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EVALUATION OF SYMPTOMS ALONG WITH DEPRESSION, ANXIETY AND STRESS LEVELS OF SARS-COV-2 POSITIVE PATIENTS DURING THE SECOND WAVE IN THE CITY OF INDORE, CENTRAL INDIA – A CROSS SECTIONAL STUDY

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ABSTRACT

INTRODUCTION. The consequences of the second wave hitting India have drastically laid a huge impact on the mental state of patients. The second wave had proven to be far more dangerous and hence the psychological evaluation needed to be conducted to know the scenario of patients suffering from SARS-CoV-2.

OBJECTIVE. This study was undertaken to evaluate the symptoms of SARS-CoV-2 patients along with the existing depression, anxiety and stress levels amongst them.

MATERIAL AND METHODS. An observational, cross-sectional questionnaire-based survey was conducted among 351 patients infected with SARS-CoV-2 during the second wave in Indore, Central India. The questionnaire consisted of questions pertaining to socio-demographic characteristics, clinical signs and symptoms. Evaluation of depression, anxiety and stress levels were done by use of 21 item Depression, Anxiety, Stress Scale (DASS-21).

RESULTS. The most common symptom amongst patients was cough (42.2%) followed by fever (40.2%). Sixty-nine (19.6%) patients were asymptomatic. Depression score was found to have significant, positive weak correlation with age (ρ-0.124, p-0.020, p value <.05). No significant difference was observed between the depression, anxiety and stress score of males and females. Based on the scores assigned to the responses, patients who tested positive were belonging to normal category with no diagnosed depression, anxiety or stress.

CONCLUSION. The present study showed fever, cough, headache, weakness, and chest pain as the common sign and symptoms of COVID-19 during the second wave. There was a prevalence of low levels of anxiety, stress and depression amongst patients in Radha Saomi Covid Care Centre, Indore during the second wave.

Keywords: *COVID-19, DASS-21, SARS-CoV-2, depression*

INTRODUCTION

Like many other countries around the globe, India has also experienced the massive tide of COVID-19 cases and deaths (1). In India there has been substantial spread of SARS-CoV-2 infection over multiple waves of the ongoing pandemic (2). The first case of SARS-CoV-2 was reported in Kerala, India on January 27, 2020 (3). One case led to many and thus gave rise to the first wave in early March 2020 leading to death of many patients and also affecting general and mental health of the survivors (4). In April, 2021 struck the second wave of COVID-19 in India. During April-May 2021, sudden upsurge of confirmed cases/day in India was seen. Lineage analysis showed the emergence of new SARS-CoV-2 variants, i.e., B.1.617.1 and B.1.617.2, which was considered to be responsible for the same (5). During the second wave, severe consequences were experienced in the form of spiralling cases, insufficient and delayed supply of essential treatment and increased death rate especially amongst young adults (6). Uncurbed use of steroids for treatment of COVID-19 and immunosuppression by the virus led to the emergence of opportunistic fungal infections including aspergillosis, invasive candidiasis, and mucormycosis ("black fungus") (6). The typical clinical symptoms of patients who suffered from the novel viral pneumonia were fever, cough, and myalgia or fatigue with abnormal chest CT, and the less common symptoms were sputum production, headache, hemoptysis, and diarrhea (7, 8).

With the advent of the second wave, many uncertainties arose in people's minds and lives. To limit the spread, governments globally reinforced

strict measures of quarantine or self-isolation, these measures were essential for public safety but had caused people to experience significant psychological distress in the form of anxiety, irritability, depression, insomnia and much more. It was necessary to record a survey of people's psychological health who were undergoing treatment for SARS-CoV-2.

A similar study was conducted in Indore (Central India) on health care professionals for the assessment of knowledge and anxiety levels due to COVID-19 pandemic among health care professionals using DASS-21 scale. Participants in that particular study reported good knowledge regarding COVID-19 pandemic. Anxiety scores among the participants were found to be low (9).

The most common psychiatric diagnosis after COVID-19 diagnosis is an anxiety disorder, followed by mood disorders (10). A Chinese study found the prevalence of anxiety and depression in patients to be 18.57% and 13.36% respectively (11). Even after recovery from this infectious disease, the psychopathological symptoms might prevail. Self-reported anxiety and depressive symptoms were found to be around 40% and 30% respectively in patients a month post treatment (12). A review of psychological symptoms in recovery from this infection also revealed similar distress related to survival, fear that they might infect others, related stigma and a general psychological distress (13). Hence, this study was undertaken to analyse the clinical signs and symptoms and to assess the depression, anxiety and stress levels amongst the patients infected with SARS-CoV-2 virus during the second wave.

MATERIAL AND METHODS

Study design, study population, sample size, sampling technique. An observational, cross-sectional study using convenient sampling technique was conducted amongst 351 patients who were tested positive for SARS-CoV-2 and were admitted to Radha Saomi Covid Care Centre during the second wave in Indore, Central India after obtaining approval from the institutional ethical committee of Index Institute of Dental Sciences, Indore. The study was carried out in May-June 2021 at Radha Saomi Covid Care Centre, Indore, after seeking the permission from the nodal officer in-charge. Written informed consent was taken from all the study participants, anonymity was maintained to establish privacy and confidentiality of the information collected from the participants.

Method for data collection. The information was gathered using structured questionnaire comprising variables of three sections. The first section was composed of questions related to socio-demographic characteristics such as age, gender, name, contact details. Each variable and its comparison has been discussed further. In the second section, the main complaints, presenting signs and symptoms, vaccination status and treatment administered were inquired. The third section comprised questions for the assessment of psychological status using well established 21-item Depression, Anxiety and Stress Scale (DASS-21) (7, 8).

Each of the three DASS-21 scales contained 7 items, divided into subscales with similar content. The depression scale assessed dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The anxiety scale assessed autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale was sensitive to levels of chronic nonspecific arousal. It assessed difficulty in relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Seven items of each component were scored on 4-point scale ranging from 0 (did not apply to me at all), to 3 (applied to me very much, or most of the time). Scores for depression, anxiety and stress items were summed up and multiplied by two. The cut-off points were 0-14 (normal), 15-18 (mild), 19-25 (moderate), 26-33 (high), and > 34 (very high). Cut-off scores of 60 and 21 are used for the total DASS score and for the depression subscale respectively.

Based on the score obtained, the extent of the given emotion was classified as normal, mild, moderate, severe and extremely severe. Scores for depression, anxiety and stress were calculated by summing the scores for the relevant items (7).

Statistical analysis. The data was entered into the excel sheet. The data was analysed using SPSS (Statistical Package for Social Sciences) 20.0 version, IBM, Chicago. The data was analysed for probability distribution using Kolmogorov-Smirnov test which indicated that data was not normally distributed so non-parametric tests of significance were applied (p<.05). The descriptive statistics was performed. Inter-group comparisons were done using Man-Whitney U test. Correlation between different variable was established using Spearman's Correlation coefficient. P value <.05 was considered statistically significant.

RESULTS

The data was firstly checked for probability distribution using Kolmogorov-Smirnov test which has a p<.05, indicating that the data was not normally distributed. Thus non-parametric tests of significance were applied. The study included 351 patients. The mean age of the participants was 40.42±14.72 years

[Median 38.0 years, inter-quartile range (IQ) 29.0-50.0 years]. There were 240 males (68.4%) and 111 females (31.6%). The age of male and female patients was non-significantly different as p value 0.80 [Median (IQ) age 39.0 (30.0-50.0) years vs. 35.0 (29.0-49.0) years, p value >.05]. Vaccination was done in 8 patients (2.3%). Sixty-one (17.4%) patients were part of the mass sampling. The most common symptom was cough (42.2%) followed by fever (40.2%). Sixty-nine (19.6%) patients were asymptomatic (Table I).

The response to DASS-21 questionnaire revealed that majority (68.9%) of patients did not seem to experience lack of any positive feeling at all. About 45.0% of patients were not finding it difficult to work up initiative to do things. However, most of patients (59.0%) denied feeling downhearted and blue and 43.0% were not enthusiastic about anything to some degree. The feeling of having nothing to look forward

Table I. Description of various symptoms present in patients (n=??).

Symptom	Number	Percentage
Fever	141	40.2%
Cough	148	42.2%
Cold	98	27.9%
Weakness	61	17.4%
Headache	42	12.0%
Throat infection	28	8.0%
Chest pain	38	10.8%
Loss of apetite	20	5.7%
Body ache	35	10.0%

Table II. Response of patients to various questions related to depression in the questionnaire.

Depression			
Question	Response	Number	Percentage
I couldn't seem to experience any positive feeling at all.	Did not apply to me at all	242	68.9
	Applied to me to some degree, or some of the time	104	29.6
	Applied to me to a considerable degree or a good part of time	5	1.4
	Applied to me very much or most of the time	0	0
I found it difficult to work up the initiative to do things.	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	153	43.6
	Applied to me to a considerable degree or a good part of time	40	11.4
	Applied to me very much or most of the time	0	0
I felt that I have nothing to look forward to.	Did not apply to me at all	290	82.6
	Applied to me to some degree, or some of the time	55	15.7
	Applied to me to a considerable degree or a good part of time	6	1.7
	Applied to me very much or most of the time	0	0
I felt down hearted and blue.	Did not apply to me at all	207	59.0
	Applied to me to some degree, or some of the time	124	35.3
	Applied to me to a considerable degree or a good part of time	20	5.7
	Applied to me very much or most of the time	0	0
I was unable to become enthusiastic about anything.	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	153	43.6
	Applied to me to a considerable degree or a good part of time	40	11.4
	Applied to me very much or most of the time	0	0
I felt I wasn't worth much as a person.	Did not apply to me at all	206	58.7
	Applied to me to some degree, or some of the time	123	35.0
	Applied to me to a considerable degree or a good part of time	22	6.3
	Applied to me very much or most of the time	0	0
I felt that life was meaningless.	Did not apply to me at all	246	70.1
	Applied to me to some degree, or some of the time	100	28.5
	Applied to me to a considerable degree or a good part of time	5	1.4
	Applied to me very much or most of the time	0	0

to was not prevalent. The 58.7% still realise their worth as a person. Seventy percent of patients still found life to be meaningful (Table II).

Response to the questions pertaining to anxiety revealed that dryness of my mouth was experienced by very few patients, only 2.0% experienced it to a considerable degree. More than half (53.0%) of patients did not experience breathing difficulty. Trembling was experienced to some degree by 43.9% of patients and to a considerable degree by 11.1% of patients. The majority of the patients were not worried about the situations in which they may panic or may make a fool of themselves. Sixty percent of patients had never panicked during or after the COVID-19

infection. A greater proportion of patients admitted that they were aware of the action of their heart even in the absence of physical exertion to some (43.9%) or a considerable degree (11.1%). Similar was the response to being scared for no good reason (Table III).

The response to questions corresponding to stress revealed that the majority (60.4%) of the patients found it hard to wind down to some degree. Nearly, 56.0% of patients had a tendency to overreact to the situation to some degree and they feel that they are using a lot of nervous energy. A major portion (70.1%) of the patients reported that they do not get agitated. More than half (55.0%) of the patients found it difficult to relax to some (44.2%) or considerable (10.8%) degree. The

Table III. Response of patients to various questions related to anxiety in the questionnaire.

Anxiety			
Question	Response	Number	Percentage
I was aware of dryness of my mouth.	Did not apply to me at all	256	72.9
	Applied to me to some degree, or some of the time	88	25.1
	Applied to me to a considerable degree or a good part of time	7	2.0
	Applied to me very much or most of the time	0	0
I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).	Did not apply to me at all	189	53.8
	Applied to me to some degree, or some of the time	134	38.2
	Applied to me to a considerable degree or a good part of time	28	8.0
	Applied to me very much or most of the time	0	0
I experienced trembling (e.g., in the hands).	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	154	43.9
	Applied to me to a considerable degree or a good part of time	39	11.1
	Applied to me very much or most of the time	0	0
I was worried about situations in which I might panic and make a fool of myself.	Did not apply to me at all	290	82.6
	Applied to me to some degree, or some of the time	54	15.4
	Applied to me to a considerable degree or a good part of time	6	1.7
	Applied to me very much or most of the time	1	.3
I felt I was close to panic.	Did not apply to me at all	211	60.1
	Applied to me to some degree, or some of the time	126	35.9
	Applied to me to a considerable degree or a good part of time	14	4.0
	Applied to me very much or most of the time	0	0
I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	154	43.9
	Applied to me to a considerable degree or a good part of time	39	11.1
	Applied to me very much or most of the time	0	0
I felt scared without any good reason.	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	154	43.9
	Applied to me to a considerable degree or a good part of time	39	11.1
	Applied to me very much or most of the time	0	0

Table IV. Response of patients to various questions related to stress in the questionnaire.

	Stress		
Question	Response	Number	Percentage
I found it hard to wind down.	Did not apply to me at all	120	34.2
	Applied to me to some degree, or some of the time	212	60.4
	Applied to me to a considerable degree or a good part of time	14	4.0
	Applied to me very much or most of the time	5	1.4
I tended to over-react to situations.	Did not apply to me at all	109	31.1
	Applied to me to some degree, or some of the time	197	56.1
	Applied to me to a considerable degree or a good part of time	44	12.5
	Applied to me very much or most of the time	1	0.3
I felt that I was using a lot of nervous energy.	Did not apply to me at all	109	31.1
	Applied to me to some degree, or some of the time	197	56.1
	Applied to me to a considerable degree or a good part of time	44	12.5
	Applied to me very much or most of the time	1	0.3
I found myself getting agitated.	Did not apply to me at all	246	70.1
	Applied to me to some degree, or some of the time	100	28.5
	Applied to me to a considerable degree or a good part of time	5	1.4
	Applied to me very much or most of the time	0	0
I found it difficult to relax.	Did not apply to me at all	158	45.0
	Applied to me to some degree, or some of the time	155	44.2
	Applied to me to a considerable degree or a good part of time	38	10.8
	Applied to me very much or most of the time	0	0
I was intolerant of anything that kept me from getting on with what I was doing.	Did not apply to me at all	206	58.7
	Applied to me to some degree, or some of the time	125	35.6
	Applied to me to a considerable degree or a good part of time	20	5.7
	Applied to me very much or most of the time	0	0
I felt that I was rather touchy.	Did not apply to me at all	204	58.1
	Applied to me to some degree, or some of the time	125	35.6
	Applied to me to a considerable degree or a good part of time	22	6.3
	Applied to me very much or most of the time	0	0

intolerance to anything keeping the patients away from getting on what they were doing was not experienced by 58.7% of patients. Nearly 58% of patients did not feel that they were touchy (Table IV).

The median (IQ) depression score [4.0 (2.0-5.0)] was greater than the median anxiety [3.0 (2.0-4.0)] and stress score [3.0 (2.0-5.0)]. Based on the scores assigned to the responses, the COVID-19 positive patients were belonging to the normal category with no diagnosed depression, anxiety or stress (Table V). By analysing the correlation between depression, anxiety and stress score with other variables such as age and number of presenting signs and symptoms, it was found that only depression score was having significant, positive weak correlation with age as Spearman's coefficient is 0.124 and p-value is 0.020 (p-value <.05, significant), for correlation between anxiety score and age p-value

Table V. DASS-21 score of patients.

	Median	Inter-quartile range
Depression	4.0	2.0-5.0
Anxiety	3.0	2.0-4.0
Stress	3.0	2.0-5.0
Total	11.0	7.0-14.0

is 0.556 (>.05 non significant) and between stress and age p-value is 0.393 (>.05 non-significant) (Table VI).

On comparing the genders, no significant difference was observed between the depression (p=0.71), anxiety (p=0.60) and stress (p=0.90) scores of males and females (Table VII) (p>.05 i. e. non-significant). Ultimately, the DASS score p-value was 0.98 which is considered to be non-significant.

Table VI. Correlation between DASS and different variable.

	Spearman's Correlation coefficient	P value <.05 (Significant) >.05 (Non-significant)
Depression score & age	0.124	0.020
Anxiety score & age	0.032	0.556
Stress score & age	0.046	0.393
DAS score & age	0.075	0.158
DAS score & number of symptoms	-0.016	0.841

Table VII. Comparison of different parameters between males and females.

	Median (Inter-quartile range)		P value∞ <.05 (Significant) >.05 (Non-significant)
	Male	Female	
Depression	4.0 (2.0-5.0)	4.0 (2.0-6.0)	0.080
Anxiety	3.0 (2.0-4.0)	3.0 (2.0-5.0)	0.718
Stress	3.0 (2.0-5.0)	3.0 (2.0-6.0)	0.606
DAS score	11.0 (7.0-14.0)	10.0 (5.0-15.0)	0.986

∞Man-whitney U test

DISCUSSION

In the present study, an effort has been made to recognize the most common presenting signs and symptoms of SARS-CoV-2 with the new variant in India. The study also focused on the determination of depression, anxiety and stress among the infected patients. The study utilized a self-administered pre-validated questionnaire for the assessment of Depression, Anxiety and Stress (8). The self-administered questionnaire is one of the most feasible methods to gather information from a large population (14).

The median (IQ) age of patients was 38.0 (29.0-50.0) years. Even in other parts of the world the mean age of the patients was almost similar (35.33±14.90 years). It is mostly because this is the most productive age group and people had to go out for office or business and thus were primarily infected. In the present study, the male preponderance (68.4%) was observed. Similar findings were reported by Ali R et al. (2021) (15). They also found that males (60.12%) were more commonly affected than females (39.88%). The reason for males being more commonly affected was their working status. In India, most females are still playing the role of homemakers, whereas males earn money (16), which compelled them to get out of the house, coming in contact with many people and thus exposing them to the virus. WHO explained droplet infection as the most important mode of transmission of COVID-19 virus, droplet transmission occurs when a person comes in close contact (within 1 meter) with someone who has

respiratory symptoms (e.g., coughing or sneezing) and is therefore at risk of having his/her mucosae (mouth and nose) or conjunctiva (eyes) exposed to potentially infective respiratory droplets (17).

The study revealed the common presenting signs and symptoms to be fever (40.2%), cough (42.2%), cold (27.9%), weakness (17.4%), headache (12.0%), chest pain (10.8%), body ache (10.0%), throat infection (8.0%) and loss of appetite. Iftimie S et al. (2021) also reported fever, dyspnea, pneumonia, and cough as the most frequent signs and symptoms during both waves (18). In the present study, 69 (19.6%) of patients were asymptomatic. Ali R et al., 2021 also reported 19.0% patients to be asymptomatic (15).

In the present study, the median DASS-21 scale score of the patients indicated that the patients were normal and had no significant depression, anxiety or stress. However, Mazza MG et al. (2020) reported high rates of PTSD, depression, anxiety, insomnia, and obsessive-compulsive symptomatology among COVID-19 patients in Milan (19). Dorman-Ilan S et al. (2020) reported high anxiety levels among patients and their adult relatives in Israel (20). Htun YM et al. (2021) also reported a 40.0% prevalence rate of depressive symptoms amongst patients with COVID-19 in a treatment centre in Myanmar. Ezzelregal HG et al. (2021) also reported a high prevalence of psychiatric sequelae among COVID-19 survivors in Egypt (21). The low prevalence of depression, anxiety and stress amongst COVID-19 patients in the present study can be attributed to the regular practice of yoga and meditation by the patients at the health centreas

a part of their therapy. Jerrin RJ et al. (2021) showed a significant reduction in anxiety and depression level among COVID-19 patients on implementing yoga and naturopathic interventions (22). Ransing R (2020) also believed that yoga can be an effective, evidence-based preventive or therapeutic supplementary or alternative intervention for COVID-19 related mental health issues (23).

Age and gender were not found to have a significant correlation with depression, anxiety and stress. Both the men and women of all the age groups had similar experiences in the treatment center and thus had almost similar depression, anxiety and stress.

The results from various studies provide evidence that the DASS-21 is suitable for use as a screening tool for symptoms of common mental health problems, especially depression and anxiety. The studies also extend knowledge on the reliability and convergent validity of the DASS-21 (24).

CONCLUSIONS

The present study showed fever, cough, headache, weakness, and chest pain as the common sign and symptoms of SARS-CoV-2 during the second wave. There was a prevalence of low levels of anxiety, stress and depression amongst the patients in Radha Saomi Covid Care Centre, Indore during the second wave. Adequate screening, early diagnosis and timely management of these symptoms may have reduced the burden of these symptoms and their impact on COVID-19. Sensitization of clinicians towards this possibility and the need for expert psychiatry care for these patients have proved beneficial in reducing these symptoms.

Limitations.

The present study was conducted only in a single COVID-19 care centre in a city in Central India. Yoga was practised in this particular centre which might have been an aid to reduce the level of depression. Hence, a study oriented to multiple centres across various cities can be conducted.

Also, the limitation of this study was that it was a unicentric study that covered a relatively small geographical area. The factors such as socioeconomic status, locality (rural/urban), and history of previous exposure to the SARS-CoV-2 virus should also be analyzed. It is important to deal with the mental health of both infected patients as well as a healthy person because distress mode may lead to a very poor prognosis.

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