimum age of study participants was 15 years and maximum age was 45 years. Majority of the participants belonged to younger population (15-25 years). Out of the 147 study participants, 67% were females and 43% were males. Symptoms were present in 94 (63.9%) patients. Among the 147 study participants, 33 (22.4%) were healthcare workers. Mean days of home isolation was 14 (4.7) days. Mean daily screen time was 7 (3) h. The maximum screen time was 20 h. Mean hours of sleep on a day during home isolation was 8 (2) h. Among the patients under home isolation, 46% had taken at least 1 dose of COVID-19 vaccine. Table 1 shows sociodemographic characteristics of cases.
Table 1. Sociodemographic Characteristics of Study Participants (N = 147).

| Variable                      | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Age category (in years)       |           |            |
| 15-20                         | 47        | 32.0       |
| 21-25                         | 64        | 43.5       |
| 26-30                         | 7         | 4.8        |
| 31-35                         | 4         | 2.7        |
| 36-40                         | 3         | 2.0        |
| 41-45                         | 22        | 15.0       |
| Gender                        |           |            |
| Male                          | 64        | 43.5       |
| Female                        | 83        | 56.5       |
| Religion                      |           |            |
| Hindu                         | 93        | 63.3       |
| Christian                     | 35        | 23.8       |
| Muslim                        | 19        | 12.9       |
| Educational qualification     |           |            |
| High school                   | 4         | 2.7        |
| Higher secondary              | 46        | 31.3       |
| Degree                        | 78        | 53.1       |
| Postgraduation                | 13        | 8.8        |
| Others                        | 6         | 4.1        |
| Occupation                    |           |            |
| Unemployed                    | 110       | 74.8       |
| Employed in government sector | 15        | 10.2       |
| Employed in private sector    | 22        | 15         |
| Loss of wages during home isolation | 29 | 19.7 |
| Yes                           | 29        | 19.7       |
| No                            | 118       | 80.3       |
| Socioeconomic status          |           |            |
| APL                           | 130       | 88.4       |
| BPL                           | 17        | 11.6       |
| Type of family                |           |            |
| Nuclear                       | 125       | 85         |
| Extended                      | 22        | 15         |
| Marital status                |           |            |
| Married                       | 31        | 21.1       |
| Single                        | 116       | 78.9       |
| Comorbidities                 |           |            |
| Yes                           | 10        | 6.8        |
| No                            | 137       | 93.2       |
| Smoking                       |           |            |
| Yes                           | 11        | 7.5        |
| No                            | 136       | 92.5       |
| Alcohol                       |           |            |
| Yes                           | 20        | 13.6       |
| No                            | 127       | 86.4       |
| Sleep time                    |           |            |
| $\leq 8$                      | 93        | 63.3       |
| $>8$                          | 54        | 36.7       |
| Screen time                   |           |            |
| $\leq 6$                      | 74        | 50.3       |
| $>6$                          | 73        | 49.7       |
| Symptoms                      |           |            |
| Present                       | 94        | 63.9       |
| Absent                        | 53        | 36.1       |
| Home isolation days           |           |            |
| $<17$                         | 106       | 82.2       |
| $>17$                         | 23        | 17.8       |

Table 2. Symptom Profile of Cases Under Home Isolation (N = 94).

| Symptoms                  | Frequency | Percentage |
|---------------------------|-----------|------------|
| Fever                     | 77        | 81.9       |
| Loss of smell             | 64        | 68.0       |
| Loss of taste             | 59        | 62.7       |
| Sore throat               | 56        | 59.6       |
| Cough                     | 53        | 56.4       |
| Fatigue                   | 43        | 45.7       |
| Breathing difficulty      | 31        | 32.9       |
| Loose stools              | 18        | 19.1       |
| Rhinitis                  | 16        | 17.2       |

The symptom profile of COVID-19 cases is given in Table 2. Fever and anosmia were the common symptoms. The mean PSS score was 17.5 (6.4). Among the cases under home isolation, 24.5% had low stress levels, 68% had moderate stress levels, and 7.5% had severe stress levels. Females had low to moderate levels of stress compared to males, whereas severe stress levels were more common in males. Table 3 shows proportion of cases having low, moderate, and high perceived stress levels.

Fever and anosmia were the predominant symptoms among patients with low and moderate stress levels. Fever and sore throat were the predominant symptom in patients with high perceived stress levels.

Age (Pearson correlation coefficient $-0.001$) and sleep hours (Pearson correlation coefficient $-0.143$) were negatively correlated with perceived stress scores. Factors associated with moderate to severe stress levels were analyzed by chi square test. Logistic regression was done to predict the factors associated with high stress levels.
Table 3. Prevalence of Perceived Stress Among Cases.

| Stress Levels                | Stress Score | Frequency | Percentage | 95% Confidence Interval |
|-----------------------------|--------------|-----------|------------|-------------------------|
| Low stress (PSS score 0-13) | 9.1 ± 3.7    | 36        | 24.5       | 18.4-30.6               |
| Moderate stress (PSS score 14-26) | 19.1 ± 3.2  | 100       | 68         | 60.5-74.8               |
| High perceived stress (PSS score 27-40) | 30.6 ± 3.6  | 11        | 7.5        | 3.4-12.2                |

Table 4. Factors Associated With Perceived Stress.

| Variable                        | Category       | Low Stress Present | Moderate to Severe Stress Present | P Value | Odds Ratio (95% Confidence Interval) |
|---------------------------------|----------------|--------------------|----------------------------------|---------|-------------------------------------|
| Gender                          | Male           | 15 (23.4%)         | 49 (76.6%)                       | .79     | 1.106 (0.51-2.37)                   |
|                                 | Female         | 21 (25.3%)         | 62 (74.7%)                       |         |                                     |
| Cough                           | Absent         | 13 (31.7%)         | 28 (68.3%)                       | .05     | 0.42 (0.18-1.003)                   |
|                                 | Present        | 8 (15.1%)          | 45 (84.9%)                       |         |                                     |
| Presence of under-5 or elderly in the same house | Present | 1 (2.9%)          | 34 (97.1%)                       | .008    | 15.45 (2.03-117.47)                |
|                                 | Absent         | 35 (31.3%)         | 77 (68.8%)                       |         |                                     |
| Feeling of loneliness during home isolation | Present | 7 (10.6%)         | 59 (89.4%)                       | <.0001  | 4.7 (1.9-11.62)                    |
|                                 | Absent         | 29 (35.8%)         | 52 (64.2%)                       |         |                                     |

Loneliness during home isolation were found to be significantly associated with moderate to high perceived stress levels. Factors associated with moderate to severe levels of perceived stress is given in Table 4.

**Discussion**

In this study, the prevalence of moderate stress was found to be 68%. The prevalence of moderate to severe stress was found to be 75.5%. In a study conducted among general population during pandemic situation in India, the prevalence of moderate to severe perceived stress was found to be 84%. In a study conducted by Zandifar et al in Iran, the prevalence of severe and very severe stress was 84.9%. High prevalence of psychiatric distress among SARS-CoV-2 survivors implies the urgent need for initiating screening for early diagnosis and treatment as well as health promotion and preventive measures to address the same.

In this study, statistically significant association was not found between gender and perceived stress level as similar to the study conducted in Columbia. In a study conducted in Pakistan, male gender was found to be significantly associated with perceived stress.

Stress scores had inverse relation with age in the present study. This is similar to the finding obtained by another study where older respondents reported lower stress levels. This could be due to the financial hardships that the youth is facing and excess dependence on social media for knowledge. In this study, level of education and occupation was not found to be associated with perceived stress levels but higher education was found to be associated with high stress levels in China and it was associated with lower stress levels in Australian studies.

In this study, statistically significant association was not found between gender and perceived stress level as similar to the study conducted in Columbia. In a study conducted in Pakistan, male gender was found to be significantly associated with perceived stress.

Cough was present in 56.4% of patients and was found to be a factor significantly associated with higher perceived stress levels in cases. This may be due to the fear of complications and death because of the involvement of respiratory system. Presence of elderly or under-5 children in the same house was found to be a risk factor for higher stress levels. This may be due to the increased risk of complications and death in elderly population if they get affected with this disease. Those who felt loneliness during the isolation period had higher stress scores. Loneliness is a state of perceived
social isolation which has got negative implications on health and well-being. Sleep duration was inversely related with perceived stress scores similar to studies conducted in rest of the world.

Conclusion

One-third of the study participants had moderate to severe levels of perceived stress. Age, sleep, presence of cough, presence of under-5 children or elderly in the same house, and feeling of loneliness during home isolation were found to be significantly associated with high perceived stress level scores.

Recommendation

Higher stress levels among patients suggest the need for screening of psychological status of SARS-CoV-2 patients under home isolation.

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Author Contributions

Design of study: ANKKN, SVS, RRS, and LIA; acquisition of data: ANKKN, JVRN, SVS, RRS, and AMM; analysis of data: ANKKN and JVRN; interpretation of data: ANKKN, JVRN, SVS, RRS, AMM, and LIA; writing of article: ANKKN, JVRN, SVS, and RRS; critical review of article: SVS, RRS, and AMM; analysis of data: ANKKN; Design of study: ANKKN, SVS, RRS, and LIA; acquisition of data: ANKKN, JVRN, SVS, RRS, AMM, and LIA; writing of article: ANKKN, JVRN, SVS, RRS, and AMM; analysis of data: ANKKN.

Declaration of Conflicting Interests

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