MENTAL HEALTH ISSUES:
ANXIETY, DEPRESSION, AND STRESS IN COVID-19
POST-TREATMENT PATIENTS IN BINH DINH PROVINCE IN 2021 - 2022

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ABSTRACT

The cross-sectional descriptive study was conducted to: (1) determine the prevalence of anxiety, depression and tension in patients after Covid-19 treatment, and (2) identify related factors. A study on 316 Covid-19 – post - treatment in Binh Dinh province showed that the rates of anxiety, depression and stress in COVID-19 patients who had completed treatment according to the DASS-21 scale were 9.9%, 2.6% and 1.8%, respectively. Anxiety manifestations were mild (3.4%), moderate (5.2%), severe (1%), and very severe (0.3%). Depression manifests in mild (1%) and moderate (1.6%). Stress manifestations are mild (0.5%) and moderate (1.3%). Factors affecting: anxiety: occupational group is health workers, witnessing someone with severe COVID-19/death; depression: age, patient who has witnessed someone with severe COVID-19/death; stress: witnessing someone with severe COVID-19/death, social and lack of family economic support.

Keyword: *mental health issues, anxiety, depression, and stress*

I. INTRODUCTION

COVID-19 is an acute infectious disease of group A caused by the SARS-CoV-2 virus [1]. The disease was first recorded on December 29, 2019 in Wuhan (China), then spread to the whole world. By October 25, 2022, Vietnam recorded 11,498,047 cases, of which 10,601,535 people had recovered and 43,161 deaths [2]. Binh Dinh province recorded the first case of COVID-19 on June 28, 2021 in the 4th wave of the epidemic in the country, since then to October 26, 2022, the whole province has recorded 140,992 cases in 11/11 districts/towns/cities. Of which, 140,657 cases had recovered, 316 deaths. The pandemic not only affected the physical health of patients but also increased Mental health issues such as anxiety, depression, and stress. According to the US Centers for Disease Control and Prevention, COVID-19 causes 63% of 18-24-year-olds adults that feel anxious or depressed, 25% of them use more stimulants, and about 25% think about suicide. On September 20, 2021, the results of surveys and assessments of the mental health of patients at the treatment departments at Ho Chi Minh City COVID-19 Intensive Care Hospital (in charge of Cho Ray Hospital) showed that the rate of COVID-19 patients suffering from depression was 20%, anxiety is 53.3%, stress is 16.7%. In particular, patients who have breathed high-flow oxygen through the nose or have breathed oxygen through a mask or mechanical ventilation had a depression rate of 66.7% [3].

II. RESEARCH OBJECTS AND METHODS

- **Study subjects:** COVID-19 patients aged 18 years and older who completed

treatment, are living at the study site, and agree to voluntarily participate.

- **Study Period:** From 04/2022 to 11/2022.

- **Location of study:** Binh Dinh province.

- **Research methods:** Cross-sectional descriptive research, quantitative method.

- **Sample size:** The sample size is calculated according to the formula of estimating a prevalence in the population: n = $Z^2_{(1-\alpha/2)}$

In which:

- n is the size of the study sample.

- p is the rate of anxiety, depression, and stress in COVID-19 patients according to previous research. Taking the ratio from the research results of the Ho Chi Minh City COVID-19 Intensive Care Hospital (in charge of Cho Ray Hospital): the rate of COVID-19 patients suffering from depression is 20%, anxiety is 53.3%, stress is 16.7% [12].

- α: It is a type I error, estimated in the study, is 0.05 (95% reliability).

- $Z_{1-\alpha/2}$: It is a confidence factor, which is 1.96; with α = 0.05.

- d: The desired accuracy between the sample and the population is 0.05.

Calculating the sample size according to each proportion, 383 is the minimum sample size to study.Using the method of Stratified Sampling based on level of treatment facilities (provincial, districts ..). The number of patients included in the study sample size at the provincial level is 09 patients, at the district level treatment is 58 patients and the home treatment is 316 patients.

- **Data processing methods**: Data processing using SPSS 20.0 software; use descriptive statistics (frequency and percentage), applied the χ^2 test at a meaningful level α = 0.05 to compare the difference between two or more ratios.

III. RESEARCH RESULTS

3.1. Mental health issues: anxiety, depression, and stress in COVID-19 patients

The percentage of COVID-19 post - treatment patients with anxiety symptoms accounted for 9.9%, depression symptoms accounted for 2.6%, and stress symptoms accounted for 1.8%. COVID-19 post-treatment patients had anxiety: mild (3.4%), moderate (5.2%), severe (1%), and extremely severe (0.3%); depression: mild (1%) and moderate (1.6%); and stress: mild (0.5%) and moderate (1.3%).

3.2. Some factors related to anxiety, depression, and stress in COVID-19 patients

The age was related to the depression in post-Covid 19 patients, in which the 18-29 group has a higher depression rate.

Table 3.3. **Association between Demographic characteristics and Mental health issues in COVID-19 Patients**

Factors		Anxiety			Depression			Stress		
		Yes	No	p	Yes	No	p	Yes	No	p
Marital Status	Unmarried	4 (16,7)	20 (83,3)	0,332	2 (8,3)	22 (91,7)	0,187	1 (4,2)	23 (95,8)	0,420
	Married	33 (9,9)	300 (90,1)		8 (2,4)	325 (97,6)		6 (1,8)	327 (98,2)	
	Divorced/ separated, widowed	1 (3,8)	25 (96,2)		0 (0)	26 (100)		0 (0)	26 (100)	

Factors		Anxiety			Depression			Stress		
		Yes	No	p	Yes	No	p	Yes	No	p
Living Conditions	Living alone	1 (6,7)	14 (93,3)	1	1 (6,7)	14 (93,3)	0,333	1 (6,7)	14 (93,3)	0,246
	Living with family	37 (10,1)	331 (89,9)		9 (2,4)	359 (97,6)		6 (1,6)	362 (98,4)	
Current occupation	Healthcare worker	4 (28,6)	10 (71,4)	0,04	0 (0)	14 (100)	1	0 (0)	14 (100)	1
	Other	34 (9,2)	335 (90,8)		10 (2,7)	359 (97,3)		7 (1,9)	362 (98,1)	
Family Economy	Poor/near-poor households	4 (13,3)	26 (86,7)	0,521	2 (6,7)	28 (93,3)	0,180	2 (6,7)	28 (93,3)	0,097
	Not poor	34 (9,6)	319 (90,4)		8 (2,3)	345 (97,7)		5 (1,4)	348 (98,6)	

Comment: Occupation is related to the anxiety of patients after Covid 19. In which, patients whose occupation was medical staff had a higher rate of anxiety.

Table 3.4. **Association between COVID-19-related characteristics and Mental health issues in COVID-19 patients**

Factors		Anxiety			Depression			Stress		
		Yes	No	p	Yes	No	p	Yes	No	p
COVID-19 vaccination	Unvaccinate, 1 dose	2 (33,3)	4 (66,7)	0,111	0 (0)	6 (100)	1	0 (0)	6 (100)	1
	≥ 2 noses	36 (9,5)	341 (90,5)		10 (2,7)	367 (97,3)		7 (1,9)	370 (98,2)	
Symptoms of COVID-19	Symptomatic	36 (10,2)	318 (89,8)	0,754	10 (2,8)	344 (97,2)	1	7 (2,0)	347 (98,0)	1
	Asymptomatic	2 (6,9)	27 (93,1)		0 (0)	29 (100)		0 (0)	29 (100)	
Time to complete treatment so far	< 3 months	9 (8,0)	103 (92,0)	0,427	3 (2,7)	109 (97,3)	1	3 (2,7)	109 (97,3)	0,422
	>= 3 months	29 (10,7)	242 (89,3)		7 (2,6)	264 (97,4)		4 (1,5)	267 (98,5)	
Comorbidities	Yes	14 (8,4)	152 (91,6)	0,394	3 (1,8)	163 (98,2)	0,524	2 (1,2)	164 (98,8)	0,704
	No	24 (11,1)	193 (88,9)		7 (3,2)	210 (96,8)		5 (2,3)	212 (97,7)	
Have been actively treated for COVID-19	Yes	1 (33,3)	2 (66,7)	0,270	0 (0)	3 (100)	1	0 (0)	3 (100)	1
	No	37 (9,7)	343 (90,3)		10 (2,6)	370 (97,4)		7 (1,8)	373 (98,2)	
Breathed oxygen when infected with COVID-19	Yes	1 (50,0)	1 (50,0)	0,189	0 (0)	2 (100)	1	0 (0)	2 (100)	1
	No	37 (9,7)	344 (90,3)		10 (2,6)	371 (97,4)		7 (1,8)	374 (98,2)	

Comments: No association was recorded between the characteristics related to Covid-19 disease and mental health problems.

Table 3.6. **The relationship between the life events; social support and anxiety in COVID-19 patients**

Factors		Anxiety			Depression			Stress		
		Yes	No	p	Yes	No	p	Yes	No	p
Whose family members infected COVID-19	Yes	20 (8,6)	212 (91,4)	0,291	3 (1,3)	229 (98,7)	0,055	4 (1,7)	228 (98,3)	1
	No	18 (11,9)	133 (88,1)		7 (4,6)	144 (95,4)		3 (2,0)	148 (98,0)	
Whose family members died of COVID-19	Yes	1 (33,3)	2 (66,7)	0,270	1 (33,3)	2 (66,7)	0,076	1 (33,3)	2 (66,7)	0,054
	No	37 (9,7)	343 (90,3)		9 (2,4)	371 (97,6)		6 (1,6)	374 (98,4)	
Witnessing severe COVID-19/death	Yes	8 (23,5)	26 (76,5)	**0,012**	3 (8,8)	31 (91,2)	**0,05**	3 (8,8)	31 (91,2)	0,018
	No	30 (8,6)	319 (91,4)		7 (2,0)	342 (98,0)		4 (1,1)	345 (98,9)	
The incident life event within 1 year	Yes	15 (16,5)	76 (83,5)	**0,016**	5 (5,5)	86 (94,5)	0,062	2 (2,2)	89 (97,8)	0,672
	No	23 (7,9)	369 (92,1)		5 (1,7)	287 (98,3)		5 (1,7)	287 (98,3)	
Major life events	Yes	4 (7,1)	52 (92,9)	0,452	1 (1,8)	55 (98,2)	1	1 (1,8)	55 (98,2)	1
	No	34 (10,4)	293 (89,6)		9 (2,8)	318 (97,2)		6 (1,8)	321 (98,2)	
Social Support	Low	0 (0)	3 (100)	0,886	0 (0)	3 (100)	1	1 (33,3)	2 (66,7)	**0,046**
	Average	10 (10,6)	84 (89,4)		2 (2,1)	92 (97,9)		2 (2,1)	92 (97,9)	
	High	28 (9,8)	258 (90,2)		8 (97,2)	278 (97,2)		4 (1,4)	282 (98,6)	

Comments: the association between the factors: life events occurring within 1 year, witnessing people dying of severe Covid 19/death and anxiety; witnessing people dying of severe Covid 19/death and Depression; witnessing people dying of severe Covid 19/death and social support and stress.

IV. DISCUSSION

4.2. Anxiety, depression, and stress in COVID-19 patients after treatment and some related factors

4.2.1. Anxiety, depression and stress in COVID-19 post treatment patients

The rates of anxiety, depression, and stress in COVID-19 patients who completed treatment on the DASS-21 scale in this study were 9.9%; 2.6% and 1.8%, respectively. This rate is lower than the results in the study at the Ho Chi Minh City COVID-19 Intensive Care Hospital (in charge of Cho Ray Hospital): the rate of COVID-19 patients suffering from depression was 20%, anxiety was 53.3%, stress was 16.7% [3].

4.2.2. Some factors related to anxiety, depression, and stress in COVID-19 patients who had completed treatment

Current occupation and anxiety

The rate of anxiety in the study group of medical workers was 28.6%, higher than that of other occupational groups. This difference is significant in the Chi - square assessment model. During the outbreak of the COVID-19 epidemic in Vietnam, medical staff are the leading force in treatment and epidemic prevention activities at all levels. . In the neurological and cognitive sequelae study of COVID-19: 4-month follow-up resulted in significantly higher scores of anxiety, stress, and depression in healthcare workers with COVID-19 compared to healthcare workers without COVID-19, which suggests that COVID-19 does not only impact in the acute phase of the disease, but also in the long term to the mental health of healthcare workers [4].

Having witnessed people with severe COVID-19/ death, and anxiety, depression, and stress

In our study, the anxiety rate in the group of people who had witnessed severe COVID-19/death was 23.5%, higher than in the group that had never witnessed it (8.6%). However, this difference is only statistically significant in the Chi - square assessment model. The depression rate in people who had witnessed severe COVID-19 infection/death was 8.8%, this rate in people who had never witnessed it was 2.0%.

In our study, people who showed signs of stress in the group of people who had witnessed severe COVID-19/death accounted for 8.8%, higher than those who had never witnessed (1.1%). This difference is statistically significant in the Chi - square assessment model.

The life event has just occurred within 1 year and anxiety and depression

This study showed that the study subjects with anxiety manifestations in the group with events that had just occurred in the past 1 year accounted for 16.5%, higher than the group without events (7.9%).

Age group and depression

In our study, the prevalence of depression in patients in the age group of 18 to 29 years was 7.7%, higher than in the age group of 30 to 59 years (2.9%), not recorded in the age group of 60 years and older. However, this difference is only statistically significant in the squared expenditure inspection model. In a study by Chaolin Huang and colleagues in China in 2021, there was no difference in the rates of anxiety and depression by age [5].

Families with COVID-19 and depression

The rate of depression in people with COVID-19 in their families wasis 1.3%, this rate in the group of people in the family without people with COVID-19 was 4.6%. For COVID-19 patients, regardless of the severity of the disease, health workers make a decision to isolate and treat at home or at a medical facilities.

Social support and stress

The rate of stress in the group with low social support accounted for 33.3%, this rate was higher than that of the group with medium support (2.1%) and high support (1.4%). This difference is statistically significant in the squared expenditure inspection model. Studies around the world show that social support provides physical and psychological advantages for people facing stressful physical and psychosocial events, and is considered a factor that helps reduce psychological anxiety in the face of stressful events especially for women, the elderly, patients, workers, and students [6].

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Family Economy and Stress

The stress rate in patients in poor or near-poor households was 6.7%, this rate in non-poor households is 1.4%. Economic and financial burdens are one of the common causes of stress for people. Especially during the COVID-19 pandemic, the implementation of social distancing measures for a long time, the work were disrupted, leading to the income of many people being severely affected. This affects mental health of people in general and COVID-19 patients in particular. Family economic difficulties, not having enough income to cover life are combined factors related to stress in COVID-19 patients.

V. CONCLUSION

The rates of anxiety, depression, and stress in COVID-19 patients who completed treatment on the DASS-21 scale in this study were 9.9%; 2.6% and 1.8%, respectively. Anxiety manifestations were mild (3.4%), moderate (5.2%), severe (1%), and very severe (0.3%). Depression manifests in mild (1%) and moderate (1.6%). Stress manifestations are mild (0.5%) and moderate (1.3%).

In COVID-19 post treatment patients, the factors related to anxiety are the occupational group of healthcare workers, witnessing severe COVID-19 cases/deaths and life events occurred in the past 1 year; the factors related to depression are the age group, the family has someone with COVID-19, witnessing a person with severe COVID-19/death and lifen event in the past 1 year; factors affecting stress are having witnessed severe COVID-19 deaths, social and family economic support.

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