




The Persistent Symptoms and Decreased Quality of Life of COVID-19 Patients (A 3-month Follow-up after Discharge)

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Abstract

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BACKGROUND: Most coronavirus disease 2019 (COVID-19) patients are still experiencing persistent clinical symptoms even after being discharged from the hospital. The previous studies have reported the remaining symptoms in 29–93% of patients. This condition can have a major impact on a patient's ability to perform daily activities and have a deleterious effect on their quality of life (QoL).

AIM: This study aimed to evaluate persistent symptoms and QoL of COVID-19 patients 3 months after discharge from Dr. Kariadi Hospital Semarang, Central Java, Indonesia.

METHODS: Confirmed COVID-19 patients were enrolled in this prospective cohort study after discharge from Dr. Kariadi Hospital Semarang from March 1, 2021, to May 15, 2021. Telephone interviews were conducted each week in the 1st month, and every 2 weeks in the 2nd and 3rd months regarding persistent symptoms. EQ-5D-5L questionnaires were completed and evaluated every month for 3 months after hospital discharge.

RESULTS: Of the 104 patients enrolled, 52.9% were male, with a mean age of 48.96 years. The incidence of persistent symptoms in the 1st, 2nd, and 3rd months was 49%, 31.7%, and 25%, respectively. The most common persistent symptoms were fatigue, cough, shortness of breath, and nausea. The characteristics of the patients included being overweight/obese, having one or more comorbidities, having five or more symptoms classified as moderate COVID-19, and requiring supplemental oxygen during hospitalization. Based on the EQ-5D questionnaire, most patients reported worsening in the quality of their ability to perform usual activities, feelings of pain/discomfort, and anxiety/depression. The total values of the EQ-5D and EQ-VAS indices were lower than those of the Indonesian general population, indicating a decrease in QoL.

CONCLUSION: The patients developed persistent symptoms and decreased quality of life during the 3-month following hospital discharge.

Introduction

The coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread rapidly worldwide.[1], [2]The severity and symptoms of COVID-19 range from asymptomatic to a critical state [3]. The challenge that has emerged is the continuation of health problems for COVID-19 patients after discharge from the hospital. Some patients are still experiencing symptoms associated with COVID-19 after the acute phase of infection has passed [4].

The previous studies reported that 29%–93% of patients may be affected by persistent symptoms 1–7 months following acute COVID-19 [5]. Fatigue and dyspnea were the most commonly reported persistent symptoms after acute COVID-19 infection [4], [6]. Previous coronavirus outbreaks, such as severe acute respiratory syndrome (SARS) and Middle East

respiratory syndrome-related coronavirus, reported some survivor patients with a diminished pulmonary function and exercise performance 6 months after discharge [6], [7].

The health-related quality of life (HRQoL) assessment assists health-care practitioners in characterizing the factors influencing QoL and understanding the features of COVID-19 management required to improve the QoL of patients [8].The HRQoL assessment evaluates the impact of illness, disorders, or disabilities on a patient's health. Several previous studies have shown that COVID-19 may affect the QoL of patients. Some of the people who suffered from COVID-19 still experience physical symptoms that impact their daily lives and lead to poor HRQoL [9].

This study aimed to determine persistent symptoms and evaluate QoL of COVID-19 patients 3 months after discharge from Dr. Kariadi Hospital Semarang.

Methods

A single-center, prospective cohort study at Dr. Kariadi Hospital Semarang was conducted on post-discharge COVID-19 patients from March 1, 2021, to May 15, 2021. The eligibility criteria were COVID-19 patients aged ≥ 18 years who signed the informed consent. Exclusions included pregnancy, having cognitive impairment, or having a psychotic disorder. Ethical guidance was obtained from the Health Research Ethical Committee of Dr. Kariadi Hospital Semarang (771/EC/KEPK-RSDK/2021).

Hospital admission data were retrieved from electronic medical records including demographics, clinical signs, symptoms, comorbidities, hospital length of stay, and oxygen supplementation support. The World Health Organization (WHO) guidelines were utilized to classify the disease severity of COVID-19 and the discharge criteria. Telephone interviews were conducted to follow all symptoms every week during the 1st month, and every 2 weeks in the 2nd and 3rd months. The HRQoL questionnaires were applied every month of follow-up. Persistent symptoms included any self-reported persistent or newly occurring symptoms potentially associated with COVID-19 infection after hospital discharge. The survivors' current symptoms were differentiated from those of their preexisting condition and, therefore, were not assigned to COVID-19. Patients were contacted at various times to increase their chances of success with calls. Evaluation and enumeration were completed using the HRQoL Indonesian version of the EQ-5D-5L questionnaire [10].

All data were analyzed with descriptive using the 25.0 version of the Statistical Package for the Social Sciences program (IBM Corp. Armonk, NY, USA). The data were presented in frequencies, percentages, means, and graphics.

Results

Study sample

One hundred and thirty-six confirmed COVID-19 patients were discharged from the hospital between March 1, 2021, and May 15, 2021. Of those, 112 patients fulfilled the inclusion criteria and were enrolled in the initial cohort. During the follow-up period, four patients died (two died at home and two died at the hospital; three had malignancy and one had HIV-AIDS), three patients did not answer the phone calls, and one declined to follow-up. A total of 104 patients completed the study (Figure 1).

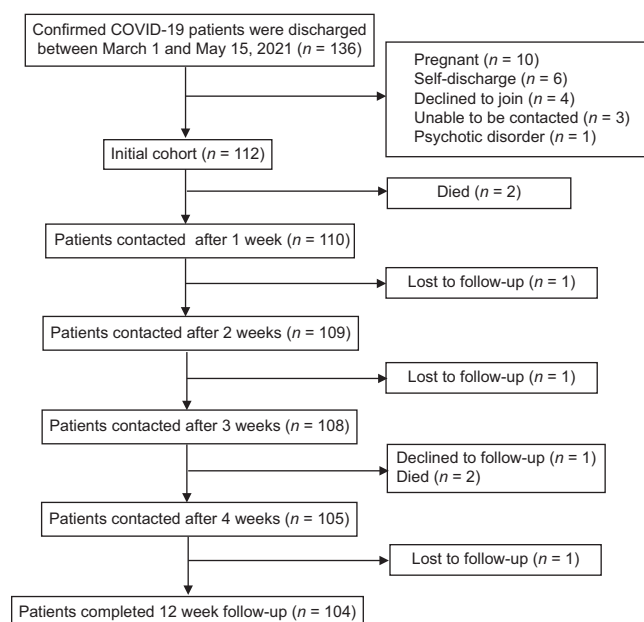


Figure 1: Flowchart of study sample

Patients' demographics and characteristics

Table 1 shows the baseline characteristics of 104 patients in this study.

Persistent symptoms

In the 1st week after discharge, 91 (87.5%) of 104 patients reported at least one persistent symptom. The percentages of persistent symptoms for the 1st–3rd months were 49%, 31.7%, and 25.0%, respectively. The most frequent symptoms were fatigue, dyspnea, cough, and nausea (Table 2). Clinical characteristics of patients who developed persistent symptoms were male, older age (>65 years), having comorbidities, being overweight/obese, moderate severity, having at least five symptoms through acute COVID-19, and requiring oxygen supplementation (Table 3).

The time free of persistent symptoms for the COVID-19 patients in this study showed a median of 6 weeks after hospital discharge, according to the Kaplan–Meier survival analysis (Figure 2a). The median remissions of fatigue, cough, dyspnea, and nausea were 4, 3, 3, and 10 weeks after discharge, respectively (Figure 2b).

HRQoL

Table 4 shows the scores on the five EQ-5D-5L items. During the 1st–3rd month of follow-up, the majority of patients reported issues, particularly with the performance of usual activities (43.3–31.7%), pain/discomfort (31.7–17.3%), and anxiety/depression (30.8–27.9%). The mean (SD) of the EQ-5D index

Table 1: Demographics and clinical characteristics of study samples

Characteristics	Value (n, %)
Sex	
Male	55 (52.9)
Female	49 (47.1)
Age (years), mean ± SD	48.96 ± 15.97
18–65	86 (86.7)
>65	18 (13.3)
Marital status	
Married	85 (81.7)
Unmarried	14 (13.5)
Divorced/widowed	5 (4.8)
Education level	
Illiterate	3 (2.9)
Up to primary school	19 (18.3)
Up to junior high school	15 (14.4)
Up to senior high school	40 (38.5)
Bachelor or above	27 (26.0)
Occupational status	
Employed	55 (53.8)
Unemployed	49 (46.2)
BMI (kg/m²), mean ± SD	24.09 ± 5.27
Presenting symptoms during hospitalization	
Fever	86 (82.7)
Cough	79 (76.0)
Shortness of breath	76 (73.1)
Malaise	71 (68.3)
Nausea	58 (55.8)
Diarrhea	29 (27.9)
Vomiting	24 (23.1)
Abdominal pain	23 (22.1)
Difficulty sleeping	19 (18.3)
Headache	14 (13.5)
Runny nose	10 (9.6)
Anosmia	8 (7.7)
Odynophagia	7 (4.1)
Sore throat	6 (5.8)
Chest pain	4 (3.8)
Ageusia	4 (3.8)
Joint pain	4 (3.8)
Myalgia	3 (2.9)
Types of comorbidities*	
Hypertension	33 (31.7)
Diabetes	30 (28.8)
Active smoker	9 (8.7)
Cardiac disease	8 (7.6)
Malignancy	7 (6.7)
Stroke	5 (4.8)
Asthma/COPD	5 (4.8)
Chronic kidney disease	4 (3.8)
Autoimmune disease	3 (2.8)
HIV	2 (1.9)
Hepatitis B	2 (1.9)
Tuberculosis	1 (1.0)
Epilepsy	1 (1.0)
Thalassemia	1 (1.0)
Number of comorbidities	
No comorbid	32 (30.8)
1 comorbid	45 (43.3)
2 comorbidities	18 (17.3)
≥3 comorbidities	9 (8.7)
Hospital length of stay (days), mean ± SD	16.49 ± 10.62
Disease severity (WHO)	
Mild	15 (14.4)
Moderate	54 (51.9)
Severe	21 (20.2)
Critical	14 (13.5)
Highest oxygen supplementation	
No support	26 (25.0)
Nasal cannula	49 (47.1)
NRM (non-rebreathing mask)	14 (13.5)
HFNC (high-flow nasal cannula)	13 (12.5)
Ventilator	2 (1.9)

*The total number cases is 111, due to some patients have multiple comorbidities.

for 3 months was 0.894 (0.117), 0.916 (0.102), and 0.920 (0.098), whereas those of EQ-VAS were 76.83 (15.67), 81.83 (12.45), and 82.98 (11.56), respectively. The overall score of the EQ-5D-5L questionnaire improved over time.

Discussion

This is the study to analyze the long-term effects of COVID-19 in Indonesia. In the 1st month, the percentage of persistent symptoms was 49%. These results are similar to those of Mahmud *et al.* [6] who reported that 46% of patients developed post-COVID-19 syndrome, although Jacobs *et al.* [11] reported a higher percentage (72.7%) at 30–35 days of follow-up after hospital discharge. The percentage of persistent symptoms in the 2nd month was 31.7%. This result is consistent with Chopra *et al.* [12] who reported that 32.6% of patients still experienced persistent symptoms, but two European studies [13], [14] reported 62.5% and 84% at 50–60 days after hospital discharge, respectively. At the end of the 3rd month, the percentage of persistent symptoms was 25%. A similar study conducted by Evlice *et al.* [15] who reported that 27.4% of patients had persistent symptoms, whereas two studies in China found 49.6% [16] and 57.6% [9] of patients at 120–140 days after hospital discharge.

The difference in percentages in this study may be due to variations in demographic data, methods, and time of sampling, especially in comparison to Western countries. The most prominent characteristic was the age of the patients. In this study, only 17.3% (18/104) of patients were >65 years old, compared with the US study in which 31% of patients were >65 years old. In addition, the differences in the sociocultural background of Indonesia may provide an explanation, where the percentage of the elderly population in Indonesia is lower (9.6%) [17] than that of Western countries (North America, 16%; Europe, 21%) [6].

In this study, systemic (fatigue and excessive sweating), pulmonary, neurologic, and gastrointestinal systems were the most common organ systems with persistent symptoms from the 1st to 12th week follow-up period. This study differs in this way from the study of Davis *et al.* [18] which described 203 persistent symptoms from 10 organ systems, of which systemic had the highest percentage, followed by pulmonary, ENT, neuropsychiatric, and gastrointestinal.

Many other studies have reported fatigue as a symptom experienced by numerous patients during the course of their treatment. Post-COVID-19 patients have a symptom profile that is similar to that of chronic fatigue syndrome, which includes debilitating fatigue, pain, neurocognitive impairment, low quality of sleep, symptoms related to autonomic dysfunction, and worsening of global symptoms, with very little improvement in physical and/or cognitive activity. This fatigue symptom may remain more than 3 months after the appearance of the first symptom of acute COVID-19 [19]. In the previous studies, the rates of post-COVID-19

Table 2: Persistent symptoms of COVID-19 patients after hospital discharge to 12 weeks

Variables	1 week (n, %)	2 weeks (n, %)	3 weeks (n, %)	4 weeks (n, %)	6 weeks (n, %)	8 weeks (n, %)	10 weeks (n, %)	12 weeks (n, %)
Number of symptoms								
No symptom	13 (12.5)	27 (26.0)	47 (45.2)	53 (51.0)	63 (60.6)	71 (68.3)	76 (73.1)	78 (75.0)
1 symptom	34 (32.7)	43 (41.3)	35 (33.7)	31 (29.8)	28 (26.9)	21 (20.2)	20 (19.2)	19 (18.3)
2 symptoms	45 (43.3)	24 (23.1)	16 (15.4)	14 (13.5)	9 (8.7)	8 (7.7)	5 (4.8)	5 (4.8)
≥3 symptoms	12 (11.6)	10 (9.7)	6 (5.8)	6 (5.8)	4 (3.8)	4 (3.8)	3 (2.9)	2 (1.9)
Persistent symptoms								
Fatigue	73 (70.2)	61 (58.7)	44 (42.3)	37 (35.6)	26 (25.6)	21 (20.2)	16 (15.4)	15 (14.4)
Cough	37 (35.6)	20 (19.2)	12 (11.5)	10 (9.6)	5 (4.8)	4 (3.8)	4 (3.8)	3 (2.8)
Dyspnea	13 (12.5)	10 (9.6)	4 (3.8)	4 (3.8)	2 (1.9)	1 (1.0)	1 (1.0)	1 (1.0)
Nausea	8 (7.7)	7 (6.7)	6 (5.8)	6 (5.8)	6 (5.8)	5 (4.8)	4 (3.8)	2 (1.9)
Sleeplessness	5 (4.8)	4 (3.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)
Headache	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)
Ageusia	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)
Joint pain	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)
Anosmia	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	1 (1.0)	1 (1.0)
Myalgia	2 (1.9)	2 (1.9)	2 (1.9)	2 (1.9)	1 (1.0)	1 (1.0)	1 (1.0)	0
Cognitive disorder	2 (1.9)	2 (1.9)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	0	0
Abdominal pain	2 (1.9)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	0	0	0
Tinnitus	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)
Chest pain	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)
Runny nose	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	0	0	0	0
Excessive sweating	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	0	0	0	0
Persistent symptoms based on organ system								
Systemic	74 (71.2)	62 (59.6)	45 (43.3)	38 (36.5)	26 (25.0)	21 (20.2)	16 (15.4)	15 (14.4)
Pulmonary	50 (48.1)	30 (28.8)	16 (15.4)	14 (13.5)	7 (6.7)	7 (6.7)	6 (5.8)	6 (5.8)
Neurology	10 (9.6)	9 (8.7)	8 (7.7)	8 (7.7)	7 (6.7)	6 (5.8)	5 (4.8)	5 (4.8)
Gastrointestinal	10 (9.6)	8 (7.7)	7 (6.7)	7 (6.7)	7 (6.7)	5 (4.8)	5 (4.8)	4 (3.8)
ENT*	7 (6.7)	7 (6.7)	7 (6.7)	7 (6.7)	6 (5.8)	5 (4.8)	4 (3.8)	2 (1.9)
Musculoskeletal	4 (3.8)	4 (3.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	3 (2.8)	2 (1.9)
Cardiovascular	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)	1 (1.0)

*ENT: Ears, nose, and throat.

fatigue were higher than those of post-viral fatigue (Epstein–Barr virus, Q fever, or Ross River virus infections) at the same intervals. However, 40% of individuals reported post-SARS fatigue 1 year after initial infection [20].

In this study and other studies, dyspnea and cough were also reported to have a high percentage. A follow-up study among noncritical hospitalized patients with COVID-19 in China showed that radiographic changes were present in almost two-thirds of patients 90 days after discharge, and abnormalities on computed tomography scans of the lungs were seen in 35% of patients after 60–100 days of discharge. In the previous data, recovered patients suffering

from other viral pneumonia also had changes in their residual radiography. In a meta-analysis, pulmonary function impairment, such as reduced diffusion capacity for carbon monoxide, persisted in 10% of patients. An additional study found that the estimated lung dysfunction of COVID-19 and SARS survivors was 53% and 28%, respectively [19].

Males over 65 years old who had at least one comorbidity were overweight/obese, had moderate illness severity, had at least five symptoms, and required oxygen supplementation during hospitalization dominated persistent symptoms from the 1st–3rd month. This finding is essentially identical to that of Mendelson *et al.* [21] who found that participants who had more than 5 symptoms during the 1st week of acute sickness, as well as were female, of older age, and obese, were more likely to have persistent symptoms. The current findings have also indicated that a few months after hospital discharge, females have higher rates of persistent symptoms than males. Nandasena *et al.* [22] showed a contradictory result where six out of 12 of the studies found an association with female gender. However, some studies have found a similar risk between males and females to develop persistent symptoms. Other factors associated with persistent symptoms included age over 70 years, having five or more symptoms in the 1st week of acute illness, having comorbidities, and being female. No association was found between persistent symptoms and the severity of acute COVID-19 in the majority of studies; however, patients who required ICU admission or mechanical ventilation had a higher risk of undergoing long-term tissue damage related to persistent symptoms. The ambiguity in risk factors of persistent symptoms may be

Table 3: Clinical characteristics of patients who developed persistent symptoms for 3 months

Characteristics	1 st month (n, %)	2 nd month (n, %)	3 rd month (n, %)
Sex			
Male	29 (56.9)	19 (57.6)	15 (57.7)
Female	22 (43.1)	14 (42.4)	11 (42.3)
Age			
18–65 years	42 (82.4)	28 (84.8)	23 (88.4)
>65 years	9 (17.6)	5 (15.2)	3 (11.6)
Number of comorbidities			
No comorbid	11 (21.6)	6 (18.2)	4 (15.4)
≥1 comorbid	40 (78.4)	27 (81.8)	22 (84.6)
BMI			
Underweight	12 (23.5)	9 (27.2)	6 (23.1)
Normal weight	10 (19.6)	8 (24.3)	7 (26.9)
Overweight/obese	29 (56.9)	17 (48.5)	13 (50.0)
Number of symptoms during hospitalization			
<5 symptoms	17 (33.3)	8 (24.2)	7 (26.9)
≥5 symptoms	34 (66.7)	25 (75.8)	19 (73.1)
Disease severity			
Mild	5 (9.8)	4 (12.1)	3 (11.5)
Moderate	24 (47.1)	15 (45.4)	12 (46.2)
Severe	14 (27.5)	9 (27.3)	7 (26.9)
Critical	8 (15.6)	5 (15.2)	4 (15.4)
Oxygen supplementation			
No oxygen	12 (23.5)	8 (24.2)	6 (23.1)
Requiring oxygen	39 (76.5)	25 (75.8)	20 (76.9)

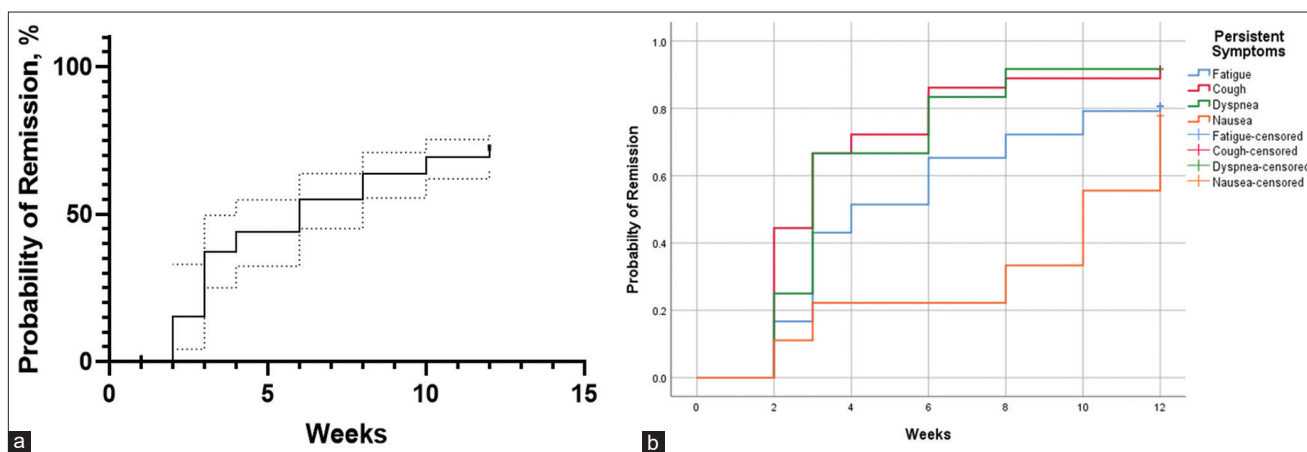


Figure 2: Kaplan–Meier survival analysis (one minus survival function) showed (a) free of persistent symptom probability with the median 6 weeks after discharge and (b) remission probability of fatigue, cough, dyspnea, and nausea with median 4, 3, 3, and 10 weeks after discharge, respectively (Censored data mean the event (remission) does not occur within the study duration)

due to variances in writing, design, clinical conditions (e.g., disease severity and treatment received), demographics (e.g., comorbidities, socioeconomic status, and smoking history) characteristics, and multifaceted pathophysiology, which may involve only certain phenotypes in populations.[23] In addition, Nasserie *et al.* [24] revealed that in cases requiring hospitalization, younger age (mean or median ages of <60 years) did not protect against persistent symptoms.

In this study, persistent symptoms decreased over time, from 49% in the 1st month, to 31.7% in the 2nd month, and ultimately 25% in the 3rd month. Cirulli *et al.* [25] reported that the number of persistent symptoms (96.6% outpatients) decreased over time, from 42.3% at 30 days, to 33.8% at 60 days, and 24.1% at 90 days after symptom onset. Similarly, Sudre *et al.* [26] found that persistent symptoms decreased with time from 13.3% at 28 days, to 4.5% at 56 days, and 2.3% at 84 days after symptom onset.

Most patients with persistent symptoms reported problems performing daily activities, feelings of pain/discomfort, and features of anxiety/depression.

These results were consistent with Sigfrid *et al.* who stated that the EQ5D-5L dimensions for which the majority of participants (median follow-up 222 days from symptom onset) reported deterioration were usual activities (38.9%), pain/discomfort (37.6%), and anxiety/depression (37.6%) [27]. Iqbal *et al.* [28] also found that patients with persistent symptoms (mean 38.10 ± 20.00 days since recovery) had more problems in pain/discomfort (74.1%), usual activities (72.8%), and anxiety/depression (60.1%) dimensions.

The mean EQ-5D index scores were 0.894, 0.916, and 0.920 in the 1st, 2nd, and 3rd months, respectively. These scores were higher than those of a study by Garrigues *et al.* [29] that had an overall EQ-5D index value of 0.86 (mean 110.9 days from discharge) and a study by Sykes *et al.* [30] of 0.657 (median 113 days from hospital discharge). In this study, the mean EQ-VAS values were 76.83, 81.83, and 82.98 in the 1st, 2nd, and 3rd months, respectively (Figure 3). These were significantly higher than those in the study by Sykes *et al.* [30] which found an overall EQ-VAS value of 70.3 (median 113 days from discharge) and the study by Carfi *et al.* [31] which found an overall EQ-VAS value of 63 (mean 60.3 days from symptom onset). This may be due to differences in sample characteristics, as well as the higher percentage of persistent symptoms. When compared with the general population in Indonesia (EQ-5D index was 0.9420 ± 0.0981 and EQ-VAS was 88.94 ± 40.83) [32], this study's results, which were lower than these values, indicated a decrease in the QoL of discharged COVID-19 patients who had recovered or those with persistent symptoms.

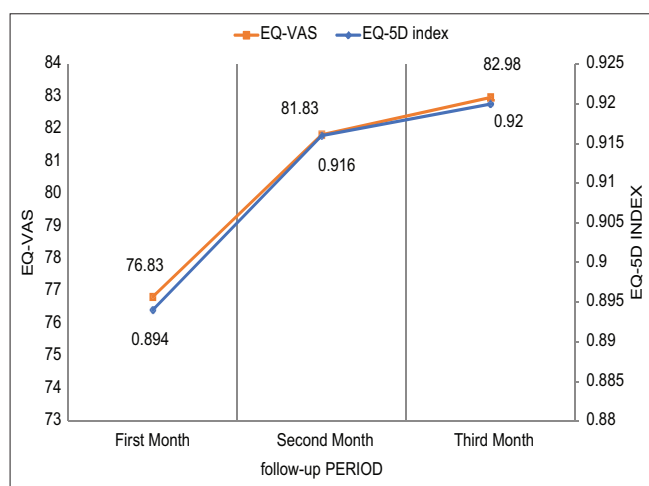


Figure 3: Percentage graphic of mean EQ-5D index and EQ-VAS score for 3 months after discharge

Telephone interviews rely on patients' reports, which may result in recall bias or incomplete recall was a limitation of the study. Further research is needed, using supporting examination tools or instruments to assess the severity of symptoms scale.

Table 4: HRQoL patients with persistent symptoms using EQ-5D-5L questionnaire

Dimensions	1 st month (n, %)	2 nd month (n, %)	3 rd month (n, %)
Mobility			
No problems	87 (83.7)	92 (88.5)	93 (89.4)
Slight problems	15 (14.4)	11 (10.6)	10 (9.6)
Moderate problems	2 (1.9)	1 (1.0)	1 (1.0)
Severe problems	0	0	0
Unable	0	0	0
Self-care			
No problems	90 (86.5)	93 (89.4)	95 (91.3)
Slight problems	11 (10.6)	10 (9.6)	8 (7.7)
Moderate problems	3 (2.9)	1 (1.0)	1 (1.0)
Severe problems	0	0	0
Unable	0	0	0
Usual activities			
No problems	59 (56.7)	69 (66.3)	71 (68.3)
Slight problems	21 (20.2)	32 (30.8)	31 (29.8)
Moderate problems	23 (22.1)	3 (2.9)	2 (1.9)
Severe problems	1 (1.0)	0	0
Unable	0	0	0
Pain/discomfort			
No pain/discomfort	71 (68.3)	86 (82.7)	86 (82.7)
Slight pain/discomfort	17 (16.3)	10 (9.6)	12 (11.5)
Moderate pain/discomfort	13 (12.5)	8 (7.7)	6 (5.8)
Severe pain/discomfort	3 (2.9)	0	0
Extreme pain/discomfort	0	0	0
Anxiety/depression			
No anxiety/depression	72 (69.2)	75 (72.1)	75 (72.1)
Slight anxiety/depression	23 (22.1)	22 (21.2)	23 (22.1)
Moderate anxiety/depression	6 (5.8)	5 (4.8)	5 (4.8)
Severe anxiety/depression	3 (2.9)	2 (1.9)	1 (1.0)
Extreme anxiety/depression	0	0	0
EQ-5D-5L index value, mean ± SD	0.894 ± 0.117	0.916 ± 0.102	0.920 ± 0.098
EQ-VAS, mean ± SD	76.83 ± 15.67	81.83 ± 12.45	82.98 ± 11.56

Conclusion

This study indicated that a noticeable proportion of COVID-19 patients has persistent symptoms for up to 3 months after discharge, persistent symptoms were found to decrease over time. Males over 65 years old who had at least one comorbidity were overweight/obese, had moderate illness severity, had at least five symptoms, and required oxygen supplementation during hospitalization dominated persistent symptoms. These symptoms have a negative impact on QoL. The persistence of symptoms in so many people definitely represents a challenge not only for health workers but also for policy-makers. Regular follow-up of discharged patients should be performed to identify these symptoms early so that treatment or rehabilitation can be initiated to support recovery. Consequently, it is crucial to allocate sufficient resources and build post-COVID-19 clinics to respond to the needs of people living with persistent symptoms.

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