ARTICLE

Anxiety, depression, and family dysfunction among COVID-19 patients admitted to hospital and isolation facilities in the Philippines

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ABSTRACT

COVID-19 patients are prone to developing psychosocial distress during and after admission to healthcare facilities. This prospective cohort study determined the prevalence of anxiety, depression, and family dysfunction among COVID-19 patients discharged from health facilities in Metro Manila, Philippines. Data was collected through phone interviews with COVID-19 patients two weeks and eight weeks after discharge. The questionnaires were based on validated tools such as HADS-P for screening anxiety and depression symptoms and Filipino Family APGAR and SCREEM Family resources survey for the perceived family function and resource, respectively. Data were analyzed using descriptive statistics to determine the prevalence of anxiety and depression symptoms. Factors associated with anxiety, depression, and family function were analyzed using logistic regression. Approximately 31.6% (23.8 – 40.2%) presented with anxiety symptoms, and 12.0% (7.3 – 18.4%) had depression symptoms two weeks after being discharged from COVID-19 infection. From two weeks after discharge, the prevalence of anxiety symptoms decreased to 19.8%, while depression increased to 13.5% eight weeks after discharge. The percentage of patients with a perceived moderate family dysfunction was 12.8% at two weeks and 12.5% at eight weeks after discharge, while patients with perceived severe family dysfunction grew from 0% at two weeks to 1.0% at eight weeks after discharge. Economic, medical, and educational were the

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most inadequate resources for the patients. The patient's anxiety was associated with perceived moderate family dysfunction ($p = 0.034$) and moderately inadequate family resources ($p = 0.034$). Depression was associated with perceived moderate family dysfunction ($p = 0.020$) and low income ($p = 0.036$). This is one of the first studies to determine how COVID-19 infection affects the mental health status of Filipino patients. The study's results highlight the importance of holistic care for COVID-19 patients and the need to include mental health in the management of COVID-19 patients.

INTRODUCTION

Coronavirus disease 2019, or COVID-19, is a public health concern affecting all ages worldwide (Zhu et al. 2020), including the Philippines. The impacts of COVID-19 traverse physical, mental, and emotional well-being (Malaluan et al. 2022). Since the start of this pandemic, cases of major depressive disorders have increased by 27.6%, while cases of anxiety disorders have increased by 25.6% (Santomauro et al. 2021). Social isolation brought about by months of lockdown also affected the well-being of Filipinos. Moreover, the pandemic also affected the Philippine economy, further increasing unemployment (de Lara-Tuprio et al. 2022). These socioeconomic factors contribute to the psychosocial distress experienced by Filipinos during the pandemic.

Numerous reports have shown the negative impacts of COVID-19 on the mental health of COVID-19 patients. Fear and uncertainty of COVID-19, coupled with social isolation brought by social distancing measures, brought psychosocial distress to patients. Lockdown and quarantine measures were associated with anxiety and depression in the general population in Germany (Benke et al. 2020). Similarly, a multicenter observational study in China showed that COVID-19 patients experienced psychosocial distress, including insomnia, depression, and anxiety (Wang et al. 2021). Moreover, anxiety and depression experienced by COVID-19 patients can persist even after their discharge from the hospital (Galea et al. 2020; Hurissi et al. 2021).

COVID-19 patients also experienced problems and dysfunction within their families (Fernandes et al. 2020; Gadermann et al. 2021). Families with children less than 18 years old experienced deteriorated mental health due to the COVID-19 pandemic (Gadermann et al. 2021). Participants of the study reported that the most common stressors brought on by the pandemic were being able to cope with uncertainty, fear of a family member getting sick or dying, and being separated from friends and family. A large proportion also reported being stressed about financial concerns, losing/loss of job, and having enough food to meet their household's basic needs (Gadermann et al. 2021). A previous study in the Philippines showed that family members of patients infected with COVID-19 also reported moderate family dysfunction (Apostol-Nicodemus et al. 2022). A study conducted in Portugal showed a 20% prevalence of perceived severe family dysfunction or moderate dysfunction due to the COVID-19 pandemic (Fernandes et al. 2020). Family support plays a vital role in the provision of healthcare to and recovery of COVID-19 patients (Wardani and Arifin 2021). The importance of families is evident among Filipinos known for their closely knitted family structure. Families provide the emotional support necessary for patients with illnesses, including those dealing with mental health issues (Panes 2020). Moreover, family function affects the health of both patients and family members (Javier et al. 2018).

Understanding the psychosocial impact, such as causing anxiety, depression, and family dysfunction, of COVID-19 hospitalization among patients is vital in managing this disease. This holistic view of COVID-19 can improve the clinical guidelines, programs, and policies to effectively respond to future pandemics. Hence, this study showed the high prevalence of anxiety and depression symptoms among COVID-19 patients in hospitals and isolation facilities in the Philippines. These COVID-19 patients also perceived moderate family dysfunction and the lack of essential healthcare resources.

MATERIALS AND METHODS

Ethical Consideration

Ethics clearance was obtained from the Research Ethics Board of UP Manila and the Single Joint Research Ethics Board of the Philippine Department of Health. All patients signed the written consent before enrolling in the study.

Study and Sampling Design

This study is part of the project on the psychosocial impact of COVID-19 on patients and their families in the Philippines. The result of the study for family members of COVID-19 patients was previously published (Apostol-Nicodemus et al. 2022). This current study employed the same prospective cohort study design. A non-probabilistic sampling was used. Adult patients were chosen from patients admitted to the study sites (COVID-19 healthcare facilities in Manila). The family medicine resident and all staff who had physical exposure to COVID areas during the recruitment of participants were trained in the proper donning and doffing of personal protective equipment. They had contact with the patients. The patients were interviewed through phone calls two weeks and eight weeks after discharge from the hospital or isolation facility.

Study Sites

The study was conducted on the patients discharged from two community isolation units (PNP Kiangan Quarantine Facility in Camp Crame, Quezon City and the University of the Philippines Diliman Silungan Molave Quarantine Facility, in Diliman, Quezon) and one hospital (Philippine General Hospital [PGH]) in Manila, Philippines.

Inclusion and exclusion criteria

The inclusion criteria include: 1) >18 years old; 2) suspected, probable, or confirmed COVID-19 patients from the three study sites. All suspected and probable patients tested positive for COVID-19 via reverse transcriptase polymerase chain reaction test; 3) able to answer the questionnaires through phone interviews; 4) can consent to participate in the study. The exclusion criteria include 1) with a pre-existing psychiatric disorder before admission to the study sites; 2) with physical or mental illness that does not allow them to consent to participate in the study and answer the interview questions.

Data collection procedure

Patients were interviewed via telephone or online calls at two weeks and eight weeks after discharge from the study sites. A semi-structured questionnaire was used for the data collection. All data, including the notes and voice recordings of calls, were stored properly and only accessible to the investigators. All patients who required supportive psychosocial care during the interview process were referred to physicians for initial counseling. Those needing further management were referred to the Family Health Unit clinic of PGH. The interview was stopped and/or rescheduled when the patient felt uneasy, uncomfortable, or did not want to continue with the interview. In case additional time is warranted, another interview session was scheduled.

Data Collection Tools
The questionnaire used in this study was pre-tested to improve the data quality before the start of the data collection.

Hospital Anxiety and Depression Scale – Pilipino Version (HADS-P)
Anxiety and depression symptoms were evaluated using HADS-P, a Filipino translation of HADS validated among Filipino patients (Hedman et al. 2013). This is a self-report tool used to determine anxiety and depression symptoms. It is composed of 14 items with two subscales: anxiety and depression. Each item was given a score ranging from 0 to 3. A score of ≥ 11 indicated the presence of anxiety or depression (De Guzman 2013; Snaith 2003; Tan et al. 2015).

Family assessment tools
This study used the Filipino family APGAR to determine the family function. This is a validated tool based on Smilkstein's family APGAR and translated into Filipino. The tool comprised five parameters: adaptability, partnership, growth, affection, and resolve. A total score of 0–3 indicated the presence of severe family dysfunction, a score of 4–7 for moderate family dysfunction, and a score of 8–10 for highly functional families (Panganiban-Corales and Medina 2011).

The SCREEM Family Resources Survey (SCREEM-RES) was used to assess the adequacy of family resources (Panganiban-Corales and Medina 2011). This is a 12-item questionnaire with six original domains and two items per domain. Each item was answered with strongly disagree, disagree, agree, or strongly agree. The total SCREEM-RES scores were assessed as severely inadequate (a score of 0 – 12), moderately inadequate (a score of 13 – 24), and adequate family resources (a score of 25 – 36). On the other hand, the results for the domain subscales were assessed as severely inadequate (a score of 0 – 2), moderately inadequate (a score of 3 – 4), and adequate family resources (a score of 5 – 6).

Data Analysis
IBM® SPSS® Statistics 28 was used for the statistical tests. An independent student t-test or a Mann-Whitney U test was used to compare the two means. Categorical variables were analyzed using the χ^2 test or Fisher's exact test. Binary logistic regression analysis was performed to determine the association between clinical and sociodemographic factors and anxiety, depression, and family dysfunction symptoms. The association measure was presented as odds ratios and 95% confidence intervals. An adjustment was made for confounding exposure variables with $p < 0.25$ based on univariate analysis.

Results
Sociodemographic characteristics of COVID-19 patients
This study recruited 133 patients who completed the first interview at two weeks from discharge, 96 of whom had finished the second interview at eight weeks from discharge. **Table 1** shows the sociodemographic characteristics of the 133 patients who completed at least the first interview. The mean age of patients was 42.9 ± 13.1, with an age range of 20 to 69. Patients with mild COVID-19 had the highest number, followed by those with critical and severe diseases. Most patients were married (51.1%), college graduate (57.9%), with a regular job (48.9%), belonging to a low income family with a monthly salary of ₱10,957.0 to 43,828.0 (42.1%), and diagnosed with at least one chronic disease (63.2%).

Anxiety and depression among COVID-19 patients
Using the cut-off HADS-P anxiety score of 11, 31.6% of the patients had anxiety symptoms two weeks after discharge. The prevalence of anxiety decreased to 19.8% eight weeks after discharge. At the cut-off HADS-P depression score of 11, 12% of patients had depression symptoms two weeks after discharge. The prevalence of depression increased to 13.5% at eight weeks post-discharge. Mixed diagnoses of anxiety and depression had a prevalence of 6.8% at two weeks and 6.3% after discharge (**Table 2**).

Among those who showed anxiety symptoms at two weeks post-discharge, 42.9% (12/28) remained symptomatic at eight weeks, while among those who showed depressive symptoms at two weeks, 45.5% (5/11) remained symptomatic at eight weeks. Of those who did not show anxiety symptoms at two weeks, 10.3% (7/68) developed them at eight weeks. Five point nine percent (5/85) developed depressive symptoms at eight weeks after being asymptomatic at two weeks (**Table 3**).

Family dysfunction perceived by COVID-19 patients
The Family APGAR index, which measures the general family function, scores moderate dysfunction at 4-7 and severe dysfunction at 0-3. Patients with perceived moderate family dysfunction increased from 12.5% to 12.8%, and the percentage of patients with severe family dysfunction also grew from 0% to 1.0% (**Table 4**). Among those with perceived family dysfunction at two weeks, 46.2% maintained the same perception at eight weeks after discharge, while 8.4% of those without perceived dysfunction at two weeks developed it at eight weeks (**Table 5**).

Inadequacy of family resources perceived by COVID-19 patients
Based on the results of the SCREEM RES questionnaire, the most inadequate resources for COVID-19 patients were the economic, educational, and medical resources. The number of patients with perceived inadequate economic resources diminished while those with perceived medical inadequacy increased at eight weeks post-discharge. The least perceived inadequate resources were social, cultural, and religious. All three of these resources had increased perceived inadequacy at eight weeks compared to two weeks after discharge. The perceived overall resource inadequacy from two weeks to eight weeks after discharge slightly increased from 31.6% to 34.4% (**Table 6**).

Most patients (66.7%) who perceived inadequacy of family resources at two weeks maintained the same perception eight weeks after discharge, while 19.7% of those without perceived inadequacy of family resources at two weeks developed it at eight weeks for patients (**Table 7**).

Factors Associated with Psychological Impact of COVID-19 Infection
Factors associated with developing anxiety symptoms were having a perceived moderate family dysfunction ($p = 0.034$) and low family-orientedness of care received in the facility ($p = 0.049$) two weeks after discharge. At eight weeks after discharge, perceived moderate inadequacy of family resources ($p = 0.034$) was associated with anxiety symptoms. Low income and poor class ($p = 0.02$) and perceived moderate family dysfunction in the family ($p = 0.036$) are both factors associated with depressive symptoms. (**Table 8**).

DISCUSSION

This multicenter prospective cohort study showed a high prevalence of anxiety and depression among COVID-19 patients after discharge from the hospitals and isolation facilities. Anxiety and depression persisted in the eighth week after discharge. Patients with COVID-19 perceived family dysfunction even at eight weeks post-discharge. Family dysfunction was associated with anxiety and depression at two

weeks after discharge, while inadequate family resources were associated with anxiety at eight weeks after discharge.

Table 1: Baseline socio-demographic characteristics of patients who at least completed the first interview.

Characteristic	Patient (N = 133)
Age in years, mean (SD)	42.9 (13.1)
Age group, n (%)	
18 to 34 years old	42 (31.6)
35 to 49 years old	43 32.3
50 to 64 years old	41 (30.8)
65 years old and above	7 (5.3)
Sex assigned at birth, n (%)	
Female	63 (47.4)
Male	70 (52.6)
Health care facility, n (%)	
PGH COVID-19 Designated Referral Center	71 (53.4)
UP Diliman Silungan Molave Quarantine Facility	34 (25.6)
PNP Kiangan Quarantine Facility	28 (21.1)
COVID-19 severity during admission, n (%)	
Critical and severe	44 (33.1)
Moderate	14 (10.5)
Mild	71 (53.4)
Asymptomatic	4 (3.0)
Civil status, n (%)	
Married	68 (51.1)
Cohabitation	10 (7.5)
Separated	5 (3.8)
Widow	7 (5.3)
Single	43 (32.3)
Educational attainment, n (%)	
Post-graduate	16 (12.0)
College	77 (57.9)
Vocational	5 (3.8)
Secondary school	31 (23.3)
Primary school	4 (3.0)
Employment status, n (%)	
Regular, n (%)	65 (48.9)
Self-employed, n (%)	13 (9.8)
Contractual, n (%)	37 (27.8)
Unemployed, n (%)	18 (13.5)
Affected job due to admission, n (%)	45 (33.8)
Number of household members, median (IQR)	5 (3-6)
Number of household members group, n (%)	
less than 5	65 (48.9)
5 or more	68 (51.1)
Diagnosed with at least one chronic disease, n (%)	84 (63.2)
Had previous hospital admission, n (%)	67 (50.4)
Had previous surgery, n (%)	62 (46.6)
Income classification based on PIDS 2018, n (%)	
Poor (monthly salary below ₱ 10,957.0)	28 (21.1)
Low income (monthly salary of ₱ 10,957.0 to 43,828.0)	56 (42.1)
Middle income (monthly salary of ₱43,828 to 219,140)	49 (36.8)
Knew someone who died due to COVID-19, n (%)	50 (37.6)
Knew someone else who had COVID-19, n (%)	95 (71.4)

Abbreviations: SD, standard deviation; IQR, interquartile range; PGH, Philippine General Hospital; PNP, Philippine National Police; UP, University of the Philippines; PIDS, Philippine Institute for Development Studies; ND, No Data.

Table 2: Proportion of adult COVID-19 patients with symptoms of anxiety and depression at 2 and 8 weeks after discharge from the study sites.

Mental health outcome	Patient			
	2 weeks after discharge (N = 133)		8 weeks after discharge (N = 96)	
	n	% (95% CI)	n	% (95% CI)
Anxiety	42	31.6 (23.8-40.2)	19	19.8 (13.4-29.2)
Depression	16	12.0 (7.3-18.4)	13	13.5 (7.8-21.4)
Mixed diagnosis, n (%)	9	6.8 (3.4-12.0)	6	6.3 (2.7-12.4)

Table 3: Dynamics of anxiety and depressive symptoms among adult patients at 2 and 8 weeks after discharge (N = 96).

Psychosocial condition N = 96	Symptomatic at 2 weeks			Asymptomatic at 2 weeks		
	n	Resolved symptoms at 8 weeks n (%)	Remained symptomatic at 8 weeks n (%)	n (%)	Remained asymptomatic at 8 weeks n (%)	Developed symptoms at 8 weeks n (%)
Anxiety	28	16 (57.1)	12 (42.9)	68	61 (29.7)	7 (10.3)
Depression	11	6 (54.5)	5 (45.5)	85	80 (94.1)	5 (5.9)

Table 4: Proportion of adult COVID-19 patients with perceived family dysfunction at 2 and 8 weeks after discharge from the study sites.

Social outcome	Patient			
	2 weeks after discharge (N = 133)		8 weeks after discharge (N = 96)	
	n	% (95% CI)	n	% (95% CI)
Moderately dysfunctional	17	12.8 (7.9-19.2)	12	12.5 (7.0-20.2)
Severely dysfunctional	0	0 (0.0-1.9)	1	1.0 (0.0-4.8)

Table 5: Dynamics of perceived family dysfunction among adult patients at 2 and 8 weeks after discharge (N = 96).

Psychosocial condition N = 96	With dysfunction at 2 weeks			Without dysfunction at 2 weeks		
	n	Resolved at 8 weeks n (%)	Remained with dysfunction at 8 weeks n (%)	n	Remained at 8 weeks n (%)	Developed dysfunction at 8 weeks n (%)
Family dysfunction	13	7 (53.8)	6 (46.2)	83	76 (91.6)	7 (8.4)

Table 6: Proportion of adult COVID-19 patients with perceived inadequate family resources at 2 and 8 weeks after discharge from the study sites.

Social outcome	Patient			
	2 weeks after discharge (N = 133)		8 weeks after discharge (N = 96)	
	n	% (95% CI)	n	% (95% CI)
Inadequate family resources, n (%)				
Over-all resources				
Moderately inadequate	42	31.6 (24.1-39.8)	33	34.4 (25.4-44.2)
Severely inadequate	0	0 (0.0-1.9)	0	0 (0.0-2.6)
Social resources				
Moderately inadequate	35	26.3 (19.4-34.3)	32	33.3 (24.5-43.1)
Severely inadequate	0	0 (0.0-1.9)	0	0 (0.0-2.6)
Cultural resources				
Moderately inadequate	47	35.3 (27.6-43.7)	43	44.8 (35.1-54.8)
Severely inadequate	2	1.5 (0.3-4.7)	1	1.0 (0.1-4.8)
Religion resources				
Moderately inadequate	45	33.8 (26.2-42.2)	40	41.7 (32.2-51.7)
Severely inadequate	2	1.5 (0.3-4.7)	2	2.1 (0.4-6.5)
Economic resources				
Moderately inadequate	72	54.1 (45.7-62.4)	53	55.2 (45.2-64.9)
Severely inadequate	24	18.0 (12.2-25.2)	14	14.6 (8.6-22.7)
Educational resources				
Moderately inadequate	55	41.4 (33.2-49.8)	50	52.1 (42.2-61.9)
Severely inadequate	9	6.8 (3.4-12.0)	6	6.3 (2.7-12.4)
Medical resources				
Moderately inadequate	69	51.9 (43.4-60.3)	52	54.2 (44.2-63.9)
Severely inadequate	22	16.5 (11.0-23.5)	19	19.8 (12.8-28.6)

Our study revealed depressive symptoms among COVID-19 patients, with a prevalence that increased from 12 to 13% in weeks 2 to 8. Like other studies on the psychological effects of COVID-19 infection, survivors of mild to moderate COVID-19 infection present with post COVID syndrome for 12 weeks or more. This includes depressive symptoms, which can be seen in 11 to 28% of patients post-COVID-19 (Renaud-Charest et al. 2021). Carod and colleagues showed that depression might persist up to 6 months post-infection (Carod-Artal 2021).

Table 7: Dynamics of perceived inadequacy of family resources among patients at 2 and 8 weeks after discharge (N = 74).

Psychosocial condition N = 74	With perceived inadequate family resources at 2 weeks			Without perceived inadequate family resources at 2 weeks		
	n (%)	Resolved at 8 weeks n (%)	Remained with inadequacy at 8 weeks n (%)	n (%)	Remained at 8 weeks n (%)	Developed Perceived Inadequacy at 8 weeks n (%)
Inadequate family resources	30 (30.3)	10 (10.4)	20 (20.8)	66 (68.8)	53 (55.2)	13 (13.5)

Table 8: Factors associated with psychological symptoms identified by multivariate logistic regression analysis.

Explanatory variable	Adjusted odds ratio (95% CI)	*p* value
Condition: Anxiety in patients at 2 weeks after facility discharge[1]		
Family functioning		
Moderately dysfunctional	3.58 (1.1–11.7)	0.034
Highly functional	1	
Family-orientedness of care	0.89 (0.78–0.99)	0.049
Condition: Anxiety in patients at 8 weeks after facility discharge[2]		
Family resources		
Moderately inadequate	3.2 (1.1–9.7)	0.034
Adequate	1	
Condition: Depression in patients at 2 weeks after facility discharge[3]		
Family functioning		
Moderately dysfunctional	7.0 (1.4–35.6)	0.02
Highly functional	1	
Income class		
Low income and poor	8.1 (1.1–57.5)	0.036
Middle income	1	

The uncertainty of the prognosis of COVID-19 infection may contribute to anxiety and depression among patients. Previous research demonstrated that fear of COVID-19 and intolerance to uncertainty are correlated with poor mental wellbeing (Bakioğlu et al. 2021; Bulut 2022; Satici et al. 2022). Moreover, at the start of the pandemic, clinical practice guidelines were still evolving, and little is known about SARS-COV-2. Despite administering the standard management, several patients still succumb to infection and die. COVID-19 vaccinations were also limited at the start of the pandemic. There were significant morbidities and mortalities during that time, and the health system was overwhelmed. These factors added to the uncertainty of the outcomes for the participants.

Isolation from family members during the patient's confinement in the COVID-19 facilities might also contribute to psychosocial distress. Social isolation from quarantines, lockdowns, and facility treatment has profound mental health effects (Hwang et al. 2020; Robb et al. 2020). Patients admitted to COVID-19 cannot be physically visited by family members. COVID-19 facilities mitigated social isolation by providing internet connectivity for the online interaction of patients with their relatives. Filipino families have strong intergenerational ties. A high degree of exchange and support occurs among family members in different relationships with one another across generations (Agree et al. 2002). Intergenerational co-residence is also prevalent, and adult children still live in their parent's household until marriage. Older parents also live in the household of their adult children (Natividad and Cruz 1997). Studies have shown that the coresidence of parents with adult children improves their physical and mental well-being (Cong and Silverstein 2012). It also improves the feeling of social connection, which is helpful in well-being. This can also be a source of satisfaction, as they can offer resources and care to younger family members (Su and Ferraro 1997). Hence, isolation from family members due to COVID-19 may contribute to the psychosocial distress of the patients.

The persistence of anxiety and depression can be attributed to the severity of the COVID-19 infection. A previous study showed higher odds of experiencing psychological distress seven months after infection for those with symptomatic COVID-19 compared to individuals without infection (Niedzwiedz et al. 2021). The estimated incidence of a neurological and psychiatric diagnosis within six months after COVID-19 diagnosis was high among those patients admitted to a hospital intensive care unit (Taquet et al. 2021). COVID-19 patients who were bedridden for more than seven days were persistently at higher risk of symptoms of depression and anxiety than those without a diagnosis (Magnúsdóttir et al. 2022). Viral infections, including COVID-19, were shown to trigger symptoms affecting sleep and causing appetite loss and fatigue. These factors can also contribute to the persistence of mental health conditions after infection. Lastly, there is abundant evidence of the long COVID-19 symptoms and their association with symptoms of posttraumatic stress disorder, anxiety, or depression six months after the onset of COVID-19 infection (Houben-Wilke et al. 2022).

In this study, risk factors for patient anxiety include perceived moderate dysfunction, low family-orientedness of care facilities, and inadequate family resources. Likewise, moderate dysfunction in the family is correlated with depressive symptoms. Our findings agree with previous research that family function predicts mental well-being among patients. For instance, a cross-sectional study in China showed that family function is a positive predictor of the general well-being of stroke patients during COVID-19 (Song et al. 2022). High family function scores were also a protective factor against anxiety among pregnant women during the pandemic (Khoozan et al. 2022). Furthermore, family functioning moderated adolescents' stress (Wu et al. 2021).

Inadequate family resources and low income were predictors of anxiety and depression, respectively. Scarcity among socially disadvantaged groups increases their vulnerability to mental

distress due to their low psychosocial resources (Campo-Arias and De Mendieta 2021). A national web-based survey in the United States showed that food insecurity is associated with depression, anxiety, and stress during the pandemic (Wolfson et al. 2021). Household savings are likewise shown to increase anxiety among students living in the COVID-19 epicenter in the US (Rudenstine et al. 2021). This evidence highlights the social determinants of health and how socioeconomic factors, such as household unemployment, economic stress, and food insecurity, can compound poor mental health among COVID-19 patients (Duby et al. 2022).

The perceived family dysfunction increased from two weeks to eight weeks among the COVID-19 patients. This suggests that the COVID-19 admission might have exacerbated family dysfunction, which could have long-term effects. There was a slight increase in perceived inadequacy of family resources, especially for medical reasons. This suggests that patients might have perceived a more remarkable lack of access to medical facilities eight weeks post-discharge.

Our study contributes to the evidence for a more holistic approach to COVID-19 management and supports the need to include psychosocial interventions in practice guidelines. We recommend including individual and family assessments in the routine history taking in the clinics and hospitals. Validated tools, such as Depression, Anxiety, and Stress Scale and Patient Health Questionnaire can help early detection of mental disorders. Functional family relationships and family resources can be assessed through Family APGAR and SCREEM RES, respectively. We emphasize the need for an interdisciplinary approach to managing COVID-19 patients. Providing psychological and social support and home care should be considered for COVID-19 patients.

Our study has inherent limitations. This study only included COVID-19 patients in Manila. While Manila had the most cases of COVID-19 in the country, healthcare facilities from other regions might have different experiences from our study cohort. HADS-P tool was designed to be self-administered. However, the challenges posed by the lockdown during the pandemic limited the researchers' ability to travel and visit patients in person in their residences. Hence, a telephone interview was done for this study. However, a previous study showed that telephone administration of self-report measures of social anxiety, depressive symptoms, and sleep difficulties can be a valid method of administration (Hedman et al. 2013). Another limitation is that the calculated sample size was not reached due to difficulties in recruiting patients from community quarantine facilities. Thus, some factors associated with study outcomes might have been missed. The presence of family dysfunction and inadequacy of resources before the conduct of the study was not confirmed. Lastly, the results of the screening for anxiety and depression were not confirmed using diagnostic tools used in the psychiatric community. Nevertheless, our study successfully showed the prevalence and dynamics of psychosocial distress among designated healthcare facilities in Manila. Moreover, we successfully determined risk factors for anxiety and depression among these patients.

CONCLUSION

Our study showed that COVID-19 patients in three healthcare facilities in Manila experienced symptoms of anxiety and depression at two- and eight weeks post-discharge. Several family-associated factors influenced these outcomes. Low family-orientedness in healthcare facilities and perceived dysfunctional family relationships are related to anxiety symptoms among patients. Depressive symptoms, on the other hand, are affected by low income and perceived dysfunction in the family. It was also noted that the highly inadequate family resources for patients were economic, educational, and medical. The medical resources were identified as a long-term inadequacy post-COVID-19 infection compared to economic resource inadequacy experienced two weeks post-discharge.

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CONFLICT OF INTEREST

The authors declare no conflicts of interests.

CONTRIBUTIONS OF INDIVIDUAL AUTHORS

Conceptualization, L.A.N., I.K.B.T., A.G.O.L., G.D.P.D.; methodology, L.A.N., I.K.B.T., A.G.O.L., G.D.P.D.; Formal analysis, L.A.N., I.K.B.T., A.G.O.L., G.D.P.D., O.A.G.T., E.D.B.O.; Investigation, L.A.N., I.K.B.T., A.G.O.L., G.D.P.D.; data curation, L.A.N., I.K.B.T., A.G.O.L., G.D.P.D., O.A.G.T., E.D.B.O.; writing – original draft preparation: L.A.N., I.K.B.T., A.G.O.L., G.D.P.D., O.A.G.T., E.D.B.O.; writing—review and editing, I.K.B.T., O.A.G.T.; supervision: L.A.N.; funding acquisition, L.A.N. All authors have read and agreed to the published version of the manuscript.

ETHICS STATEMENT

This study was approved by the Research Ethics Board of UP Manila (2020-280-01) and the Single Joint Research Ethics Board of the Philippine Department of Health (2020-100).

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