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Original Article

Occupational and Return-To-Work Characteristics of Covid-19 Patients After Treated in Udayana University Hospital

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ABSTRACT

Corona virus disease 2019 (COVID-19) is a new disease caused by severe acute respiratory syndrome corona virus 2 (SARS-COV-2). The COVID-19's symptoms are fatigue, muscle pain, and psychological disorders. The purpose of this study was to describe the occupational characteristics and health conditions of COVID-19 patients who had recovered after being treated at Udayana University Hospital. This study is a descriptive study with a quantitative method and cross-sectional design. The research samples were 110 COVID-19 patients treated at Udayana University Hospital from June to August 2020 and taken using random sampling. The results showed that the highest proportion of respondents were aged between 24-44 years (44.5%), with almost equal proportions of women (50.1%) and men (49.09%). Most of them lived in Denpasar (46.36%). Most respondents work as private sector employees (24.55%), and 70% of them were using personal protective equipment (PPE) while working. Most respondents needed less than seven days to return to work after being declared "in recovery state" (60%), with the remaining 55.5% having a decreased work duration to be less than 8 hours per day. The proportion of respondents with comorbidities was 30.91%. As many as 27.27% were experiencing previously similar symptoms (fever, fatigue, cough) 4 to 5 months after being declared "cured." COVID-19 patients who have recovered should be monitored for a longer period of time to evaluate the symptom reoccurrence and its impact on their occupational and health conditions.

Keywords: Occupations, Back To Work, Comorbidity, COVID-19, and Quality of life.

Highlights: This study provides an overview of the characteristics of COVID-19 patients who have recovered in terms of work and health at the Udayana University Hospital.

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INTRODUCTION

Since December 2019, the world has been startled by the Chinese government's report on finding unusual pneumonia cases. In 2020, China confirmed the finding as COVID-19. COVID-19 is caused by Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2). This disease can cause pneumonia and severe respiratory distress like MERS and SARS. On March 11th, 2020, the WHO declared COVID-19 a pandemic after infecting 123 countries in Europe, Asia, America, and Africa. According to data from COVID-19 Task Force, up to March 20th, 2021, the number of confirmed positive COVID-19 cases has reached 124 million people with 223 countries infected, including Indonesia, since being found in Wuhan in December 2019.

Confirmed positive COVID-19 cases in Indonesia keep increasing, reaching 1.47 million people by January 23rd, 2021. From those numbers, 1.3 million people recovered, and 39,865 people died. Based on a study at several hospitals in Wuhan, of COVID-19 patients that had been declared recovered, 1038 out of 1655 respondents experienced fatigue and muscle pain, while 437 respondents experienced sleep disturbance. Meanwhile, 367 out of 1617 respondents had anxiety and depression. Patients with severe disease tend to experience lung diffusion and chest disturbance. These findings showed that patients that recovered from COVID-19 still might experience some physical or psychological symptoms.[1]

Based on those findings, we are interested in conducting this study to determine the occupational and return-to-work characteristics of patients treated at Udayana University Hospital in April-August 2020 after being declared recovered from COVID-19 for at least six months. Six months were taken as a cutoff for the respondents after declared recovered to minimize work-related activity affected by acute or long post-COVID phenomenon. Deep knowledge about these severe cases is expected to help clinicians in day-to-day practice in anticipating the worst possible outcomes during treatment.

MATERIALS AND METHODS

Methods

This study is a descriptive study with a quantitative method and cross-sectional design. The target population in this study is COVID-19 patients that recovered after being treated at Udayana University Hospital from June to August 2020. The sample size was determined using a sample size application by the WHO, resulting in 110 people.

Materials

Samples were taken using random sampling by accessing patients' medical records to determine which patients met the study criteria.[2] The inclusion criteria in this study were complete medical record data and the patient had completed education on how to fill the questionnaire. The exclusion criteria in this study were that the patient did not have device to support filling the google form, or illiterate patient. Data were collected using an online Google Form questionnaire sent to respondents by WhatsApp application. The collected data were presented as univariable to describe each variable's frequency distribution.

RESULTS AND DISCUSSION

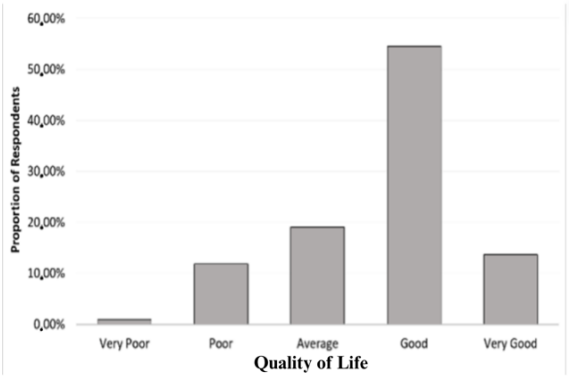

Figure 1. Respondents' Quality of Life.

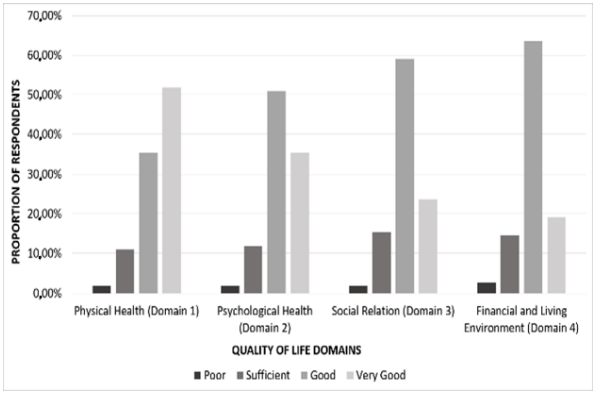

Figure 2. Respondents' Quality of Life Domain Distribution.

Respondents' Characteristics

A total of 110 respondents were included in this study. Respondents' characteristics, occupational characteristics, health conditions, and risky behaviors are shown in Table 1, Table 2, Table 3, and Table 4, respectively. Respondents' quality of life and quality of life domains are visualized in Figure 1 and Figure 2. Most (57,27%) were interviewed ten months after being declared recovered from COVID-19 (recovered in July).

Physical health domain was categorized as "poor" if the respondent experienced limitation in mild activities such as bending, kneeling, stooping, housework (e.g. carrying groceries, mopping the floor), or needed to routinely take medications for symptom relief, "sufficient" if the respondent experienced limitation in moderate activities such as moving table, climbing one flight of stairs, walking more than a kilometer, or occasionally needed to take medications for symptom relief, "good" if the respondent experienced limitation in vigorous activities, such as running, lifting heavy objects, or participating in strenuous sports, and "very good" if no significant limitation was experienced in doing physical activity, compared with the activity they used to do before diagnosed with COVID-19.

Psychological domain was assessed using several parameters, namely tiredness, feeling energized, peacefulness, nervousness, feeling worn out, and feeling downhearted/blue. Respondents were categorized as "poor" if the psychological parameters were causing them to take days off from their work, "sufficient" if respondents needed more time to finish their work compared than before diagnosed with COVID-19, "good" if they felt worse psychologically than before their COVID-19 diagnosis, but no significant effect on their work, and classified as "very good" if they never or only occasionally felt decrease in their psychological status after declared recovered from COVID-19.

In the social relation domain, respondents were assessed whether their physical and/or psychological problems interfered with their social activities such as visiting friends, relatives, attending social gatherings, and other social activities they normally used to do. They were categorized as "low" if the social problems were experienced most of the time, "sufficient" if the symptoms affected social life some of the time, "good" if the symptoms occasionally caused social issues, and "very good" if no social problems were experienced compared to before COVID-19 diagnosis.

For the financial and living environment domain, respondents were classified as "low" if they experienced significant decrease in their financial and/or living environment status, "sufficient" if they experienced moderate decrease, "good" if they experienced mild decrease, and "very good" if they experienced minimal or no issues in this domain.

Table 1. Respondents' Characteristics.

Characteristics	N	%
Age (mean ± SD)	(38.40±13.41)	
18-24 years	22	20.00
25-44 years	49	44.55
45-59 years	32	29.09
>60 years	7	6.36

Gender		
Male	54	49.09
Female	56	50.91
Location at the time of COVID-19 diagnosis		
Bangli	4	3.64
Badung	19	17.27
Buleleng	9	8.18
Denpasar	51	46.36
Gianyar	15	13.64
Jembrana	1	0.91
Karangasem	7	6.36
Klungkung	1	0.91
Tabanan	2	1.82
Outside Bali	1	0.91
Respondents' location after declared recovered from COVID-19		
Bangli	4	3.64
Badung	17	15.45
Buleleng	9	8.18
Denpasar	41	37.27
Gianyar	16	14.55
Jembrana	1	0.91
Karangasem	10	9.09
Tabanan	4	3.64
Outside Bali	8	7.27
Time gap between declared recovered until interview conducted		
9 months (recovered on August)	30	27.27
10 months (recovered on July)	63	57.27
11 months (recovered on June)	17	15.45

Table 2. Respondents' Occupational Characteristics.

Occupational Characteristics	N	%
Respondents' job before confirmed with COVID-19		
Not working	15	13.64
Governmental employee	19	17.27
Private sector employee	27	24.55
Hotel/Restaurant/ Commercial worker	1	0.91
Healthcare worker	6	5.45
Health professional	2	1.82
Farmer/fisherman/ market trader	5	4.55
Labor/daily worker	5	4.55
Self-employed/ Entrepreneur	14	12.73
Student/college student	11	10.00
Others	5	4.55
Duration of work per day before confirmed with COVID-19 (mean ± SD)	**(6.38 ± 3.15)**	
<8 hours	54	49.09
8 hours	46	41.82
>8 hours	10	9.09
Number of working days per week before confirmed with COVID-19 (mean ± SD)	**(4.88 ± 2.24)**	
0	16	14.55
1	1	0.91
2	2	1.82
3	3	2.73
4	25	22.73
5	46	41.82
6	17	15.45
7		
Respondents' job after recovering from COVID-19		
Not working	14	12.73
Governmental employee	18	16.36
Private sector employee	28	25.45
Hotel/Restaurant/ Commercial worker	1	0.91
Healthcare worker	6	5.45
Health professional	2	1.82
Farmer/fisherman/ market trader	5	4.55
Labor/daily worker	6	5.45
Self-employed/ Entrepreneur	13	11.82
Student/college student	11	10.00
Others	6	5.45
Duration of work per day after recovered from COVID-19 (mean ± SD)	**(6.10 ± 3.14)**	

<8 hours	61	55.45
8 hours	41	37.27
>8 hours	8	7.27
Number of working days per week after recovered from COVID-19 (mean ± SD)	**(4.71 ± 2.22)**	
0	17	15.45
2	1	0.91
3	2	1.82
4	8	7.27
5	27	24.55
6	42	38.18
7	13	11.82
Number of resting days before going back to work after declared recovered (mean±SD)	**(8.62± 8.87)**	
<7 days	66	60.00
8-14 days	23	20.91
15-21 days	13	11.82
22-28 days	4	3.64
>29 days	4	3.64
Gender characteristics of respondents who returned to work <7 days		
Male	41	62.12
Female	25	37.87
Age characteristics of respondents who returned to work <7 days		
18-24 years	12	18.18%
25-44 years	34	51.51%
45-59 years	18	27.27%
>60 years	2	3.03%
Gender characteristics of respondents who returned to work >29 days		
Male	3	75
Female	1	25
Age characteristics of respondents who returned to work >29 days		
18-24 years	0	0
25-44 years	0	0
45-59 years	2	50
>60 years	2	50
Usage of PPE while working		
Wearing PPE	77	70.00
Not wearing PPE	33	30.00
Type of PPE used while working (n=77)		
Face mask	76	98.70
Face shield	24	31.17
Medical latex gloves	22	28.57
Hair cap	14	18.42
Gown/special clothing	11	14.29
Protective boots/shoes	7	9.09

Table 3. Respondents' Health Conditions.

Health Characteristics	N	%
History of Comorbidity	34	30.91
Present	76	69.09
Absent		
Types of Comorbidity History (n=34)		
Pregnancy	2	5.88
Diabetes	8	23.53
Asthma	6	17.65
Cardiovascular	3	8.82
Renal failure	3	8.82
Nervous system disturbance	2	5.88
Cancer	1	2.94
Others (hypertension)	12	35.29
Re-experiencing symptoms after recovered		
Yes	30	27.27
No	80	72.73
Types of symptoms experienced after recovered (n=30)		
Fever	12	40.00
Sore throat	1	3.33
Cough	7	23.33
Flu	4	13.33
Shortness of breath	2	6.67
Nausea/vomiting	4	13.33
Diarrhea	1	3.33
Weakness	8	26.67
Headache	4	13.33
Loss of appetite	1	3.33
Neurological symptoms	1	3.33

Timing of symptoms Re-experienced after recovered (n=30)		
1 month	4	13.33
2 months	2	6.67
3 months	3	10.00
4 months	4	13.33
5 months	4	13.33
6 months	5	16.67
7 months	5	16.67
8 months	2	6.67
9 months	1	3.33

Table 4. Respondents' Risky Behaviors.

Risky Behavior Characteristics	N	%
History of Smoking		
Smoking	35	31.82
Not smoking	75	68.18
History of Alcohol Consumption		
Consuming alcohol	28	25.45
Not consuming alcohol	82	74.55
Travelling History		
Travelling	18	16.36
Not travelling	92	83.64
Travelling Destination (n=18)		
Buleleng	1	5.56
Denpasar	3	16.67
Jembrana	1	5.56
Karangasem	2	11.11
Klungkung	1	5.56
Outside Bali	10	55.56
Timing of travelling after recovered (n=18)		
2 months	2	11.11
3 months	1	5.56
4 months	1	5.56
5 months	2	11.11
6 months	2	11.11
7 months	5	27.78
8 months	2	11.11
9 months	3	16.67

This study found an almost equal proportion of male and female respondents. However, this result differs from other studies, where female patients were more common.[3,4] The majority of respondents were aged 25-44 years, considered a productive age group with a higher chance of being infected with COVID-19 due to their high mobility and frequent interactions. Almost all respondents lived in Bali, with the highest proportion living in Denpasar, with the highest number of COVID-19 cases in Bali. This finding is consistent with another study, where areas with higher population density and activity have higher COVID-19 cases.[3]

Occupational Characteristics

Most respondents worked as private sector employees before and after recovering from COVID-19. This finding was similar to another study, where the majority (30,67%) of respondents also worked as private sector employees.[5] As many as 70% of respondents were using PPE while doing activity in the workplace, with face masks as the most common PPE used (98,70%). Strict regulation in Bali might be the cause of this finding.[6]

Return-To-Work Profiles

Most respondents (60%) required less than seven days of rest before returning to work. Those whose aged 25 to 44 years dominated this group (51%). A higher proportion of males (62%) was found within this group. Whereas, the respondents who needed >28 days before returning to work were all aged 45 years or older, and most of them were men (75%).This finding is in line with a study conducted by Jacobsen et al.[8] that found women and older males had prolonged return to work. This might be related with other literature that stated males have more severe disease manifestations of COVID-19.[7,8]

Another study found that some patients experienced symptoms for over 28 days, even after being declared recovered.[8] In this study, almost half of the respondents worked less than eight hours per day (49.09%) before being diagnosed with COVID-19, which increased to 55.55% after recovery. In addition, there was a decrease in

the proportion of respondents working six days per week, from 41.82% before being confirmed positive to 38.18% after recovery.

The reduction in working hours and days may be caused by decreased health quality or regulations from their companies. However, it is also possible that factors such as employment status and government regulations may have affected the number of working days.

Health Characteristics

Several studies were conducted to investigate the impact of COVID-19 on the health and quality of life of patients who recovered from the disease. Results of these studies showed that hypertension was the most common comorbidity found in recovered patients[8–10], and individuals needed to control their blood pressure and pay attention to their lifestyle to prevent this condition.[10]

Additionally, many patients in this study experienced recurring symptoms after recovery, including fever, weakness, fatigue, and respiratory issues. This phenomenon, known as Chronic Post COVID-19, is common and emphasizes the need to practice health protocols to prevent re-infection.[1,11,12] Family and friend support is vital in boosting the patient's confidence and quality of life.[13-19]

Risky Behaviors

The study found that a significant percentage of COVID-19 patients had engaged in risky behaviors such as smoking (31.82%) and alcohol consumption (25.45%), which could increase their risk for severe disease.[15-17] The study also highlighted the importance of limiting travel to prevent the transmission of the virus, as almost all of the respondents did not travel to other regions (83.64%). [15,20]

The findings were consistent with previous studies, which showed that smoking[15,16,21] and alcohol consumption[17,22] could increase the risk of severe COVID-19 disease and that limiting travel is an essential preventive measure during the pandemic.[3,23-26] The study's results suggest that promoting healthy behaviors and limiting unnecessary travel could help prevent the spread of COVID-19 and maintain overall health.

STRENGTH AND LIMITATION

The study was conducted online using Google Forms, which might have limited the participation of those who do not have access to digital devices. Respondents may have had different interpretations of the questions, which could lead to bias in the study's results. Additionally, the study was conducted around six months after the patients recovered, which may have affected their recall of events and experiences, leading to recall bias. Finally, the questionnaire may also have had words or questions difficult for some respondents to understand, which could have caused further bias.

CONCLUSIONS

This study had almost equal proportions of male and female respondents, with an average age of 38 years. Many respondents were of adult age, lived in Denpasar, and worked as private sector employees. Most used PPE and needed less than a week to return to work after recovery. The highest comorbidity found was hypertension. Reoccurrence of symptoms was experienced by some respondents, with fever, weakness/fatigue, and respiratory problems being the most common symptoms. Most respondents did not smoke, did not consume alcohol, and did not have a traveling history. It is recommended that COVID-19 patients who have recovered should be monitored for a longer period of time to evaluate the possibility of symptom reoccurrence and its impact on their occupational and health conditions.

ETHICAL CLEARANCE

The research protocol was approved by Chairperson of the Research Ethics Commission, Faculty of Medicine, Udayana University with protocol number 2021.01.1.0612.

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CONFLICT OF INTEREST

The authors declared that no conflict of interest might bias or fabricate the information and work stated within the paper.

AUTHOR CONTRIBUTION

IMAW, MF and CAWP contributed to the proofreading and critically revised the article. IKJDK were responsible for data collection, analysis and interpretation of the data. IKJDK also wrote the article, and all authors, including IKJDK, IMAW, CAWP, MF, and HA gave final approval of the article.

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