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QUALITY OF LIFE OF COVID-19 SURVIVORS IN THE CITY OF BOGOR

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ABSTRACT

Introduction: The number of COVID-19 survivors in Bogor City until 2021 is 98.52%. COVID-19 survivors often experience a reduction in quality of life and impacts such as symptoms for a long period of time, fatigue, headaches, shortness of breath, impaired physical function, and others that affect quality of life. **Aim**: Analyze the quality of life of COVID-19 survivors in Bogor City. **Method**: A cross-sectional design with a population of all Bogor City residents who have declared cured depending on data from the Bogor City Health Office in 2021 with a sample is the majority of COVID-19 survivors in the Bogor City residents who have been certified cured of COVID-19 as demonstrated by the positive screening findings for COVID-19 and have the inclusion criteria. Age, gender, educational status, marital status, employment status, income, vaccination status, alcohol drinking habit, smoking habit, comorbidity, obesity, COVID-19 symptoms experienced, duration of COVID-19 recovery, and hospitalization were independent variables, and data collection was done with an online questionnaire application within 2 (two) months using the 36-Item Short Form Survey Instrument (SF-36) to measure quality of life. **Result**: The quality of life of COVID-19 in Bogor City is classified as good. The variables of educational status, income, comorbidities, obesity, COVID-19 symptoms experienced, and duration of COVID-19 recovery show that these variables have a greater risk of experiencing poor quality of life. **Conclusion**: Educational status, income, comorbidities, obesity, COVID-19 symptoms experienced, and the duration of COVID-19 recovery have a significant relationship with quality of life.

Keywords: Quality of Life, COVID-19 Survivors, SF-36.

INTRODUCTION

Quality of life is an important for everyone. Health, when viewed from the perspective of the public health community, is a multidimensional concept that encompasses physical, mental and social domains. Current medical and public health advances lead to better cures and treatments for diseases and lower mortality rates so that measuring health outcomes will begin with assessing the health of a region's population which not only focuses on reducing mortality but also in improving the quality of life of the community (CDC, 2018).

As of 30 November, 2021, the number of confirmed COVID-19 cases in Indonesia was 4,256,112 cases: 143,819 (3.37%) cases died and 4,104,333 (96.43%) cases recovered. During this time period, West Java Province was the province that contributed the second most confirmed cases of COVID-19 in Indonesia. A city in West Java Province with the most confirmed COVID-19 cases is Bogor City with 37,654 confirmed cases, 526 (1.39%) cases died and 37,093 (98.52%) cases completed isolation or recovered. The large number of recovered cases/recovery rate (RR), shows Bogor City has a large number of COVID-19 survivors.

There are still very few studies on the quality of life of survival of COVID-19 patients in Indonesia. Research in Iran with the EQ-5D-5L instrument and Vietnam with the SF-36 instrument shows that age, gender, educational status and comorbidities are risk factors that have a relationship with the quality of life of coronavirus disease patients who survive (Arab-zozani et al., 2020; Nguyen et al., 2020). Likewise, research in

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Saudi Arabia using the QLI instrument shows that gender is a risk factor (Algamdi, 2021). Other studies in Indonesia using the SGRQ instrument and Brazil using the EQ-5D-3L instrument show that female gender has a significant relationship with low quality of life of survival of COVID-19 sufferers (Costa et al., 2021; Suyanto et al., 2022). In China the EQ-5D-5L instrument showed that educational status is also a risk factor that has a relationship with COVID-19 survivors' well-being (Chen et al., 2021). Research in Indonesia shows that comorbidities have a significant difference to lower quality of life in COVID-19 survivors (Suyanto et al., 2022). In China and Vietnam, marital status is a risk factor ; Nguyen et al., 2020). Arab-zozani et al. (2020) revealed that employment status (working/not working) and workplace status (crowded/uncrowded) are risk factors that have an association with the well-being of COVID-19 survivors in Iran. Nguyen et al. (2020) showed that individuals who survived COVID-19 in Vietnam have a higher quality of life due to social status and the ability to pay for treatment.

Research on the well-being of individuals who survived COVID-19 in Spain using VAS instruments shows that long Covid syndrome is a risk factor that has a relationship. COVID-19 patients who survived and experience long Covid syndrome have a poorer quality of life than those who do not experience long Covid syndrome (Moreno-Pérez et al., 2021). Suyanto et al. (2022) discovered that the severity of COVID-19 symptoms encountered is significantly related to decreased quality of life in COVID-19 patients who survived in Indonesia. Another research by Sandmann et al. (2022) in England on respondents with confirmed COVID-19 who were followed up for six months showed that COVID-19 survivors who experienced COVID-19 symptoms for six months had a statistically significant correlation with well-being. In China, COVID-19 survivors who have good home ventilation, wear a mask when going out, feel worried about COVID-19, and do physical activity are risk factors that have an association with quality of life (Chen et al., 2021). Likewise, research in Hong Kong using the WHOQOL-BREF instrument shows that worry about COVID-19 in COVID-19 survivors is a risk factor that has a relationship with quality of life (Choi et al., 2021). In addition, physical activity is also a risk factor in Vietnam (Nguyen et al., 2020). Research conducted by Logue et al. (2021) in America using VAS instruments showed that a history of hospitalization is a risk factor that has a relationship with the quality of life of COVID-19 survivors. Those who have survived treatment for COVID-19 in the hospital experience worse quality of life than those receiving treatment as outpatient. Costa et al. (2021) conducted research in Brazil showing that a history of being admitted to the ICU is a risk factor affecting the quality of life of coronavirus disease survivors. A history of intensive care is strongly linked to a decrease in coronavirus disease patients' quality of life.

The large number of recovered cases/recovery rate in Bogor City is 98.52% of cases, which is the reason the researcher is interested in identifying the quality of life of COVID-19 survivors in Bogor City. The aim of this study is to analyze quality of life of COVID-19 survivors in Bogor City.

METHOD

The research is an analytical observational study with a cross-sectional design. This research took place during a two-month period, from May to June 2022. The population in the research were all Bogor City residents who have been declared cured of coronavirus disease based on data from the Bogor City Health Office, (2021) of 37,093 individuals. The research sample consisted of Bogor City residents who have been certified cured of COVID-19 as demonstrated by the positive screening findings for COVID-19 and matched the following inclusion criteria: declared cured of COVID-19 in 2021, living or settling in

Bogor City, aged >18 years, able to communicate well, have smartphone and agreed to be a respondent. The sample size was 396 COVID-19 survivors using Slovin's formula and α=0.05. The research was conducted utilizing an online questionnaire application employing the SF-36 and the chi-square relationship test. The SF-36 is a questionnaire that measures quality of life in eight domains: physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain and general health. Researchers coded the analyzed data on COVID-19 survivors' characteristics (age, gender, education status, marital status, employment status, income, vaccination status, alcohol drinking habit, and smoking habit); and used frequency distribution to analyze them. The quality of life of COVID-19 survivors in Bogor City was assessed by adding the averages from each domain. Data analysis approaches for each research variable included editing, scoring, entering, coding, and analysis using frequency distribution and chi-square. The Universitas Airlangga Faculty of Dental Medicine Health Research Ethical Clearance Commission No.129/HRECC.FODM/III/2022 conducted ethical testing on the research questionnaire.

RESULT

Confirmed cases of COVID-19 in Bogor City during 2021 experienced a significant increase in June, July and August. In June, there was an increase in cases of 4,529 cases from the previous month to 20,555 confirmed cases. Then, in July, there was an increase of 12,320 cases from June to 32,875 confirmed cases, and in August the confirmed cases were 36,822, an increase of 3,947 cases from July. The highest increase in confirmed cases occurred in July. Death cases in Bogor City have increased, but not significantly. Meanwhile, recovery in Bogor City experienced a significant increase followed by an increase in confirmed cases of COVID-19 in Bogor City. The recovery rate in Bogor City during 2021 was 98.52%.

Frequency Distribution of COVID-19 Survivors

Most surviving coronavirus disease in Bogor City 94.9% were <55 years old; 51.8% were male; 46.5% had senior high school education status; 64.6% were unmarried; 43.4% were employed; 46.2% had no income; 44.9% had no vaccine; 98.2% did not have alcohol drinking habit, 76.0% did not have smoking habit, 79.8% did not have comorbidities and 69.9% were not obese (BMI≤25). The majority of COVID-19 symptoms experienced by survey participants were in the moderate symptom group at 57.1%, followed by severe symptoms at 23.2%, mild symptoms and no symptoms at 9.8% each. Respondents in this research were COVID-19 survivors who had been declared cured 4-17 months before the research. Most survivors, 65.7%, had been declared cured ≥11 months and 92.9% were not hospitalized (Table 1).

The types of comorbidities present in respondents were asthma (24 respondents), hypertension (19 respondents), chronic ulcer (15 respondents), diabetes mellitus (7 respondents), heart disease (5 respondents), tonsillitis (3 respondents); autoimmune, stroke, lung disease (2 respondents); and kidney disease, anemia, gout, scleroderma, hepatitis, hypotension, sinusitis (1 respondent).

Quality of Life of COVID-19 Survivors

The results indicated that the quality of life of coronavirus disease who survived in Bogor City ranged from 1135 - 3575 (mean = 2566.39, median = 2615). Most (50.5%) are classified as good quality of life. Based on research results of chi-square analysis, there is strong association between the education status (p=0.01), income (p=0.01), comorbidities (p=0.00), obesity (p=0.01), COVID-19 symptoms experienced (p=0.01) and duration of

COVID-19 recovery (p=0.03) with quality of life.

Table 1. Frequency distribution and association of risk factors with quality of life

Variables	f (%)	Quality of Life		p	PR	95% CI	
		Bad f (%)	Good f (%)			Lower	Upper
Individual Characteristics							
Age							
≥55 years	20 (5.1)	10 (50.0)	10 (50.0)	1.0	1.01	0.64	1.58
<55 years old	376 (94.9)	186 (49.5)	190 (50.5)				
Gender							
Male	205 (51.8)	100 (48.8)	105 (51.2)	0.84	0.97	0.79	1.18
Women	191 (48.2)	96 (50.3)	95 (49.7)				
Education Status							
Elementary school	7 (1.8)	5 (71.4)	2 (28.6)	**0.01**			
Junior high school	17 (4.3)	13 (76.5)	4 (8.6)		0.93	0.54	1.59
Senior high school	184 (46.5)	100 (54.3)	84 (45.7)		1.31	0.807	2.13
Bachelor/Diploma	169 (42.7)	70 (41.4)	99 (58.6)		**1.72**	**1.04**	**2.84**
Master	19 (4.8)	8 (42.1)	11 (57.9)		1.69	0.83	3.43
Marital Status							
Not married	256 (64.6)	129 (50.4)	127 (49.6)	0.706	1.05	0.85	1.301
Married	133 (33.6)	67 (47.9)	73 (52.1)				
Employment Status							
Not working/unemployed	38 (9.6)	17 (44.7)	21 (55.3)	0.78			
Housewife	43 (10.9)	19 (44.2)	24 (55.8)		1.01	0.62	1.64
Student	143 (36.1)	72 (50.3)	71 (49.7)		0.88	0.602	1.31
Work	172 (43.4)	88 (51.2)	84 (48.8)		0.87	0.59	1.28
Income							
No income yet	183 (46.2)	85 (46.4)	98 (53.6)	**0.01**			
<5M	145 (36.6)	87 (60.0)	58 (40.0)		**0.77**	**0.63**	**0.94**
5M – 10M	50 (12.6)	17 (34.0)	33 (66.0)		1.36	0.9	2.07
10M – 20M	12 (3.0)	4 (33.3)	8 (66.7)		1.39	0.61	3.14
>20M	6 (1.5)	3 (50.0)	3 (50.0)		0.92	0.41	2.09
Vaccination Status							
Not yet vaccinated	178 (44.9)	89 (50.0)	89 (50.0)	0.97			
Vaccine dose 1	111 (28.0)	55 (49.5)	56 (50.5)		1.009	0.79	1.28
1st and 2nd dose of vaccine	107 (27.0)	52 (48.6)	55 (51.4)		1.02	0.806	1.31
Alcohol Drinking Habit							
Yes	7 (1.8)	3 (42.9)	4 (57.1)	1.0	0.86	0.36	2.04
No	389 (98.2)	193 (49.6)	196 (50.4)				
Smoking Habit							
Yes	95 (24.0)	53 (55.8)	42 (44.2)	0.19	1.17	0.94	1.45
No	301 (76.0)	143 (47.5)	158 (52.5)				
Biological Function							
Comorbid							
Have comorbidities	80 (20.2)	54 (67.5)	26 (32.5))	**0.00**	**1.502**	**1.23**	**1.82**

Variables	f (%)	Quality of Life		p	PR	95% CI	
		Bad f (%)	Good f (%)			Lower	Upper
No comorbidities	316 (79.8)	142 (44.9)	174 (55.1)				
Obesity							
Obesity (BMI>25)	119 (30.1)	47 (39.5)	72 (60.5)	**0.01**	**0.73**	**0.57**	**0.94**
Not obese (BMI≤25)	277 (69.9)	149 (53.8)	128 (46.2)				
Symptoms							
COVID-19 symptoms experienced							
Severe symptoms	92 (23.2)	14 (35.9)	25 (64.1)	**0.01**			
Moderate symptoms	226 (57.1)	112 (49.6)	114 (50.4)		0.72	0.46	1.12
Mild symptoms	39 (9.8)	14 (35.9)	25 (64.1)		1.0	0.55	1.809
Asymptomatic	39 (9.8)	14 (35.9)	25 (64.1)		1.0	0.55	1.809
Duration of COVID-19 recovery							
<11 months	136 (34.3)	57 (41.9)	79 (58.1)	**0.03**	**0.78**	**0.62**	**0.98**
≥11 months	260 (65.7)	139 (53.5)	121 (46.5)				
Hospitalized							
Yes	28 (7.1)	17 (60.7)	11 (39.3)	0.3	1.24	0.91	1.71
No	368 (92.9)	179 (48.6)	189 (51.4)				

DISCUSSION

The post-COVID-19 condition poses challenges in terms of health and quality of life for patients with associated physical, social, psychological and functional limitations (CDC, 2021). COVID-19 survivors in Indonesia who exhibit indications of long-term consequences have a decline in various dimensions quality of life (Trihandini et al., 2023). Pneumonia and comorbidities are risk factors for chronic COVID-19 syndrome (Susanto et al., 2022).

At the beginning of Indonesia experiencing a surge in confirmed cases of COVID-19, Indonesia established a policy of early countermeasures for the COVID-19 outbreak, namely the Minister of Health Decree No. HK.01.07/MENKES/104/2020 about the Determination of Novel Coronavirus Infection (2019-nCoV Infection) as a Type of Disease that Can Lead to an Outbreak and Its Countermeasures; and Presidential Decree No. 11 of 2020 on the Determination of Corona Public Health Emergency Virus Disease 2019 (COVID-19). This government policy serves as a guideline for local governments in developing COVID-19 policies in response to the emergence of proven COVID-19 instances. In terms of policy implications, the government introduced public health protection measures like as mobility restrictions, the 3M campaign (wearing masks, washing hands, and keeping distance), and vaccination.

Characteristics of COVID-19 Survivors

COVID-19 patients that survive occur at a younger age, and cases of death increase with increasing age in coronavirus disease sufferers (Bialek et al., 2020). Research reveals the majority of coronavirus disease survivors are <55 years old. As age progressively increases and enters the elderly age group, individuals will have declining bodily functions (CDC, 2022). Other research by Ping et al. (2020) also indicated that older age influences on reducing quality of life. COVID-19 survivors are mostly male. Studies indicate that most individuals who survive COVID-19 are men (Garrigues et al., 2020; (Huang et al., 2021; Van Den Borst et al., 2021). This is in line with research that females are more vulnerable to COVID-19 as they are

dominated by more affected occupations and livelihoods (Muthukrishnan et al., 2021). On the educational status variable, the results showed that most respondents belonged to the senior high school education group. Research by Ahmed et al. (2020) is in line with the results of researchers who show that most respondents have a senior high school education. Other similar research was conducted by Arab-zozani et al. (2020), Ping et al. (2020), Tran et al. (2020) and Widiastuti (2021) which shows that most respondents have educational status below university. The survey results show that most of the respondents are unmarried. The findings of this investigation contradict the findings of Arab-zozani et al., (2020) and Chertok, (2020) which show that COVID-19 survivors are primarily married.

During the COVID-19 pandemic, employment-related distribution was essential in infection spread. The characteristics and transmission patterns of COVID-19 can lead to high levels of transmission between workers. Mild to asymptomatic symptoms of COVID-19 make it likely that workers continue to do their jobs, putting them at risk of spreading the disease to others (Lan et al., 2020). According to the employment survey results, most of the respondents are employed. This study's findings are congruent with those of Shah et al. (2021) and Van Den Borst et al. (2021) which indicate that most of the respondents who are COVID-19 survivors are employed. The Regency/City Minimum Wage of Bogor City in 2022 is between 4 million - 4.5 million. The results showed that 46.2% of respondents had no income followed by respondents who had an income of <5 million at 36.6%. The results showed that most respondents were not yet vaccinated. Research by Muthukrishnan et al. (2021) revealed that 61.47% of respondents had not received vaccinations. Likewise, research by Passarelli-Araujo et al. (2022) suggests that COVID-19 cases in respondents who had not been vaccinated (42,431 cases) were greater than COVID-19 cases in respondents who had been vaccinated (6,541 cases), whether they had vaccine 1 or had vaccine 1 and vaccine 2. The results of the research on the variable of alcohol drinking habit indicated that most of them did not have the habit of drinking alcohol. The habit of drinking alcohol can damage immune cells in the gastrointestinal system which can cause the absorption of alcohol substances in blood vessels (Sarkar et al., 2015). According to research by Hanafi et al. (2021), a decrease in the use of alcohol drinking habits is positively correlated with respondents living in provinces that implement Large-Scale Social Distancing in Indonesia. This finding is consistent with other research by Nguyen et al. (2020) and Chen et al. (2021) who found that most of the respondents who survived COVID-19 did not have a drinking habit. Smoking behaviors raise the likelihood of infection and may make COVID-19 infection more severe (Chertok, 2020). The results showed that most COVID-19 survivors did not have a smoking habit. This is consistent with previously published research by Chen et al. (2021) showing that most people who survive COVID-19 do not smoke. Likewise, research conducted by Van Den Borst et al. (2021) showed that the majority of COVID-19 survivors were ex-smokers and did not smoke.

In comorbid variables, COVID-19 patients who are older and have comorbidities are at risk of death. (Sanyaolu et al., 2020). Likewise, research by Gupta et al. (2021) showed that 98% of coronavirus disease patients who have comorbidities are strong predictors of death. So COVID-19 survivors mostly occur in respondents who do not have comorbidities. According to the research results, it shows that most respondents do not have comorbidities. The study results are compatible with research by Van Den Borst et al. (2021) which found that 29% of individuals affected by coronavirus disease 2019 with moderate and critical symptoms had no complications. Obesity has increased every year, especially in Indonesia. The prevalence of obesity in

Indonesia in 2018 was 21.8, an increase from 2013 of 14.8 (Ministry of Health, 2018). According to Mohammad et al. (2021), obesity is an important determinant for severe in the current COVID-pandemic circumstances. Obesity can weaken the immune system, making individuals vulnerable to infectious diseases, one of which is currently COVID-19. This study contradicts the researcher's findings, which show that most respondents are not obese. Nevertheless, the outcomes of this study align with those found in research by Gupta et al. (2021), McFann et al. (2021) and Moreno-Pérez et al. (2021) which suggest that not all participants were obese.

In the variable COVID-19 symptoms experienced, the results showed that most respondents experienced moderate symptoms. The findings of this study align with the Carvalho-Schneider et al. (2021) research, which found that 77.3% of participants had moderate symptoms and 22.7% had severe symptoms. In the variable duration of recovery, the results showed that most respondents recovered for ≥11 months. The duration of recovery variable shows that most respondents were confirmed with COVID-19 in June, where confirmed cases in Bogor City experienced a significant spike in COVID-19 confirmed cases from June to August (Bogor City Health Office, 2021). Based on COVID-19 data in Bogor City, most of the COVID-19 confirmations have moderate symptoms and only undergo independent isolation or in integrated isolation centers provided by the government. Most respondents, based on the research results were not hospitalized. The study's findings are in agreement with those of Shah et al. (2021) which showed that 79.9% of respondents were not hospitalized, as well as research by Algamdi (2021) which showed 83.5% of respondents were not hospitalized.

Risk Factors Affecting the Quality of Life of COVID-19 Survivors in Bogor City

Coronavirus infection can have a direct effect on someone's quality of life. The association with poorer quality of life became more pronounced as the age of COVID-19 survivors increased (Shah et al., 2021). Gamberini et al. (2021) found that quality of life scores decline with age.

A study that followed patients for three months after COVID-19 discovered that the severity of women's symptoms was a risk factor for the appearance of signs of persistent psychological issues. It was shown that 23% of female respondents had anxiety or depression at follow-up examinations. Mohamadzadeh Tabrizi et al. (2022) showed that the average Physical Component Summary/PCS and Mental Component Summary/MCS scores were higher in men compared to women. Most of the men belonged to the good quality of life category. The conclusion of this study is compatible with the findings from the study of Mohamadzadeh Tabrizi et al. (2022) which shows that men have greater quality of life scores than women.

Fukuda et al. (2021) discovered that a person's greatest level of education has a substantial association with health literacy, or a person's knowledge of health information that necessitates health-related agreements. Nguyen et al. (2020) stated that people with greater education score higher on quality of life measures. Some respondents who possess bachelor's/diploma qualifications are grouped under the "good quality of life" category, which is compatible with former research.

Marriage is one of the risk factors for quality of life. Most respondents who are married are included in the category of good quality of life as the result of the study. The result of this research aligns with the findings presented by Acharya Samadarshi et al. (2021) who found that married adults have a 1.68 higher risk of feeling a good quality of life than unmarried adults.

During the current pandemic, lockdown policies that are the result of COVID-19 have led to a decrease in mental well-being and mental health disorders which include depression and anxiety

(Ahmed et al., 2020). Most coronavirus infection survivors who work with unhealthy physical conditions can affect activities as usual or return to work (Shah et al., 2021). Working from home, which is an impact of COVID-19 related to worker health issues, can affect quality of life (Ping et al., 2020). It also discovered that those with a low quality of life were employed, which is a low-quality group.

Various aspects of quality of life have been affected by COVID-19, including decreased income (Tran et al., 2020). High income has an influence on improving quality of life compared to low income (Acharya Samadarshi et al., 2022). This research is consistent with the study's findings, which reveal that respondents with an income of 10-20 million are more likely to have a high quality of life.

One of the government's strategies to limit the spread and death of coronavirus disease 2019 is a vaccination program. The Ministry of Health, (2021) has indicated that a COVID-19 vaccine can boost the immune system, decrease infected individuals, and reduce severe virus impact in herd communities. Therefore, getting fully vaccinated is a significant predictor factor in improving quality of life (Suyanto et al., 2022). The outcomes demonstrated that most of the individuals who had consumed both the first and second doses of vaccine were in the good quality of life range.

Non-drinking rates in COVID-19 patients are more favorable than those with drinking habits (Nguyen et al., 2020). The conclusion drawn by Dos Santos et al. (2019) is that quality of life is compromised if drinking leads to unhealthy habits. Those who were found to have a good quality of life, specifically those who abstain from drinking, were the most likely to do so.

Each year, tobacco kills more than 8 million people worldwide. Tobacco use directly causes the deaths of more than 7 million people. Smoking is a practice that can raise the risk of numerous respiratory ailments as well as the severity of coronavirus disease. Patients who have confirmed coronavirus can be seriously ill due to COVID-19, which is an infection that targets the lungs (WHO, 2020). Respondents who don't smoke have greater quality of life than those who do (Cheng & Jin, 2022). Earlier research has shown that the majority of respondents who have smoking habits belong to the group of low quality of life.

Coronavirus infection is a greater risk for people who have comorbidities. Patients with COVID-19 with comorbidities will have a low quality of life; 63.5% of respondents with comorbid diabetes mellitus were found to have low quality of life. The frequency of diabetes mellitus was greater than that of respondents with comorbid hypertension who had a poor quality of life, which was 48.1% (Widiastuti, 2021). The number of comorbidities that individuals have has an impact on reducing well-being scores (Gamberini et al., 2021). The results stated that most respondents who had comorbidities were in the category of low quality of life.

The impact of coronavirus infection that causes more activities to be carried out at home hurts adults with obesity-related health, including mental health, namely anxiety and depression (Almandoz et al., 2020). Lofrano-Prado et al. (2021) showed that the impact of the stay at home pandemic, individuals with female gender obesity tend to experience feelings of anxiety, depression, sadness and decreased self-esteem. The research revealed that respondents who are included in a good quality of life are predominantly obese respondents.

Difficulty breathing or shortness of breath, difficulty speaking, difficulty moving, confusion, and chest pain are severe symptoms experienced by people with COVID-19 (WHO, 2022). Research on COVID-19 survivors who were followed up for one year showed that fatigue, chest pain, coughing, difficulty breathing/shortness of breath, sore throat, and impaired sense of smell influenced on the severity of coronavirus disease symptoms experienced (Zhang et al., 2021). Severe coronavirus

disease symptoms experienced by patients are significant predictors of lower quality of life (Suyanto et al., 2022). The findings revealed that a large proportion of respondents with moderate symptoms had a low quality of life.

The symptoms of coronavirus infection that occur will decrease with the length of time the patient heals. Symptoms of psychiatric problems, such as depression, anxiety, difficulty concentrating, fatigue, insomnia, cognitive problems, amnesia, anosmia, and ageusia experienced a decrease in percentage over time from the first diagnosis of COVID-19 to completing the survey (Kim et al., 2022). The length of time since the disease was diagnosed with COVID-19 increases quality of life scores, especially in physical function (Qamar et al., 2022). The results suggest that respondents who were included in poor quality of life were mostly in the recovery time group ≥11 months.

In respondents with COVID-19 who were hospitalized, according to the research results most of them were in the category of poor quality of life, while respondents who were not hospitalized included a good quality of life. According to this study, the outcomes are in agreement with those who reported lower health status scores during hospitalization, which can have an impact on poor well-being (Shah et al., 2021).

The Relationship between Risk Factors and the Quality of Life of COVID-19 Survivors

Research by Cho et al. (2019) showed that educational status in people with depression has a significant relationship with quality of life using the EQ-5D instrument. Respondents who have higher education have a significant relationship to an increase in quality of life scores (Olickal et al., 2021) This study is coherent with the results of the researcher's study which shows that educational status has a significant relationship ($p = 0.01$) with quality of life.

The findings indicated that income has a significant connection ($p=0.01$) with quality of life. The researcher's results align with the study of Nguyen et al. (2017), which concluded that income was strongly linked to quality of life ($p<0.01$).

Comorbid hypertension and type 2 diabetes mellitus have a strong relationship with the quality of life domain, namely PCS (Qamar et al., 2022). Nguyen et al. (2020) revealed that low well-being scores had a strong association with respondents who had comorbidities. Quality of life of coronavirus disease patients who survive is positively affected by the amount of comorbidities they have (Gamberini et al., 2021). The results of the researcher's study are coherent with prior studies which show that comorbidities have a strong association ($p=0.00$) with quality of life.

Obesity has a significant relationship ($p=0.01$) with quality of life. Coronavirus disease survivors who are obese have a significant relationship with long Covid (Sudre et al., 2021). Cho et al. (2019) revealed that obesity has a significant association with the mobility domain, pain/discomfort domain and overall quality of life scores.

COVID-19 symptoms encountered are among the risk factors that impair well-being. Coronavirus disease symptoms are experienced during and after diagnosis (Davis et al., 2021). Research by Suyanto et al. (2022) on COVID-19 survivors showed that symptom severity had a significant relationship ($p<0.05$) with quality of life. COVID-19 survivors who experience severe COVID-19 disease severity have a significant relationship with the Physical Function/PF domain of quality of life. Experienced COVID-19 symptoms are strongly linked ($p=0.01$) to quality of life, which is consistent with former research.

Qamar et al. (2022) claimed that respondents who had recovered for more than six months since diagnosis of coronavirus disease had a significantly higher quality of life in the PCS category. The duration of COVID-19 recovery has a significant relationship ($p=0.03$) with quality of life. This finding is in alignment

with earlier research.

The study's strength is the examination of numerous risk factor variables in determining the quality of life of COVID-19 survivors. The study's shortcoming is that the sample size is still tiny in comparison to Bogor City's entire population.

CONCLUSION

The analysis revealed that the characteristics of respondents were <55 years old, male, had a senior high school, not married, worked, had no income, did not have a vaccine, did not have alcohol drinking habit, did not have smoking habit, did not have comorbidities, were not obese, had COVID-19 symptoms that included moderate symptoms and were not hospitalized. The variables of educational status, income, comorbidities, obesity, COVID-19 symptoms experienced and duration of coronavirus infection recovery have an enormous effect on quality of life.

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