RESEARCH ARTICLE

A cross-sectional online survey to assess the impact of coronavirus disease 2019 pandemic on stress, anxiety, and depression level of young adults in Odisha, India

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Received: June 05, 2021; Accepted: Jun 28, 2021

ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic has resulted in an adverse impact on the mental health of people all over the world. This may lead to long-term psychological consequences if left unchecked.

Aims and Objectives: This study aimed to determine the level of the psychological impact of the COVID-19 pandemic on young adults (18–30 years) and to find the difference in psychological impact according to gender, residence, and employment.

Materials and Methods: This cross-sectional observational study was conducted between May 2020 and June 2020. An online survey was conducted using two validated questionnaires – Impact of Event Scale-Revised and Depression, Anxiety, and Stress Scale. These two validated questionnaires assess the post-traumatic stress (PTS), depression, anxiety, and stress among the respondents. The data obtained were statistically analyzed in GraphPad Prism 6.01.

Results: A total of 111 (male 54 and female 57) research participants provided full responses. A fair number (21.62%) of participants had PTS. A total of 48 (43.24%) had moderate-to-severe stress. Sixty-three (56.75%) had extremely severe anxiety and 18 (16.21%) had moderate-to-severe anxiety. Twenty-three (20.72%) participants showed extremely severe depression and 25 (22.52%) had moderate-to-severe depression. Females showed higher levels of anxiety and depression than males. However, there was no difference in anxiety and depression among the urban and rural populations. PTS and anxiety among employed respondents were higher than non-employed respondents.

Conclusion: We found a high level of anxiety and depression among them. Female young adults of both rural and urban areas are more vulnerable to anxiety and stress. Stakeholders should consider accelerating mental health support at the grassroots level for effective management of pandemics.

KEY WORDS: Anxiety; Coronavirus Disease 2019; Depression; Mental Health; Pandemics; Social Media; Young Adult

INTRODUCTION

Coronavirus disease 2019 (COVID-19) was declared a global pandemic on March 11, 2020. The World Health Organization dashboard shows a massive 177,108,695 confirmed cases with 3,840,223 fatalities as of June 21, 2021.¹ This pandemic not only has endangered the lives of
the human race physically but also seriously affecting the psychological, social, behavioral, cultural, and economic aspects.[2] Thus, psychological disturbances such as increased anxiety, disturbances, depression, loneliness, substance abuse, and self-harm are not unexpected.[3] Therefore, it is very important to figure out the extent to which the pandemic would be impacting the mental health of people.[4-6]

Depression can be simply termed as disinterest in daily life. Whereas, emotional and mental tension that arises due to the presence of adverse circumstances is termed as stress. Fear of the unknown which is a normal mental response is called anxiety.[7] Several previous studies described the various psychosocial ramification of a pandemic on the general population.[8-11]

Students are distressed throughout the world due to the uncertainty of examinations and job availability. Even with the best efforts teachers are unable to have optimum impact. The chief reason being students are unable to transition smoothly to an online platform which has a detrimental effect on the career graph of students.[12] The disturbed academic activities, daily life events, and poor economic conditions lead to anxiety issues in students.[13]

With this background, the present study was designed to measure the psychological impact of the pandemic on young adults in the state of Odisha, India. The study intends to measure post-traumatic stress disorder (PTSD), depression, anxiety, and stress based on gender, location (rural or urban), and employment status.

MATERIALS AND METHODS

Type and Settings
This cross-sectional observational study was conducted during May–June 2020. The online questionnaire was set in a commercial survey platform – SurveyPlanet. The first part of the survey questionnaire comprised the informed consent statement. If internet users click the agree button on the informed consent page, then she/he would be taken to the survey proper.

Sampling Method
We used a snowball sampling technique to recruit young adults of 18–30 years of age from Odisha. After the generation of the online survey questionnaire, the link to the survey was distributed to targeted participants through various social media such as WhatsApp, Facebook, Twitter, and other social media messengers. We collected data from the age group of 18–30 years. The social media message contained this inclusion criterion in bold letter. Hence, we presume that subjects in the age range participated in the survey.

The online questionnaire was a combination of four parts. The first part was the statement of informed consent. The second part was the demographics including age, sex, residence (rural or urban), distance of residence from COVID treatment facility, and the status of employment (employed or unemployed). The third and fourth parts contained the two validated self-administered questionnaires.

We used two questionnaires – Impact of Event Scale-Revised (IES-R) and Depression, Anxiety, and Stress Scale (DASS-21). The IES-R is a questionnaire to assess the level of distress followed by any traumatic event. It has 22 questions with 5-point Likert-type response options.

DASS-21 is also a validated questionnaire to assess the level of depression, anxiety, and level of stress. This self-report questionnaire has 21 questions with a 4-point Likert-type scale.

Analysis of Data
We collected the raw data from the survey platform and checked for data completeness. The final data set had a total of 111 entries. We exported the data to MS Excel for storage and used GraphPad 6.01 statistical software package for analyzing the data. We used a $t$-test to compare the score between sex, residence, and employment categories. For all statistical tests, we used $P < 0.05$ to be statistically significant.

RESULTS
A total of 111 completed entries were analyzed. The mean age of the participants was $26.24 \pm 4.58$ years. There were 54 (48.6%) males and 57 (51.3%) females. The demographic-wise distribution of the sample is shown in Figure 1. Among the respondents, 24 (21.62%) had partial PTSD and 1 (0.9%) had a probable diagnosis of PTSD ($\chi^2 = 104.5, P < 0.0001$). According to DASS-21 scale, 7 (6.3%) had extremely severe stress and 48 (43.24%) had moderate-to-severe amount of stress ($\chi^2 = 37.35, P < 0.0001$). Sixty-three (56.75%) had

![Figure 1: Demographic-wise distribution of the sample](image)
extremely severe anxiety and 18 (16.21%) had moderate-to-severe anxiety ($\chi^2 = 29.35$, $P < 0.0001$). Twenty-three (20.72%) participants showed extremely severe depression and 25 (22.52%) had moderate-to-severe depression ($\chi^2 = 27.46$, $P < 0.0001$). Sex, residence, and employment wise PTSD, stress, anxiety, and depression are shown in Table 1. Female showed higher anxiety and depression score than male. Post-traumatic stress (PTS) and anxiety among employed respondents were higher than non-employed respondents. However, there was no difference in anxiety and depression among the urban and rural populations.

**DISCUSSION**

A number (21.62%) of participants had PTS. A total of 48 (43.24%) of the 111 participants had moderate-to-severe stress. Eighteen (16.21%) had moderate-to-severe anxiety while 63 (56.75%) had extremely severe anxiety. Twenty-three (20.72%) participants showed extremely severe depression and 25 (22.52%) had moderate-to-severe depression. The anxiety and depression levels of females were higher compared to males. However, there was no difference in anxiety and depression among the urban and rural populations. Employed respondents had higher PTS and anxiety than non-employed respondents.

We found a fair percentage of respondents dealing with stress, anxiety, and depression, concerning the outbreak of the coronavirus pandemic. Looking at the scores in the IES-R, it could be inferred that 21.62% of respondents were dealing with the symptoms that represent partial PTS, while 0.9% of the respondents were dealing with the symptoms that could require an immediate clinical diagnosis for PTS. A study by Liang et al. showed a PTSD level of 12.8% of participants. It was around 6% in a study conducted by Gill et al. This can be attributed to the extremely high infection rate as evidence support COVID-19 to be an extremely severe health emergency capable of eliciting PTSD. According to finding from DASS-21, around half of the respondents were experiencing the symptoms of stress, anxiety, and depression in varying degrees. Thus, it supports the existing literature which states the fear of the COVID-19 pandemic induced an adverse psychological impact on people. We found that females had significantly higher levels of anxiety and depression than males. Similar findings were deduced from studies by Rehman et al. Thus, the finding suggests that the female gender might play a significant role in aggravating the negative psychological effects of the pandemic. This could be because females are more sensitive as well as expressive in emotions as compared to males. Employed participants were significantly dealing with the symptoms of stress and anxiety than non-employed individuals. Significant differences were found in their level of depression. This suggests that the employment factor affects the mental health status of the respondents due to the pandemic. Such responses could be the result of the work-from-home situation or job insecurity as inferred by the researches in the existing literature. Moreover, some job profiles might also require coming to the office for work, which might increase the rate of fear of infection and contamination of the virus. Maintaining social distance and wearing masks might also trigger stress and anxiety. There was no significant difference in the IES-R and DASS21 scores between the people in the urban and rural areas. Hence, stress, PTS, anxiety, and depression showed similarities between the respondents living in urban areas as well as rural areas. However, the location settings do not make any difference in their rate of psychological consequences contrary to the results inferred by studies conducted by Zhang et al.

There were several limitations of the study. The study population was smaller. The study was conducted with an online survey. As the survey was anonymous, we did not have any control over who is participating. As the survey questionnaire was distributed online and we used snowball sampling, we could not detect the survey response rate. Hence, the result of this study should be interpreted with caution. Future studies can be conducted based on our study to find further insight.

**CONCLUSION**

A fair percentage of young adults in Odisha, India, is suffering from stress, depression, and anxiety in the COVID-19 pandemic. Females are more prone to psychological

### Table 1: Sex, residence, and employment wise IES-R and DASS-21 scores m mean (standard deviation)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Variable subgroup</th>
<th>IES-R score</th>
<th>Depression of DASS-21</th>
<th>Anxiety of DASS-21</th>
<th>Stress of DASS-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male (n=54)</td>
<td>16.81</td>
<td>17.33</td>
<td>19.00</td>
<td>18.48</td>
</tr>
<tr>
<td></td>
<td>Female (n=57)</td>
<td>17.54</td>
<td>21.47</td>
<td>22.70</td>
<td>20.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.51</td>
<td>2.49</td>
<td>2.3</td>
<td>0.95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.61</td>
<td>0.1*</td>
<td>0.02*</td>
<td>0.34</td>
</tr>
<tr>
<td>Employment</td>
<td>Employed (n=58)</td>
<td>18.70</td>
<td>19.55</td>
<td>22.69</td>
<td>20.41</td>
</tr>
<tr>
<td>status</td>
<td>Non-employed (n=53)</td>
<td>15.52</td>
<td>19.36</td>
<td>18.94</td>
<td>18.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.26</td>
<td>0.11</td>
<td>2.34</td>
<td>1.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.03*</td>
<td>0.9</td>
<td>0.02*</td>
<td>0.18</td>
</tr>
<tr>
<td>Location</td>
<td>Urban (n=83)</td>
<td>17.04</td>
<td>20.31</td>
<td>21.16</td>
<td>18.67</td>
</tr>
<tr>
<td></td>
<td>Rural (n=28)</td>
<td>17.60</td>
<td>16.93</td>
<td>20.14</td>
<td>21.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.34</td>
<td>1.74</td>
<td>0.54</td>
<td>1.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.74</td>
<td>0.08</td>
<td>0.59</td>
<td>0.19</td>
</tr>
</tbody>
</table>

IES-R: Impact of Event Scale-Revised; DASS-21: Depression, Anxiety, and Stress Scale, *Statistically significant P-value
disturbances than males. However, there was no difference between young adults of the rural and urban areas. Employed young adults have more depression and anxiety than unemployed. Stakeholders should consider accelerating mental health support at the grassroots level for effective management of the pandemic.

REFERENCES


How to cite this article: Panda G, Sathy M, Mondal H, Behera JK, Swarup SS, Priyadarshini B. A cross-sectional online survey to assess the impact of coronavirus disease 2019 pandemic on stress, anxiety, and depression level of young adults in Odisha, India. Natl J Physiol Pharm Pharmacol 2021;11(08):912-915

Source of Support: Nil, Conflicts of Interest: None declared.