

Psychological Impact during the Late Phase of Covid-19 Pandemic among the Hospitalised Patients and General Public in Andhra Pradesh - A Cross-Sectional Comparative Study

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ABSTRACT

BACKGROUND

Coronavirus disease 2019 (Covid-19) is a novel coronavirus, which became a pandemic within few days. Being a novel virus, the disease pathophysiology and psychological impact are not completely known. Studies conducted till now concentrated on the initial phases of the pandemic. Our study tries to understand the psychological impact during the late phase of the pandemic.

METHODS

This is a cross sectional study involving Covid-19 hospitalised patients and the general public. Sociodemographic details were collected, and subjects were administered for depression, anxiety, and stress scale (DASS). A total of 301 participants were included. Data was analysed using R language. The scores from both the groups were compared to obtain the results.

RESULTS

Among the Covid-19 patients, almost 90 % have reported normal levels in depression and stress and 67 % in anxiety with mean values of 2.71, 5.91 and 4.74 respectively. Among the general public, more than 80 % have reported normal levels in depression, anxiety, and stress with mean scores of 5.58, 3.62 and 7.32 respectively. On comparing the raw scores of the two groups, significant differences in depression ($P = 0.000$) anxiety ($P = 0.004$) and stress ($P = 0.004$) were noted.

CONCLUSIONS

Psychological impact during late phase of Covid-19 pandemic appears to be mild among both hospitalised patients and general public. Future studies should focus on long term follow up and should also include severe affected cases.

KEYWORDS

Covid-19, Mental Disorders, Pandemic

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BACKGROUND

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or coronavirus disease 2019 is the name assigned to the novel strain of coronavirus which emerged first in the Wuhan city of China.¹ Initially China reported few cluster of pneumonia cases, which rapidly escalated and started spreading to other countries.² World Health Organisation (WHO) by 11th march 2020, declared the infection as pandemic.³ The first case in India was reported in Thrissur district of Kerala on 30th January 2020 and by 28th March cases increased to 1000 throughout India.⁴

The Central Government sprang into action to take necessary steps to reduce the impact of pandemic. Accordingly, state governments imposed strict lockdown measures and notified private and government hospitals as Covid-19 hospitals.⁵ The concept of lockdown is new to the public and response was varied, but most of the people adhered to the restrictions and followed the necessary precautions.

In the initial days due to the uncertainty of the disease process, symptoms and outcome, there were reports of increase in psychiatric morbidity.^{6,7} As the pandemic progressed to involve more cases, we started understanding the disease patho-physiology better. Over a period of time, we also started understanding the psychological impact of the disease.

As per our knowledge much of the studies on psychological impact were conducted either during the initial or peak phases of the pandemic. We feel that it is essential to know whether the psychological impact is relevant nearing the end of pandemic. This study is an attempt to address this issue.

Objectives

To compare the psychological impact during the late phase of Covid-19 pandemic among the hospitalised patients and general public.

METHODS

It was a cross sectional study that started after obtaining approval from the ethics committee and was conducted during the months of September and October 2020 in a tertiary care hospital in Amalapuram, Andhra Pradesh, which was nearly six months after the start of the initial lockdown imposed by Indian Government. So, the study was timed to capture the trend towards the end of the pandemic and when the numbers of daily cases were declining. We included two groups, one group included patients admitted for Covid-19 treatment in a government designated Covid-19 care centre and another group included general public who were not Covid-19 infected. We excluded those with past or recent history of any psychiatry illness. In the patient group, those who were admitted in the Covid-19 care centre with mild symptoms were included serially. Due to precautions imposed, patients were contacted telephonically, explained about the study objectives and

were interviewed after obtaining the consent. For the general public group, those who had visited hospital before the onset of Covid-19 were selected randomly. They were also contacted telephonically and after obtaining their consent, study details were noted down. A total of 121 and 180 were included in patient and general public group respectively.

Questionnaire

In the study we used self-structured proforma to collect the socio demographic details and Depression Anxiety Stress Scale (DASS). Socio demographic proforma was created keeping in view the aims and objectives of the study to collect the necessary demographic details of the patients and general public.

Depression Anxiety and Stress Scale 21 is a 21-item scale used for screening depression, anxiety and stress. It is designed to measure emotional states using three self-report scales. Each of the three self-report scales have 7 items. It is based on a dimensional concept of mental disorders. The cut off scores for each of the scales has been provided and labels provided were normal, mild, moderate, severe and extremely severe. The cut off scores for depression were 0 to 9, 10 to 13, 14 to 20, 21 to 27 and more than 28 for normal, mild, moderate, severe and extremely severe respectively.

The cut off scores for anxiety were 0 to 7, 8 to 9, 10 to 14, 15 to 19 and more than 20 for normal, mild, moderate, severe and extremely severe respectively. Similarly cut off scores for stress were 0 to 14, 15 to 18, 19 to 25, 26 to 33 and more than 34 for normal, mild, moderate, severe and extremely severe respectively. The scale was translated into Telugu by a language expert and then back translated to English by a language expert to check for validity, the back translated version is similar to the original version. The Telugu translated version was used in the study.

Statistical Analysis

Data obtained was entered in Microsoft Excel sheet. Descriptive analysis was done to get mean, median, percentages and standard deviation and for inferential analysis following tests were used: chi square test, Shapiro-Wilk test, Mann Whitney U test and Kruskal-Wallis test. Analyses was done using R programming language version 4.0.2, using R studio integrated development environment (IDE). Packages used were: 'dplyr',⁹ 'summary tools',¹⁰ 'Desc Tools'¹¹ and 'ggplot 2'.¹² The results thus obtained were tabulated and discussed.

RESULTS

Socio-demographic details (Table 1). The study has included total of 301 participants, 121 in patient group and 180 in public group. In the patient group, about half of the sample belongs to 46 to 65-year age range, 62 % were males, 81 % were married, nearly two thirds hail from a rural

background, around one fourth were educated up to secondary school level and 88 % belong to Hindu religion.

In the public group, one fourth of the sample belongs to 26 to 35 years age range, two thirds were males, two thirds were married, two thirds hail from an urban background, nearly 90 % were educated up to and above graduation.

Demographic Variable	Patient Details (N = 121)		Public Details (N = 180)		
	Frequencies	Percentages	Frequencies	Percentages	
Age (years)	15 - 25	11	9.1	12	4.0
	26 - 35	22	18.2	75	24.9
	36 - 45	24	19.8	38	12.6
	46 - 55	33	27.3	17	5.6
	56 - 65	31	25.6	38	12.6
Gender	Male	75	62	137	76.1
	Female	46	38	43	23.8
Marital status	Married	99	81.8	139	77.2
	Unmarried	22	18.2	41	22.8
Place of residence	Rural	89	73.6	39	21.6
	Urban	32	26.3	141	78.3
Education	Illiterate	20	16.5	Nil	Nil
	Primary school	24	19.8	Nil	Nil
	Higher school	30	24.8	15	8.4
	Under-graduation	24	19.8	86	47.8
	Post-graduation	5	4.1	79	43.8
Religion	Hindu	107	88.4	145	80.6
	Muslim	5	4.1	6	3.3
	Christian	9	7.4	25	13.9
	Atheist	Nil	Nil	4	2.2

Table 1. Demographic Variables of Patients and Population Sample in the Study

Question	Response	Patient Group (%)	Public Group (%)	P - Value
Financial status affected by covid-19 pandemic?	Yes	57 (47.1)	94 (52.2)	0.451
	No	64 (52.8)	86 (47.7)	
Getting angry easily due to covid-19 crisis?	Yes	8 (6.6)	74 (41.1)	0.000*
	No	113 (93.3)	106 (58.8)	
Mentally prepared to handle covid-19 crisis?	Yes	103 (85.1)	138 (76.6)	0.098
	No	18 (14.8)	42 (23.3)	

Table 2. Questions Related to Covid-19 Pandemic
*P - value < 0.005 is significant

Test used: chi square test, P - value < 0.05 is significant responses on questions related to Covid-19 (Table 2). We included few questions to both the groups to assess the mood during the crisis. The responses were compared between the groups. Regarding financial status nearly equal number of participants (patient group – 47 % and population group – 52 %) in both groups have reported that their financial status was affected due to pandemic, with chi square showing no significance (P = 0.127). On emotional status during the pandemic, described as getting angry easily, significant difference (chi square test, P = 0.000) was seen between the groups, 41 % of public group have reported 'Yes'.

When asked about the mental preparedness about the pandemic, no significant difference was seen between the groups. More than two thirds in both groups (patient – 85 % and public – 76 %) have reported that they were prepared for the ongoing crisis.

In public group, 54 % have reported being afraid of contacting Covid-19 infection, 28 % have reported of having recurrent thoughts of contacting Covid-19 infection, 11 % have consulted a doctor regarding Covid-19 infection and 49

% have reported discomfort seeing/reading Covid-19 related news on instant messaging platforms or television.

Demographic Variable (N = 121)	Depression Median	P - Value	DASS Subscales		Stress Median	P - Value
			Anxiety Median	P - Value		
Age (years)	15 - 25	0.00	2.00		2.00	0.511
	26 - 35	1.00	6.00		2.00	
	36 - 45	0.00	5.00	0.390	2.00	
	46 - 55	2.00	6.00		4.00	
	56 - 65	2.00	4.00		6.00	
Gender	Male	2.00	6.00		4.00	0.919
	Female	1.00	4.00	0.760	2.00	
Marital status	Married	2.00	6.00		2.00	0.241
	Unmarried	0.00	4.00	0.310	3.00	
Place of residence	Rural	2.00	5.00		2.00	0.102
	Urban	0.00	6.00	0.189	4.00	
Education	Illiterate	2.00	8.00		4.00	0.533
	Primary school	2.00	4.00		4.00	
	Higher school	2.00	4.00		3.00	
	Intermediate	2.00	8.00	0.021*	2.00	
	Under graduation	2.00	6.00		4.00	
Post-graduation	0.00	2.00		0.00		
Religion	Hindu	0.00	4.00		2.00	0.504
	Muslim	2.00	8.00	0.397	4.00	
	Christian	2.00	6.00		6.00	

Table 3a. Comparison of Socio Demographic Variables of Patient Group with DASS Subscales
Test used: Kruskal-Wallis, Mann Whitney, *P - value < 0.05 is significant

Demographic Variable (N = 180)	Depression Median	P - Value	DASS subscales		Stress Median	P - Value
			Anxiety Median	P - Value		
Age (years)	15 - 25	6.00	4.00		8.00	0.110
	26 - 35	2.00	0.00		4.00	
	36 - 45	5.00	2.00	0.043*	8.00	
	46 - 55	0.00	0.00		4.00	
	56 - 65	2.00	0.00		6.00	
Gender	Male	2.00	0.00		6.00	0.493
	Female	4.00	2.00	0.408	6.00	
Marital status	Married	2.00	0.00		6.00	0.882
	Unmarried	6.00	2.00	0.033*	6.00	
Place of residence	Rural	2.00	2.00		4.00	0.446
	Urban	4.00	0.00	0.186	6.00	
Education	Higher school	6.00	4.00		4.00	0.506
	Intermediate	4.00	3.00		9.00	
	Under graduation	4.00	0.00	0.246	6.00	
	Post-graduation	2.00	1.00		6.00	
Religion	Hindu	2.00	0.00		6.00	0.192
	Muslim	3.00	1.00		6.00	
	Christian	4.00	2.00	0.059	10.0	
	Atheist	2.00	2.00		4.00	

Table 3b. Comparison of Socio Demographic Variables of Public Group with DASS Subscales
Test used: Kruskal-Wallis, Mann Whitney, *P - value < 0.05 is significant

Test used: Kruskal-Wallis, Wilcoxon sign rank, P < 0.05 is significant comparison of socio demographic variables with DASS subscales (Table 3a & 3b). As the values did not follow the normal distribution, we used nonparametric tests and median for comparison.

In the patient group, we did not find any significant association between the depression and stress with any of the socio-demographic details. There was a significant association between the educational status of the patients with the anxiety.

In the public group, there is significant association between the marital status, depression, and anxiety subscale, both of which were reported high among the unmarried compared to married as per the median score values. We did not find any significant association between

the rest of socio-demographic variables with the subscales of DASS.

DASS Subscales (Raw Scores)		Median	P - Value
Depression	Patient	2.00	0.000*
	Public	3.00	
Anxiety	Patient	6.00	0.000*
	Public	0.00	
Stress	Patient	4.00	0.002*
	Public	6.00	

Table 4. Comparison of DASS Scores between Patient and Population Sample

†Test used: Mann-Whitney U test, *P - value < 0.05 is significant

In the patient group, the distributions according to the cut off values were depression 90 % normal, 6.6 % mild, 2.5 % moderate and 0.8 % severe; anxiety 82 % normal, 8.3 % mild, 15.7 % moderate, 5.8 % severe and 2.5 % extremely severe; stress 91.7 % normal, 5.8 % mild and 2.5 % moderate. Similarly in the general public group, the distributions according to the cut off values were depression 81.7 % normal, 7.2 % mild, 5 % moderate, 2.8 % severe and 3.3 % extremely severe; anxiety 81.1 % normal, 4.4 % mild, 7.8 % moderate, 1.7 % severe and 5 % extremely severe; stress 86.7 % normal, 3.9 % mild, 4.4 % moderate and 5 % severe. The mean values for each were depression 2.71, anxiety 5.91 and stress 4.74. In the public group, more than 80 % have reported normal levels in depression, anxiety, and stress. The mean scores for each were depression 5.58, anxiety 3.62 and stress 7.32. When groups were compared based on the cut off levels; there was significant difference in anxiety ($P = 0.011$) and stress ($P = 0.037$) levels. When the raw scores were compared between the groups, there was a significant difference between depression ($P = 0.000$), anxiety ($P = 0.004$) and stress ($P = 0.004$).

DISCUSSION

Psychological impact among the general public: Studies were carried out during the initial days of the pandemic to assess the psychological impact of Covid-19 on general population. An online survey by Grover et al.¹³ in India found higher prevalence of psychiatric morbidity (40 %). They felt that the lockdown could have imposed higher psychiatric morbidity mostly of milder intensity among the general public. Another study by Ozamiz-Etxebarria et al.¹⁴ using DASS questionnaire found higher mean values (severe to extremely severe) of stress, anxiety, and depression in Spain. A study conducted in Egypt by Arafa A et al.¹⁵ to study the psychological impact had found similar results of higher prevalence of depression, anxiety, and stress. Roy et al.¹⁶ explored the anxiety experiences among adults in India and found participants having higher levels of anxiety. They also found that participants had moderate knowledge about Covid-19 and less aware about the prevention methods. Among the various distressing factors, the most common ones reported were sleep disturbance, paranoia about Covid-19 infection and social media distress. These are in contrast to our study, where the depression, anxiety and stress levels were less in both the hospitalised patients and general public. In the initial days of the Covid-19 infection,

people were unaware of the scope and extent of pandemic which is yet to unfold. Also, the general public were in constant fear of contacting the infection which could have led to a feeling of impending sense of uncertainty. This could have been the reason for higher reports of psychiatric morbidity.

Psychological impact among the hospitalised patients: A systematic review by Krishnamoorthy et al.¹⁷ found that no studies reported stress among Covid-19 patients. But the prevalence of depression and anxiety was 42 % and 26 % respectively, which was highest when compared to general population. Burden of psychological morbidity among the Covid-19 patients was highest followed by healthcare workers and general public. This is in line with our study—depression and anxiety was higher among the Covid-19 patients than the general public but the levels reported were low. Various reasons could be implicated for these findings: compulsory fifteen days off in patient, staying away from family members/getting admitted in other centres, patients not being segregated based on the severity of the symptoms, closed hospital setting and not allowed to meet family members/relatives. A study by Fengyi Ho et al.¹⁸ compared the psychological impact among people with and without psychiatric illness in China. They found higher mean scores for depression, anxiety, and stress score among those with psychiatric illness. In the current study, although we have not compared the psychological impact among those with already having psychiatric illness, but the finding of higher scores among patients than control subjects is a similar finding. A study by Kennedy YYN et al.¹⁹ to assess the psychological impact among the cancer patients and their caregivers found that the prevalence of anxiety was 19.1 % and 22.5 % respectively. They also found that anxiety was more among non-graduate and married patients.

Comparison of psychological impact between the patients and general public: The mean scores for depression, anxiety and stress in the public group were 5.6, 3.6 and 7.3 respectively. Whereas the mean scores for the same in the patient group were 2.7, 5.9 and 4.7. The mean scores in both groups fall within the normal ranges for all the three subscales as per the cut off values of the DASS 21 questionnaire. These are in line with a study by Verma and Mishra,²⁰ they had mean scores of 8.39, 6.53 and 8.83 respectively, all falling in the normal range of the cut off scores. But had found 25 %, 28 % and 11 % moderate to extremely severe depression, anxiety, and stress respectively, which is in contrast to our finding in both the public and patient group.

We feel the reason lies in the Covid-19 pandemic itself. In the initial days, there was regular surge in the infected cases almost throughout the world. The number of daily cases were in four-to-five-digit figures during the first few months. As the pandemic progressed, the numbers of daily cases have been declining to three-digit figures. During the preparation of the manuscript published articles on psychological impact were conducted during the raising daily cases of the pandemic. Our study in contrast was conducted when the daily cases were declining. We could thus expect different results from other articles. We believe that during

the initial days our knowledge and awareness about Covid-19 was less. But as the pandemic progressed, we started to understand about Covid-19 better and at the same time dissipated the available knowledge. The widespread dissipation of knowledge might have helped the people to get accustomed to pandemic precautionary measures to be followed. As everyone had seen cases in their family/relatives/locality and had also heard from people who have recovered from the disease and had carried on with the routine life they might have reacted in a better way. This could have been the reason for individuals scoring lower in all the subscales. Hence our study which was being conducted in the declining phase of the pandemic, had revealed lower psychological impact. The study thus brings an important point that the psychological impact might vary with the timing of the pandemic. The study is also unique in that it compared the psychological impact on general public and patients hospitalised for Covid-19 infection. As per our knowledge, there is paucity of literature comparing the psychological impact of Covid-19 among two groups. Most of the studies have been conducted on general population or specific targeted groups like healthcare workers, students etc. From our study we feel that future studies should concentrate on the long-term psychological effects of the Covid-19 pandemic.

CONCLUSIONS

The study finds that the psychological impact towards the declining days of the pandemic is less than that seen during the initial days. On comparing the Covid-19 hospitalised patients and general public, depression and anxiety are more in patients and stress is more in the general public. Overall, the mean values for depression, anxiety, and stress among both the patients and general public are low. We may infer that the psychological impact during the end days of Covid-19 pandemic is mild. Future studies should focus on long term follow up studies of Covid-19 pandemic.

Limitations

This is a cross sectional study. A follow up study would have provided more in-depth results. We limited the sample to mild cases among the Covid-19 hospitalised patients. If severe cases were also included, that would have yielded different results.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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