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ORIGINAL RESEARCH OPEN ACCESS

Epidemiological study of patients presenting with anxiety and depression, in their post COVID-19 phase

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Abstract

Background: COVID-19 caused havoc on the mankind. Post COVID-19 effects were also very painful. Post COVID-19 symptoms affected almost every organ system of the body not only physically, but also had a very profound effect on psyche of different individuals. We studied prevalence of anxiety and depression in post COVID-19 phase.

Material and methods: All patients attending various outpatient Departments, who had positive RTPCR for COVID-19, more than 3 months before the present symptoms, were included in this study. The patients were divided in two groups depending upon severity of the COVID-19 infection in past. Group-I patients were treated for COVID-19 on domiciliary basis while those required admission to hospital for treatment for COVID-19 were included in Group-II. Scoring system decided if the patient was normal or had anxiety or depression.

Results: Both anxiety and depression were common in post COVID-19 phase. Group-II patients were affected more 38.65% (167 out of 432) as compared to only 10.13% (62 out of 612) of Group-I patients. Depression was seen in 52 out of 237 (22.94%) in males as compared to female 20 out of 195 (10.25%) in Group-II. Anxiety was also more common in males in Group-II, 62 out of 237 (26.18%) than females 33 out of 195 (16.92%).

Conclusion: Both anxiety and depression were very common post COVID-19 infection. Hospitalized patients suffered more than those who had milder disease and were treated at home for COVID-19. Males suffered more than the females.

Keywords: anxiety; depression; COVID-19; RTPCR

Introduction

COVID-19 caused a huge mortality and morbidity. WHO declared it as a pandemic in March 2020 [1]. People who survived the acute infection are still complaining of various symptoms even after several months of acute infection. This phenomenon is happening around the world. Post COVID-19 symptoms are pertaining to almost all the systems of the body [2]. Various names were given to describe such symptoms like chronic COVID-19, post COVID-19 syndrome, Long Hauler syndrome [3, 4].

Many studies are underway to see the post COVID effects across the world. Very few studies have focussed exclusively on anxiety and depression. They are even less in India. India harbours nearly 19% of world's population and the burden of infection was enormous. Patients who recovered from the disease are still fearful and complain of symptoms pertaining anxiety, depression and other neurocognitive disorders.

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This study was conducted to see the prevalence of anxiety and depression in the patients who had COVID-19 in the past and attended various outpatient Departments (OPDs) of a Medical College.

Material and methods

We estimated the prevalence of anxiety and depression in the patients who were Reverse Transcription Polymerase Chain Reaction (RTPCR) positive for COVID-19. The study was conducted on patients attending various OPDs of GS Medical College & Hospital, Pilkhuwa. It is a prospective observational cross – sectional study and it was conducted from July 2021 to August 2022.

Inclusion criteria

All patients coming to various OPDs with symptoms of anxiety or depression with past history of COVID-19 infection, in whom RTPCR for COVID-19 was positive more than three months earlier, were included in this study.

Exclusion criteria

(a) Patients who had history suggestive of anxiety, depression or any other neurocognitive disorders like Alzheimer's disease, Parkinson's disease etc., in the past before contacting COVID-19 infection, (b) Patients having any death in the family or long hospitalization (other than COVID-19) in the last one year, (c) Any history of seizures disorder, head injury.

Methodology

A questionnaire [Hospital Anxiety and Depression Scale (HADS) - Appendix -I] was used to determine the presence, absence and severity of Anxiety, Depression and Neuro-cognitive impairment.

Scoring (Table 1)

Total Score: Depression (D)------- Anxiety (A) ----------

0-7= Normal

8-10= Borderline abnormal (borderline case)

11-21= Abnormal (case)

A staff nurse was trained in explaining the questionnaire to patients. She helped patients in understanding the questionnaire and filling the form properly. The patients were divided in two groups:

Group-I: Those patients who were not admitted and treated at home for COVID-19 in past were considered to be mild to moderate category patients.

Group-II: Those patients who were admitted to the hospital for COVID-19 in past were considered as severe category patients.

Table 1: Hospital anxiety and depression scale (**Scoring sheet).**

	Yes definitely	*Yes sometimes*	*No, not much*	*No, not at all*
1. I wake early and then sleep badly for the rest of the night.	3	2	1	0
2. I get very frightened or have panic feelings for apparently no reason at all.	3	2	1	0
3. I feel miserable and sad.	3	2	1	0
4. I feel anxious when I go out of the house on my own.	3	2	1	0
5. I have lost interest in things.	3	2	1	0
6. I get palpitations, or sensations of 'butterflies' in my stomach or chest.	3	2	1	0
7. I have a good appetite.	0	1	2	3
8. I feel scared or frightened.	3	2	1	0
9. I feel life is not worth living.	3	2	1	0
10. I still enjoy the things I used to.	0	1	2	3
11. I am restless and can't keep still.	3	2	1	0
12. I am more irritable than usual.	3	2	1	0
13. I feel as if I have slowed down.	3	2	1	0
14. Worrying thoughts constantly go through my mind.	3	2	1	0

Note: Anxiety 2, 4, 6, 8, 11, 12, 14; Depression 1, 3, 5, 7, 9, 10, 13; Scoring 3, 2, 1, 0 (For items 7 & 10 the scoring is reversed). Grading: 0 - 7 = Non-case/ 8 – 10 = Borderline case/ 11+ = Case.

Results

After applying inclusion and exclusion criteria 1044 patients were considered for the study. Out of them 612 (58.62%) were male and 432 (41.33%) were female (Table 2). AS per the age group consideration maximum number 357 (34.19%) was in the age group 21-30 years, followed by age group 31-40 years in which we had 283 (27.10%) patients (Table 3). As is obvious younger population had a more severe psychological impact as compared to elderly.

Table 2: Distribution of patients according to sex.

Sex	*Number*	*Percentage*
Male	612	58.62
Female	432	41.33

Table 3: Distribution of patients according to age group.

Age group	*Number*	*Percentage*
10-20	75	7.18
21-30	357	34.19
31-40	283	27.10
41-50	155	14.84
51-60	102	9.77
61-70	52	4.98
>70	20	1.91

COVID-19 disease severity wise distribution showed that 612 (58.62%) patients belonged to mild to moderate group i.e. Group-I and 432 patients fell into Group-II i.e. who were admitted in different hospitals (Table 4).

Table 4: Distribution of patients according to disease severity of COVID-19.

Disease severity	*Male patients*	*Female patients*	*Total*	*Percentage*
Mild/ Moderate	360	252	612	58.62
Severe	237	195	432	41.38

When depression part was analysed, it was seen in 22 males and 18 females i.e. in a total of 40 (3.83%) patients in Group-I; whereas 52 males and 20 females amounting to 72 (6.89%) patients in Group-II showed depression (Table 5).

Table 5: Prevalence of depression according to disease severity of COVID-19.

Disease severity	*Male patients*	*Female patients*	*Total*	*Percentage*
Mild/ Moderate	22	18	40	3.83
Severe	52	20	72	6.89

Similarly anxiety cases were also less in Group-I i.e.12 males and 10 females making a total of 22(2.10%) had anxiety whereas; in Group-II 62 males and 33 females making a total of 95(9.09%) had anxiety (Table 6).

Table 6: Prevalence of anxiety according to disease severity of COVID-19.

Disease severity	*Male patients*	*Female patients*	*Total*	*Percentage*
Mild/ Moderate	12	10	22	2.10
Severe	62	33	95	9.09

Over all 34 males and 28 females making a total of 62 (10.13%) suffered from either depression or anxiety in Group I and 114 males and 53 females making a total of 167 (38.65%) suffered from either of the two in Group-II.

Both depression as well as anxiety were more common in males in both the Groups, but these were more pronounced in Group II. Depression was seen in 52 out of 237 (22.94%) in males as compared to 20 female out of 195 (10.25%) in Group-II. Similarly anxiety was also more common in males, 62 out of 237 (26.18%) in males than females 33 out of 195 (16.92%) in Group-II.

It was tried to ascertain any association with occupation or with associated diseases. Maximum number of patients 427 (40.90%) enrolled in the study were in the group of students/ homemakers/ unemployed who did not have their personal income (Table 6). Post tuberculosis squeal was associated in 65 (6.22%) patients (Table 7) which is almost similar to their prevalence in the population. No significant statistical correlation emerged as is obvious from Tables 7 and 8.

Table 7: Distribution of patients according to occupation.

Occupation	*Number*	*Percentage*
Students/ Home Maker/ Unemployed	427	40.90
Skilled & unskilled manual labour	128	12.26
Professionals/ Teachers/ Bankers / Other white collar jobs	320	30.65
Retires	72	6.89
Others	97	9.29

Discussion

There has been no widely accepted definition of long COVID [5]. The National Institute for Health and Care Excellence (NICE) and WHO defined Long COVID as when the signs and symptoms continued or reappeared

till twelve weeks of acute COVID illness [6], If the signs and symptoms continued or reappeared beyond twelve weeks it was termed as post COVID [7, 8]. The Centre for Disease Control and Prevention (CDC) defined long COVID as a post COVID condition with a wide range of new, returning or ongoing health problems, people can experience four or more weeks after being infected with the virus that causes COVID-19 [9].

Table 8: Distribution of patients according to associated diseases.

Associated disease/s	*Number*	*Percentage*
Asthma	52	4.98
COPD	30	2.87
ACOS(Asthma COPD Overlap Syndrome)	10	0.97
Tuberculosis	20	1.91
Post tuberculosis Sequelae	65	6.22
Hypertension	43	4.11
Diabetes	30	2.87
Hypothyroidism	20	1.91
Multiple diseases like hypertension, diabetes, C	42	4.02

Although COVID-19 primarily attacks the respiratory system and major cause of death due to COVID was respiratory failure, post COVID symptoms were recorded from almost every organ system. There have been complaints of cough, breathlessness, chest pain, anosmia and palpitation [10]. Central nervous system (CNS) [11] as well as peripheral nervous system (PNS) [12] were also involved and the patients presented with various symptoms like headache, dizziness, nausea, vomiting, malaise, myalgia etc. The mechanism of involvement of nervous system has been thought to be via entry through olfactory nerve, vascular endothelium or leukocyte migration across the blood- brain barrier [13]. Hyper inflammation and hypercoagulability have also been incriminated [14].

Fear and anxiety are common psychological response during disastrous situations like COVID-19 as suggested by Dong and Bouey [15]. Anxiety and depression were the most common mental health problems post COVID-19 as described by Shanbehzadeh et al [16]. Therefore, we conducted the study focusing only on this parameter of post COVID-19 complications. Anxiety ranged 6.5% to 63% and depression ranged 4% to 31% in that study. In our study anxiety ranged from 2.10% to 9.09% and depression ranged from 3.83% to 6.89% which is more or less comparable. Greater levels of anxiety and depression were reported in females in that study, whereas in our study more anxiety and depression was seen in males. Anxiety was reported in 74 out of 612 (12.09%) males and 43 out of 432 (9.95%) females. Whereas depression was reported in 74 out of 612 (12.09%) males and 38 out of 432 (8.79%) females.

Goyal et al [17] explained that undue prolonged stress with social isolation can act as a niche for developing a pathological mental state. We could see this in our study as well. Those patients who got hospitalised had far more anxiety and depression than those who were not hospitalised. Hospitalised patients had more financial burden and also fear of loss of job which lead to more anxiety and depression as shown by Mann et al [18]. The loss of job overnight also leads to anxiety and depression as explained by Maaravi et al [19]. This may partly explain why more males suffered from anxiety and depression as seen in our study.

Strength of study

The study was conducted only on RTPCR confirmed patients and HADS score was used to detect anxiety and depression induced by post COVID stress after excluding any pre-existing psychiatric ailments.

Limitations of study

It was done in patients who attended OPDs of only one Medical College and hence may not reflect true affliction of community post COVID stress reaction.

Conclusion

A significant number of patients suffered from mental disorders like anxiety and depression even months after recovering from initial COVID-19 infection. Those patients who had to get hospitalised suffered more than those who were treated at home. Male suffered more than the females which might be related to financial issues.

Conflicts of interest

Authors declare no conflicts of interest.

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