

## Original Research Article

# A multi-dimensional study to estimate the behaviour of the general public during COVID-19 pandemic

Suryaprakash Reddy Chappidi<sup>1\*</sup>, Surya Teja K. V.<sup>2</sup>, Karthik D.<sup>2</sup>,  
Anil Kumar T.<sup>2</sup>, Ramya K.<sup>2</sup>, Madhavi G.<sup>2</sup>

<sup>1</sup>Department of Pharmaceutics, <sup>2</sup>Department of Pharmacy Practice, Annamacharya College of Pharmacy, New Boyanapalli, Rajampet, Annamaiah district, Andhra Pradesh, India

**Received:** 06 June 2023

**Revised:** 05 July 2023

**Accepted:** 06 July 2023

### \*Correspondence:

Dr. Suryaprakash Reddy Chappidi,  
E-mail: [suryaprakashreddyc@gmail.com](mailto:suryaprakashreddyc@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** The COVID-19 pandemic has had a significant impact on societies all over the world, leading to significant shifts in individual behavior as well as societal norms. The goal of this study was to provide an in-depth look at the many different aspects of public behavior during the COVID-19 pandemic.

**Methods:** Demographic information, COVID-19 knowledge and awareness, prevention adherence, vaccination attitudes, and psychological well-being as a whole were all gathered through the quantitative survey. The subjective meetings will give further bits of knowledge into the hidden inspirations, discernments, and difficulties faced by people in following general wellbeing rules.

**Results:** To find patterns and correlations among the various variables, statistical methods like regression analysis, factor analysis, and clustering algorithms were used in the data analysis. The subjective information was investigated specifically, separating key topics and accounts that shed light on the subtleties of the public's way of behaving during the pandemic.

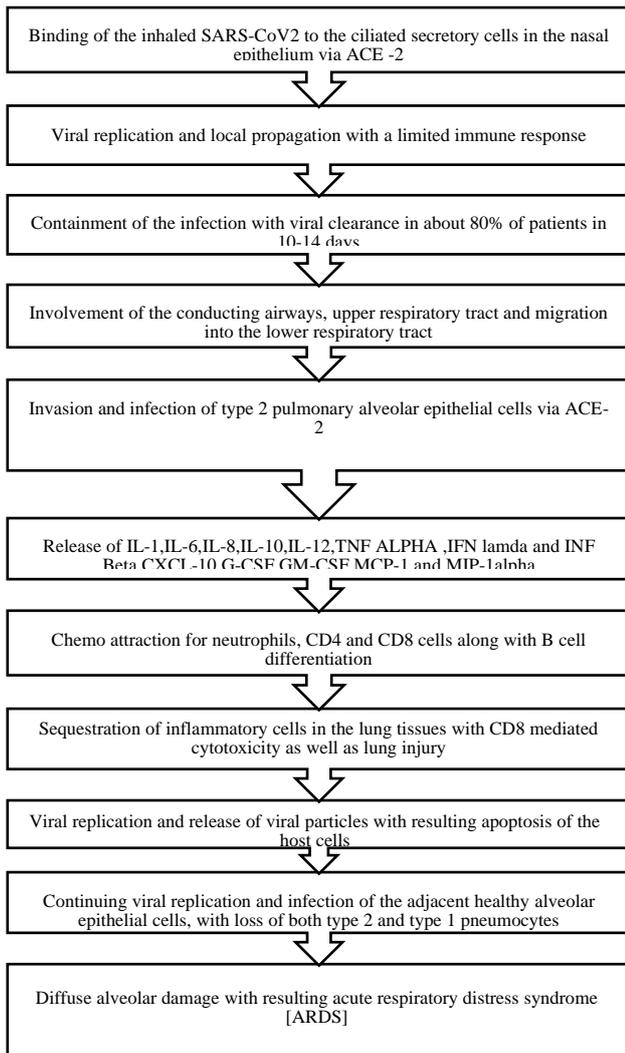
**Conclusions:** In the end, the goal of this multidimensional study was to help make decisions based on evidence and come up with plans to improve public health and lessen the impact of infectious disease outbreaks like COVID-19.

**Keywords:** COVID-19 Pandemic, General Public awareness, Vaccination Progress, Socioeconomic Status, Behavioral Analysis of people, psychological parameters

## INTRODUCTION

The novel coronavirus known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is responsible for the highly contagious and infectious disease known as coronavirus disease in 2019. The majority of coronaviruses are harmless. SARS-CoV-2 is the virus that causes COVID-19, which affects both your upper and lower respiratory systems and spreads from person to person. Infections can be mild or fatal. Midway through the 1960s, the first human coronaviruses were discovered. Due in part to the highly infectious nature of the virus and the lack of awareness and availability of

diagnostic kits in the early stages of the pandemic, the number of COVID-19 cases increased rapidly. Mortality for coronavirus has all the earmarks of being higher than that for flu, particularly occasional flu.<sup>1</sup> There are four types of coronaviruses alpha, beta, gamma, and delta, it is normal for a virus to evolve as it infects people, and this virus has done so. Several variants are currently circulating, some of which are proving to be both more contagious and more lethal than the original virus. During the pandemic, scientists have closely monitored variants such as omicron, lambda, and mu.<sup>2</sup> The most common symptoms were fever, cough, shortness of breath, fatigue, chills, and occasionally shaking. Other symptoms include headache, sore throat, and diarrhea.



**Figure 1: Pathophysiology of SARS-CoV-2.**<sup>3</sup>

A patient with self-limited myoclonic tremor who developed symptoms late after COVID-19 was thought to have an immune mediator origin linked to the SARS-CoV-2 infection. The most likely cause of persistent hiccups is damage to the afferent or efferent motor fibers of the phrenic or accessory nerve from multiple pulmonary infiltrates.<sup>4</sup>

Steps involved in distributing a new vaccine, including vaccine development, clinical trials, FDA authorization or approval, manufacturing, and distribution. In collaboration with the Indian Council of Medical Research (ICMR) and the National Institute of Virology (NIV), Bharat Biotech has successfully developed COVAXIN, India's first vaccine candidate for COVID-19. In NIV, Pune, the SARS-CoV-2 strain was isolated, and Bharat Biotech received it. The indigenous, inactivated vaccine was developed and produced in the Genome Valley, Hyderabad, India, at the Bharat Biotech BSL-3 (bio-safety level 3) high containment facility. After the company submitted preclinical study results demonstrating safety and immune response, the Drug Controller General of India (CDSCO) and the Ministry of

Health and Family Welfare granted permission to begin Phase I and II human clinical trials. In India, human clinical trials are expected to begin in July 2020.<sup>5</sup>

**Table 1: COVID-19 vaccination program in India.**<sup>6</sup>

<b>January 16, 2021</b>	Vaccination drive began for healthcare workers
<b>February 2, 2021</b>	Vaccination drive began for frontline workers
<b>March 1, 2021</b>	The vaccination drive began for beneficiaries aged above 60 years and those with co-morbidities in the 45-60 years age group
<b>April 1, 2021</b>	All beneficiaries aged above 45 years became eligible for COVID-19 vaccination
<b>May 1, 2021</b>	All beneficiaries aged above 18 years became eligible for COVID-19 vaccination
<b>October 21, 2021</b>	India reached the milestone of administering 100 crore COVID-19 vaccine doses
<b>January 3, 2022</b>	Beneficiaries in the age group of 15-18 years became eligible for COVID vaccination
<b>January 3, 2022</b>	India has also granted emergency use authorization (EUA) to three other vaccines by Moderna, Johnson and Johnson, and Zydus Cadila.
<b>January 10, 2022</b>	Administration of precautionary doses began for frontline workers and vulnerable people above the age of 60 years. To inoculate the country's huge population, the Drugs Controller General of India (DCGI) gave the green light to Oxford-AstraZeneca vaccine- Covishield (manufactured under license by Serum Institute of India) and Covaxin (India's indigenous vaccine developed locally by Bharat Biotech).
<b>October 12, 2022</b>	The Subject Expert Committee (SEC) of the drug regulator also recommended granting an emergency use authorization to Bharat Biotech's Covaxin for children aged between 2-18 years as well

In general, complementary and alternative medicine is defined as a group of diverse medical and healthcare symptoms, practices, and products that are not generally considered part of conventional medicine.<sup>7</sup> Physical activity and exercise have been shown to have positive effects across the lifespan. Increased levels of aerobic activity- exercise that significantly raises our heart rates- may be associated with greater reductions in depressive symptoms when it comes to managing depression symptoms.<sup>8</sup> It has been demonstrated that strength training can alleviate anxiety symptoms in people with and without anxiety disorders. Weight lifting, utilizing gym equipment, or family things, might assist us in lessening the adverse consequences of stress and tension. Self-esteem, improved concentration, reductions in depressive symptoms, and improvements in sleep are all linked to moderate-to-vigorous physical activity and exercise during the day for children and adolescents.<sup>9</sup> Emotional well-being incorporates our closeness to home, mental health, and social prosperity. It alters our

thinking, feelings, and behavior.<sup>10</sup> Additionally, it influences our stress management, interpersonal relationships, and decision-making. From childhood and adolescence through adulthood, mental health is important.<sup>11</sup> During COVID-19, the patients-maintained sustenance and exercise; rest is important for the mental and actual turn of events and, generally, well-being and prosperity.<sup>12</sup> Stress, anxiety, fear, sadness, and loneliness may occur during the COVID-19 pandemic. What's more, emotional wellness issues, including nervousness and discouragement, can deteriorate.<sup>13</sup> By showing a significant expansion in the quantity of US adults who report side effects of pressure, tension, sadness, and a sleeping disorder during the pandemic, compared to comparisons and overviews before the pandemic. Certain individuals have expanded their utilization of liquor or medications, feeling that this can assist them in adapting to their apprehensions about the pandemic. In fact, using these substances can make depression and anxiety worse.<sup>14</sup> In a pandemic like COVID-19, the significant changes to our daily lives caused by restrictions on our movements in support of efforts to contain and slow the virus's spread add to the fear of contracting the virus. It is essential that we take care of both our mental and physical health in the face of the new realities of working from home, temporary unemployment, homeschooling children, and a lack of physical contact with other members of our family, friends, and coworkers.<sup>15</sup> Major depressive disorder, also known as depression, is a serious medical condition that can have a negative impact on how you feel, think, and act. Thankfully, it can also be treated. Sadness and/or a loss of interest in previously enjoyable activities are symptoms of depression. It can prompt various profound and actual issues and can diminish your capacity to work at work and at home.<sup>16</sup> Changes in appetite- weight loss or gain unrelated to dieting, trouble sleeping or sleeping too much, loss of energy or increased fatigue, increase in purposeless physical activity or slowed movements or speech Feeling worthless or guilty, difficulty thinking, concentrating, or making decisions, and thoughts of death or suicide are all symptoms of depression. These symptoms can range from mild to severe.<sup>17</sup> The COVID-19 pandemic disrupts sleep for people of all ages who struggle with stress, anxiety, or depression. When they do fall asleep, their sleep tends to be light and includes more rapid eye movement sleep rather than as much deep sleep. This is possible on the grounds that our bodies are modified to answer unpleasant and possibly risky circumstances by awakening.<sup>18</sup> During an infectious disease outbreak, it has become increasingly difficult for governments and doctors to communicate with citizens; consequently, social networking sites are crucial in facilitating virtual connections between populations.<sup>19</sup>

## **METHODS**

The study aimed to investigate public behavior across multiple dimensions during the COVID-19 pandemic, to classify the general population according to their

demographics, utilizing the DASS (depression anxiety and stress scale) to assess the general population's levels of stress, anxiety, and depression during the COVID-19 pandemic. To assess the rest conduct changes during the lockdown.

### ***Study period***

The study was conducted for a Period of Six Months from November 2021 to April 2022.

### ***Source of data***

Data was collected from subjects through interviews and by providing questionnaire forms.

### ***Sample size***

400 subjects from every category who were placed under lockdown during the COVID-19 pandemic. Subjects between the ages of 18 and 60 were included in the study, as were those who were willing to sign a written informed consent form were included. Subjects who were uncooperative and unwilling were excluded from the study; those diagnosed with psychological disorders before lockdown and those with a history of sleep disorders were excluded.

### ***Method of collection of data***

Subjects from and around Government General Hospital were selected. Subjects satisfying Inclusion criteria were included in the study. Demographical details were collected in data collection form through personal interaction with subjects using depression anxiety and stress scale questionnaires and Pittsburgh sleep quality index questionnaires.

### ***Statistical analysis***

A Microsoft Excel spreadsheet contained all of the subjects' data. The mean and sample percentage, two descriptive statistics, were used to calculate the demographic information for each subject. The statistical significance of the relationship between demographic variables and stress, anxiety, and depression has been evaluated using the Pearson correlation method.

## **RESULTS**

The total sample size of the present study for six months was 400. Total number of subjects included in the study was 384. Sixteen subjects were unable to complete the questionnaires. So, they were excluded from the study.

### ***Gender-based distribution***

Out of 384 participants, 205 were females (53%) the remaining are males 179 (47%). the majority of the participants were females in the 384 sample size.

**Age group-based distribution**

Among the 384 participants, the majority were recorded in the age group between 31 and were 125 (33%); males were 55, and females were 70. Later it is followed by age the group between 21 and 30 (28%); males were 50 and females were 57. The remaining age groups were between 41 and 50 (21%) and 51 and 60 (18%).

**Educational status based distribution**

384 participants participated in the study, with the majority of participants being educated (29.4%), followed by the uneducated (70.6%).

**Table 2: Percentage distribution based on educational status.**

Educational status	No. of participants	Percentage
Uneducated	113	29.4
Educated	271	70.6
Total	384	100

**Table 3: Percentage distribution based on employment.**

Employment	No. of participants	Percentage
Employed	210	54.68
Unemployed	174	45.31
Total	384	100

**Employment-based distribution**

Among the 384 participants, the majority were recorded in the employment category of employed (55%). Later it was followed by the employment category of unemployed (45%).

**Marital status based distribution**

Among the 384 participants, the majority were recorded in marital status of married (75.26%). Later it was followed the by marital status of single (24.73%).

**Table 4: Percentage distribution based on marital status.**

Marital status	No. of participants	Percentage
Married	289	75.26
Single	95	24.73
Total	384	100

**Distribution of levels of depression among general public during pandemic**

We attempted to assess the levels of depression among general public by using DASS-21 questionnaire. Our study results show that participants aged 21-30 and 31-40 (31%) are highly depressed than participants with other age groups. Female participants (53%) are more depressed when compared with males (47%).

**Table 5: Distribution of levels of depression among general public.**

Variable	Category	n (%)	Normal	Mild	Moderate	Severe	Extremely severe	P value
Age (years)	21-30	31 (26)	2.61±7.44	11±7.51	15±8.75	25±10.88	36±10.6	
	31-40	31 (26)	1.95±7.43	11.8±7.71	16.33±8.56	23±8.25	37.5±8.29	
	41-50	30 (25)	2.34±6.2	10.83±5.58	17.2±9.47	23±8.25	35.5±11.29	
	51-60	27 (23)	2.7±7.2	11.33±7.27	17±6.66	23.66±9.72	36±10.6	
Gender	Male	56 (47)	2.5±7.1	11.2±6.9	15.9±8.5	24.6±9.8	36±13.6	<0.0001
	Female	63 (53)	2.1±7.1	11.2±8.4	15.9±8.6	24.6±10.1	36.6±11.9	
Education	uneducated	44 (37)	2.3±7.12	11.36±7.15	15.21±8.59	25.20±10.55	36.40±11.52	0.0008
	educated	75 (63)	2.58±6.95	11.10±5.03	17.40±8.25	22.75±10.33	36.66±11.91	
Income	No income	62 (52)	2.47±7.11	11.20±7.15	16.71±8.39	24.14±10.04	35.60±10.51	0.0002
	Income	57 (48)	2.29±7.12	11.26±6.97	15.30±8.59	24±10,05	38±10.89	
Employment	Employed	78 (65)	2.61±7.13	11.19±6.16	16±8.2	23.25±10.33	36.57±10.89	0.0001
	Unemployed	41 (35)	2.05±7.27	11.47±7.15	16.33±8.70	24,8±10.55	36±8.74	
Marital status	Married	84 (70)	2.27±7.39	11.14±7.09	16.57±8.92	23.16±10.33	36.5±8.79	0.0007
	Single	35 (30)	2.64±7.28	11.45±8.43	15.5±8.61	26±10.55	36±10.6	

Educated (63%) participants were more depressed than uneducated (37%) participants. participants with no-income (52%) were more depressed than participants with income (48%). Employees (65%) were more depressed than unemployed (35%) participants. Married (70%) participants were more depressed than participants whose marital status was single (30%) (Table 5).

**Distribution of level of anxiety among general public during pandemic**

We attempted to assess the level of Anxiety among general public by using DASS-21 questionnaire. Our study results show that participants aged 21-30 (31%) are highly depressed than participants with other age groups.

Female participants (51%) are more depressed when compared with males (49%). Educated (66%) participants were more depressed than uneducated (34%) participants. participants with no-income (55%) were more depressed

than participants with income (45%). Employees (61%) are more depressed than unemployed (39%) participants. Married (64%) participants were more depressed than participants whose marital status is single (36%).

**Table 6: Distribution of levels of anxiety among general public.**

Variables	Category	n (%)	Normal	Mild	Moderate	Severe	Extremely severe	P value
Age (years)	21-30	54 (31)	3.32±6.51	5.46±6.57	11.55±6.66	18±8.41	26±9.25	0.0019
	31-40	41 (24)	2.09±6.49	8.58±6.57	11.3±6.68	17.66±7.43	34±9.48	
	41-50	43 (25)	2.9±5.74	8.4±7.31	11.73±6.37	16±9.78	38±9.63	
	51-60	36 (20)	2.8±6.52	8.42±6.35	11.42±5.87	19±4.65	25±6.91	
Gender	Male	86 (49)	2.65±6.51	8.35±6.56	11.1±6.59	17.75±7.8	24.66±9.25	0.0014
	Female	88 (51)	2.39±6.5	8.31±6.54	11.93±6.65	17.4±7.43	30.66±9.49	
Education	uneducated	59 (34)	2.89±6.47	8.30±5.89	11.77±6.31	17.66±7.36	35.33±9.86	<0.0001
	educated	115 (66)	2.36±6.51	8.34±6.55	11.41±6.65	17.50±7.73	28±9.25	
Income	No income	96 (55)	2.76±6.51	8.25±6.58	11.64±6.59	17.83±7.73	29.81±9.49	<0.0001
	Income	78 (45)	2.34±6.49	8.42±6.51	11.37±6.65	17±7.25	28.50±9.25	
Employment	Employed	107 (61)	2.48±6.5	8.44±6.51	11.35±6.662	17±7.52	32.57±9.25	0.0026
	Unemployed	67 (39)	2.55±6.51	8.14±7.67	11.83±6.66	18.25±7.73	26.75±9.49	
Marital status	Married	122 (64)	2.42±6.47	8.39±6.51	11.4±6.62	18±7.43	30.66±9.25	<0.0001
	Single	52 (36)	2.86±6.51	8.18±6.56	11.8±6.67	17±7.81	27.66±9.49	

**Table 7: Distribution of level of stress among general public.**

Variables	Category	n (%)	Normal	Mild	Moderate	Severe	Extremely severe	P value
Age (years)	21-30	30 (27)	5.39±7.95	17±8.82	21.6±10.9	29±10.89	37±10.29	0.0004
	31-40	29 (26)	3.97±7.53	15.33±6.02	24±10.10	32±11.15	37.5±10.87	
	41-50	29 (26)	5.02±5.97	16.28±7.32	22±8.26	31.33±7.05	38±13.64	
	51-60	23 (21)	11±14.82	17±9.31	23±8.69	32±10.51	39±10.73	
Gender	Male	54 (48)	4.95±7.23	15.42±6.72	22±8.72	29±12.48	36±14.92	<0.0001
	Female	57 (52)	4.63±7.41	16.53±8.22	22±10.79	27.60±11.02	38±11.32	
Education	Educated	76 (68)	4.53±7.54	16.27±8.22	21.81±10.53	28.40±10.49	37.6±11.46	0.0019
	Uneducated	35 (32)	5.41±7.07	16.09±5.48	23±11.46	28±10.19	37.33±11.42	
Income	No income	61 (55)	5.21±7.67	16.4±8.3	2.18±10.72	27.66±10.66	37.6±11.55	0.0010
	Income	50 (45)	7.7	16.5	22	27	38	
Employment	Employed	70 (63)	5.06±7.66	15.83±6.08	22.66±10.85	31.33±11.51	37.66±10.61	0.0001
	Unemployed	41 (37)	4.46±7.67	16.6±8.3	21.8±10.72	27.2±10.66	37±11.55	
Marital status	Married	80 (72)	4.52±7.25	16.13±7.17	23±10.75	28.5±11.51	37.71±10.61	0.0001
	Single	31 (28)	5.78±7.68	16.28±8.59	21.55±10.72	29±10.66	37±10.29	

**Table 9: Division of participants into 3 sub scales based on number of participants affected during pandemic.**

	Depression	Anxiety	Stress
<b>Mean ± SD</b>	5.54±7.49	6.05±6.59	8.07±8.52
<b>Normal</b>	301	258	322
<b>Mild</b>	39	41	23
<b>Moderate</b>	24	61	16
<b>Severe</b>	10	7	12
<b>Extremely Severe</b>	10	17	11

**Distribution of stages of stress among general public during pandemic**

We attempted to assess the level of stress among general public by using DASS-21 questionnaire. Our study

results showed that participants aged 21-30 (27%) were highly stressed than participants with other age groups. Female participants (52%) were more stressed when compared with males (48%). Educated (68%) participants were more stressed than uneducated (32%) participants.

participants with no-income (55%) were more stressed than participants with income (45%). Employees (63%) were more stressed than unemployed (37%) participants. Married (72%) participants were more stressed than participants whose marital status is single (28%).

**Participants on three subscales of depression, anxiety and stress scale**

The mean scores of DASS-21 subscales were as follows: depression (5.54±7.49), anxiety (6.05±6.59) and stress (8.07±8.52). On the DASS-21 scale, the majority of the participants were normal. Very few of the respondents are experiencing symptoms of severe or extreme depression, anxiety and stress as shown in Table 8.

**Distribution of healthy and poor quality of sleep among general public during public**

We attempted to assess the poor quality of sleep among general public by using Pittsburgh scale. Our study results shows that participants aged 31-40 and 41-50 (26%) experienced unhealthy sleep, compared with other age groups. Female (52%) participants experienced unhealthy sleep compared with males (48%). Uneducated (73%) participants experienced poor sleep than educated (27%). Participants with income (52%) experienced unhealthy sleep than participants with no-income (48%). Employees (52%) experienced unhealthy sleep than unemployed (48%) participants. Married (78%) participants experienced unhealthy sleep than participants whose marital status was single (22%).

**Table 9: Percentage distribution of poor quality of sleep among general public.**

Variables	Category	Healthy sleep	Unhealthy sleep	Percentage
Age (years)	21-30	2.53±3.00	6.78±3.01	23
	31-40	2.80±3.03	7.69±3.03	26
	41-50	3.11±3.14	7.58±3.02	26
	51-60	2.56±2.99	7.24±3.00	25
Gender	Male	2.89±3.00	7.01±3.02	48
	Female	2.63±3.01	7.63±3.03	52
Education	uneducated	2.59±2.98	8.25±3.04	23
	educated	2.80±3.00	6.86±3.01	18
Income	No income	2.53±3.00	7.75±3.03	19
	income	2.95±3.00	6.92±3.01	23
Employment	Employed	3.05±3.01	7.51±3.02	35
	Unemployed	2.45±3.00	6.98±3.01	32
Marital status	Married	2.84±3.01	7.12±3.02	30
	Single	2.41±3.00	7.8±3.03	32

**DISCUSSION**

400 participants enrolled in this study, but 16 of them were unable to complete the questionnaire. The study had 384 participants altogether. Females were found to be more likely to experience stress, anxiety, and depression, according to our research. Wang et al, who compared our review results, state, female sexual orientations are linked to higher levels of anxiety, depression, and pressure.<sup>20</sup> Our outcomes showed that members who were utilized had higher levels of discouragement (66.7%) and nervousness (59%), respectively than the remainder of the gathering. where high work risk was related to expanded uneasiness among employed people, and occupation likewise played a critical role. by Beesley et al’s research, Brazil had the worst pandemic outcomes and response during the study period (February 2020 to roughly July 2021), particularly in terms of health care mobilization, clinical outcomes, the appropriateness of governmental orders, and adherence to governmental orders.<sup>21</sup> In general, women were more likely to experience anxiety and depression. Our study findings

demonstrate that participants with raised degrees of despondency, nervousness, and stress have more unfortunate quality rest, and rest disturbance is on a very basic level associated with developments in strain, disquiet, and misery in regards to the sharing pack. According to Anna Petherick et al’s study, the absence of differences between genders and age groups in change in adherence is also consistent with arguments in the literature.<sup>22</sup>

There are few limitations of the study. The study did not include any subjects who were unwilling or uncooperative. Subjects who were determined to have mental issues before lockdown, subjects with a history of altering issues.

**CONCLUSION**

During the COVID-19 lockdown, our study revealed that the study population in Kadapa was most affected by anxiety, stress, and depression.

According to the findings of our survey, respondents who were female and lacked education reported experiencing stress, anxiety, and depression. Hitched and utilized respondents experienced tension and stress. In addition, respondents who experienced stress, depression, and anxiety reported poor sleep quality. The connection between mental and physical health is remarkable. The most important aspect of health was psychological health, which had an impact on the respondent's physical health.

## ACKNOWLEDGEMENTS

I would like to thank Dr. Surya Teja K. V., Karthik D., Anil Kumar T., Ramya K., Madhavi G. for their effort in making the data and researching the tool.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

- Rahman S, Montero MTV, Rowe K, Kirton R, Kunik F Jr. Epidemiology, pathogenesis, clinical presentations, diagnosis and treatment of COVID-19: a review of current evidence. *Expert Rev Clin Pharmacol.* 2021;14(5):601-21.
- Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Díaz ZM, Wyssmann BM, et al. COVID-19 in health-care workers: a living systematic review and meta-analysis of prevalence, risk factors, clinical characteristics, and outcomes. *Am J Epidemiol.* 2021;190(1):161-75.
- Parasher A. COVID-19: current understanding of its pathophysiology, clinical presentation, and treatment. *Postgrad Med J.* 2021;97(1147):312-20.
- Portela-Sánchez S, Sánchez-Soblechero A, Melgarejo Ojalora PJ, Rodríguez Lopez A, Velilla Alonso G, Palacios-Mendoza MA, et al. Neurological complications of COVID-19 in hospitalized patients: The registry of a neurology department in the first wave of the pandemic. *Eur J Neurol.* 2021;28(10):3339-47.
- India's 1st COVID-19 Vaccine - COVAXIN™, Developed by Bharat Biotech gets DCGI approval for Phase I and II Human Clinical Trials [Bharatbiotech.com.](https://www.bharatbiotech.com/images/press/Indias-1st-COVID-19-Vaccine-COVAXIN-Developed-by-Bharat-Biotech-gets-DCGI-approval-for-Phase-I-and-II-Human-Clinical-Trials.pdf) 2022. Available at: <https://www.bharatbiotech.com/images/press/Indias-1st-COVID-19-Vaccine-COVAXIN-Developed-by-Bharat-Biotech-gets-DCGI-approval-for-Phase-I-and-II-Human-Clinical-Trials.pdf>. Accessed on 15 April 2022.
- Timeline of India's COVID vaccination drive as it completes one year today. *ANI News.* 2022. Available at: <https://www.aninews.in/news-national/general-news/timeline-of-indias-covid-vaccination-drive-as-it-completes-one-year-today20220116151242/>. Accessed on 16 April 2022.
- National center for complementary and alternative medicine. What are complementary and alternative medicine? Available at: <https://www.aamc.org/research/adhocgp/pdfs/nccam.pdf>. Accessed on 16 April 2022.
- COVID-19: How to manage your mental health during the pandemic. *Mayo Clinic.* 2022. Available at: <https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/mental-health-covid-19/art-20482731>. Accessed on 14 April 2022.
- Mental health and COVID-19. *Who.int.* 2022. Available at: <https://www.who.int/teams/mental-health-and-substance-use/mental-health-and-covid-19>. Accessed on 15 April 2022.
- Pedrosa AL, Bitencourt L, Fróes AC, Cazumbá ML, Campos RG, de Brito SB, et al. Emotional, behavioral, and psychological impact of the COVID-19 pandemic. *Front Psychol.* 2020;11:566212.
- Definition of sleep. *Medicinenet.com.* 2022 Available at: <https://www.medicinenet.com/sleep/definition.html>. Accessed on 9 April 2022.
- External Factors that Influence Sleep. *Healthy Sleep.* [Healthysleep.med.harvard.edu.](https://healthysleep.med.harvard.edu/healthy/science/how/external-factors-sleep) 2022. Available at: <https://healthysleep.med.harvard.edu/healthy/science/how/external-factors-sleep>. Accessed on 9 April 2022.
- Jones R, Mougouei D, Evans SL. Understanding the emotional response to COVID-19 information in news and social media: a mental health perspective. *Hum Behav Emerg Technol.* 2021;3(5):832-42.
- What is depression. *psychiatry.org.* 2022. Available at: <https://psychiatry.org/patients-families/depression/what-is-depression>. Accessed on 12 April 2022.
- Anxiety Disorders: Types, Causes, Symptoms & Treatments. *Cleveland Clinic.* 2022. Available at: <https://my.clevelandclinic.org/health/diseases/9536-anxiety-disorders>. Accessed on 12 April 2022.
- Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health.* 2020;17(5):1729.
- Daly M, Robinson E. Depression and anxiety during COVID-19. *Lancet.* 2022;399(10324):518.
- Tee ML, Tee CA, Anlacan JP, Aligam KJ, Reyes PW, Kuruchittham V, et al. Psychological impact of COVID-19 pandemic in the Philippines. *J Affect Disord.* 2020;277:379-91.
- Bernardo TM, Rajic A, Young I, Robiadek K, Pham MT, Funk JA. Scoping review on search queries and social media for disease surveillance: a chronology of innovation. *J Med Internet Res.* 2013;15(7):e2740.
- Talae N, Varahram M, Jamaati H, Salimi A, Attarchi M, Kazempour Dizaji M, et al. Stress and burnout in health care workers during COVID-19

pandemic: validation of a questionnaire. *J Public Health.* 2020:1-6.

21. Beesley LJ, Patelli P, Kaufeld K, Schwenk J, Martinez KM, Pitts T, et al. Multi-dimensional resilience: A quantitative exploration of disease outcomes and economic, political, and social resilience to the COVID-19 pandemic in six countries. *PLoS One.* 2023;18(1):e0279894.
22. Petherick A, Goldszmidt R, Andrade EB, Furst R, Hale T, Pott A, et al. A worldwide assessment of

changes in adherence to COVID-19 protective behaviours and hypothesized pandemic fatigue. *Nat Hum Behav.* 2021;5(9):1145-60.

**Cite this article as:** Chappidi SR, Teja SKV, Karthik D, Kumar AT, Ramya K, Madhavi G. A multi-dimensional study to estimate the behaviour of the general public during COVID-19 pandemic. *Int J Res Med Sci* 2023;11:2927-34.