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# Relationship between Comorbid Diseases History and Quality Of Life Post Covid-19 Infection on Health Service Officers

**Kartika Agustini Prasetiya Ningrum[1], Susianti[2], Sutyarso[3], Jhons Fatriyadi Suwandi[4], Aila Karyus[5]**
[1]Master of Public Health Study Program, Faculty of Medicine, University of Lampung
[2]Department of Histology, Faculty of Medicine, University of Lampung
[3]Faculty of Mathematics and Natural Sciences, University of Lampung
[4]Department of Microbiology and Parasitology, Faculty of Medicine, University of Lampung
[5]Faculty of Health, Mitra Indonesia University, Lampung
kartikaprasetiya.apt@gmail.com,

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**ABSTRACT**

*Covid-19 infection affects the body's organ system which ultimately has a negative impact on health-related quality of life. The purpose of this study was to determine the relationship between a comorbid diseases history and quality of life. This type of research is quantitative with a cross-sectional approach, with a sample of 41 employees of Demang Sepulau Raya Hospital, Central Lampung after being infected with Covid-19 using simple random sampling. The data collection tool was a questionnaire. Data analysis used percentages and the Chi-Square test. The results of the study found that most respondents had no comorbidities (87.8%), good physical function (95.1%), poor physical limitations (78.0%) and good physical pain (82.9%). Most respondents who had comorbid diseases had good physical function (100%), poor physical limitations (80.0%), and bad physical pain (60.0%). At the same time, most respondents who did not have comorbid diseases were those who had poor physical function (5.60%), good physical limitations (22.2%), and good physical pain (88.9%). There was no relationship between the history of comorbid diseases and physical function (p=1,000) and physical limitations (p=1,000), there was a relationship between the history of comorbid diseases and physical pain (p=0.028).*

**ABSTRAK**

Infeksi Covid-19 berpengaruh pada sistem organ tubuh yang akhirnya berdampak buruk pada kualitas hidup terkait kesehatan. Tujuan penelitian ini adalah mengetahui hubungan antara riwayat penyakit komorbid dengan kualitas hidup. Jenis penelitian ini kuantitatif dengan pendekatan cross sectional, dengan jumlah sampel 41 orang karyawan RSUD Demang Sepulau Raya Lampung Tengah pasca terinfeksi Covid-19 menggunakan simple random sampling. Alat pengumpul data kuesioner. Analisis data menggunakan persentase dan uji Chi-Square. Hasil penelitian mendapatkan bahwa sebagian besar responden tidak ada komorbid sebanyak 87,8%, fungsi fisik baik sebanyak 95,1%, keterbatasan fisik buruk sebanyak 78,0% dan nyeri fisik baik sebanyak 82,9%. Responden yang memiliki penyakit penyerta sebagian besar memiliki fungsi fisik baik (100%), keterbatasan fisik buruk (80,0%), dan nyeri fisik hebat (60,0%). Sementara itu, responden yang tidak memiliki penyakit penyerta sebagian besar memiliki fungsi fisik buruk (5,60%), keterbatasan fisik baik (22,2%), dan nyeri fisik hebat (88,9%). Tidak ada hubungan riwayat penyakit komorbid dengan fungsi fisik (p=1,000) dan keterbatasan fisik (p=1,000), ada hubungan riwayat penyakit komorbid dengan nyeri fisik (p=0,028).

## A. INTRODUCTION

The World Health Organization (WHO) has declared the Coronavirus disease 2019 (Covid-19) as a pandemic and a public health emergency of international concern on January 30, 2020. The virus is known to have originated in Wuhan City, Hubei Province, China in December 2019. Covid-19 has attracted worldwide attention due to the increasing number of cases reported both in China and worldwide in a very short time (Altay & Arisoy, 2024).

The incidence of Covid-19 in the world until April 2024, which experienced 704,753,890 cases of Coronavirus infection, with 7,010,681 deaths and 675,619,811 patients recovered. The incidence of Covid-19 in Indonesia, 6,829,221 cases of Coronavirus infection with 162,063 deaths and 6,647,104 patients recovered (Stone, 2024). The number of coronavirus cases in Central Lampung Regency until January 2024 has reached 6,896 people. Meanwhile, 653 people died from Covid-19, and 6,241 people were declared cured (Ministry of Health of the Republic of Indonesia, 2024).

Covid-19 patients with comorbidities will result in the patient's condition getting worse. A survey in Indonesia found that the top three comorbidities were hypertension (52.1%), diabetes mellitus (33.6%), and other cardiovascular diseases (20.9%) (Karyono & Wicaksana, 2020). Data on other cardiovascular diseases refers to a number of heart diseases, including heart attacks, strokes, heart failure, and others, except hypertension. Covid-19 patients with mild symptoms are not hospitalized, and usually self-quarantine or isolate at home. This phenomenon is similar to previous reports in Asia (Hansel et al., 2022).

Hypertension has been identified as a dominant factor in Covid-19 infection. There is a widespread assumption that people with unstable blood pressure generally have more renin angiotensin aldosterone system inhibitors such as ACE-2 which are associated with increased susceptibility to Covid-19. In several studies, Covid-19 patients with hypertension were associated with poor health outcomes, longer hospital stays, and intensive care unit admissions (Algamdi, 2021), (Shek, 2021), (Karakose et al., 2022). In addition, Covid-19 patients with hypertension have a two-fold higher risk of death. Among other comorbidities, hypertension is recognized as the leading cause of death among patients with Covid-19 (Aslanidis et al., 2023).

Covid-19 patients with diabetes are the second most common after hypertension. Diabetic patients are a high-risk group for Covid-19 infection. Researchers have identified that poor glycemic control is associated with poor outcomes in patients with severe Covid-19. Covid-19 patients with diabetes are at higher risk of hospitalization and ICU admission. Diabetes is one of the high-risk factors for severe Covid-19 infection that requires more attention and medical care (Cosma et al., 2021).

Comorbidities in Covid-19 patients, such as hypertension and diabetes, can increase the risk of disease severity and death. Other comorbidities such as cancer also play a role. Pneumonia due to Covid-19 can worsen lung conditions, increasing the risk of complications. Studies have shown a relationship between the number of comorbidities and disease severity and patient outcomes. Comorbidities can significantly affect the duration of Covid-19 recovery. Patients with comorbid conditions tend to experience a longer healing process compared to patients without comorbidities. Several mechanisms and factors that influence slowing recovery include a Decreased Immune System because comorbid diseases, such as diabetes and heart disease, can weaken the immune system, making the body slower to fight viral infections (Aslanidis et al., 2023). This shows a gap, such as there are comorbid patients

who have a good quality of life, but there are also those who have a poor quality of life. So not all Covid-19 patients with comorbidities have a poor quality of life.

The presence of comorbidities in Covid-19 patients causes severity and decreased quality of life. Covid-19 negatively impacts quality of life after recovery, especially for those with comorbid non-communicable diseases (Cahuas et al., 2023). Studies show that the most frequently affected aspects of quality of life are pain/discomfort and anxiety/depression. Comorbidities exacerbate these negative impacts. Understanding this relationship is important for developing effective intervention strategies to improve the quality of life of post-Covid-19 patients (Ravens-Sieberer et al., 2022).

Several studies in the world have reported burnout during the Covid-19 pandemic and found that there is a strong relationship between the severity of Covid-19 and quality of life. Health-related quality of life is considered multidimensional and subjective and is assessed by patients. According to WHO, health-related quality of life is defined as an individual's general perception of their position in life taking into account culture, value systems and their relation to expectations, goals, standards, and concerns (Mouratidis, 2021).

Research shows that Covid-19 patients with comorbidities experience a decrease in quality of life. Common comorbidities found are hypertension, diabetes mellitus, and heart disease. The impact of Covid-19, especially in cases of long-term Covid-19, can affect various aspects of quality of life including physical and psychological conditions. The percentage of hypertension comorbidities reached 50.5%, followed by diabetes mellitus 34.5% and heart disease 19.6%. This decrease in quality of life requires further attention for comprehensive treatment and recovery (Azrina et al., 2023).

Health-related quality of life includes physical function, physical limitations, bodily pain, general health, vitality, social function, emotional limitations, mental health, sleep quality and cognitive function. The Covid-19 pandemic has significantly affected the quality of life of the population globally. Studies have shown a significant decline in health-related quality of life among Covid-19 survivors, especially those with severe symptoms, due to prolonged fatigue (Mohamadzadeh Tabrizi et al., 2022). The purpose of this study was to determine the relationship between comorbid disease history and quality of life after being infected with Covid-19 in employees of Demang Sepulau Raya Hospital.

## B. METHODS

This study is a quantitative research with a cross-sectional approach. The population in this study were employees of Demang Sepulau Raya Hospital, Central Lampung totaling 162 people, who had experienced Covid-19, with a sample that met the criteria of 41 people, based on sample calculations using the Slovin formula. The inclusion criteria were employees of Demang Sepulau Raya Hospital who were infected with Covid-19 between 2020-2023 which was stated by positive Reverse Transcription-Polymerase Chain Reaction (RT-PCR) laboratory test results. The exclusion criteria were incomplete medical record data and unwillingness to fill out the questionnaire. The sampling technique used simple random sampling. The comorbid variables are collected using questionnaire from Kemenkes, while quality of life used the Short Form-36 (SF-36) questionnaire to assess physical function, physical limitations, body pain, general health, vitality, social function, emotional limitations, mental health. The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality and the Mini Mental State Examination (MMSE) to assess cognitive function which had been tested for validity and reliability and produced valid and reliable questions. Validity and reliability tests were conducted on 30 Covid-19 patients at the Public Health Center in Central Lampung, and obtained an r value of 0.367-0.784 and a Cronbach's alpha value of 0.89. Data analysis in this study included univariate analysis using percentages and bivariate analysis using the Chi-Square test.

## C. RESULT AND DISCUSSION

### 1. Result

#### a) Univariate Analysis

**Table 1.** Respondent Characteristics

| Characteristics | n | % |
|---|---|---|
| Age | | |
| 18-39 years | 19 | 46.34 |
| ≥40 years | 22 | 53.66 |
| Gender | | |
| Male | 12 | 29.27 |
| Female | 29 | 70.73 |
| Education | | |
| Senior high school | 10 | 24.39 |
| Diploma/bachelor/professional/master | 31 | 75.61 |
| Job | | |
| Health workers | 23 | 56.10 |
| Non-health workers | 18 | 43.90 |
| Total | 41 | 100.00 |

The results of the study found that the majority of respondents in the case group were aged ≥40 years (53.66%), female (70.73%), Diploma/Bachelor/Professional/Master education (75.61%) and health workers (56.10%).

**Table 2.** Frequency of Comorbid Diseases History and Quality of Life After Being Infected with Covid-19

| Variable | n | % |
|---|---|---|
| Comorbid diseases history | | |
| No | 36 | 87.8 |
| Yes | 5 | 12.2 |
| Physical function | | |
| Good | 39 | 95.1 |
| Poor | 2 | 4.9 |
| Physical limitations | | |
| Good | 9 | 22.0 |
| Poor | 32 | 78.0 |
| Physical pain | | |
| Good | 34 | 82.9 |
| Poor | 7 | 17.1 |
| General health | | |
| Good | 22 | 53.7 |
| Poor | 19 | 46.3 |
| Vitality | | |
| Good | 35 | 85.4 |
| Poor | 6 | 14.6 |
| Social function | | |
| Good | 28 | 68.3 |
| Poor | 13 | 31.7 |

| Variable | n | % |
|---|---|---|
| Emotional limitations | | |
| Good | 9 | 22.0 |
| Poor | 32 | 78.0 |
| Mental health | | |
| Good | 33 | 80.5 |
| Poor | 8 | 19.5 |
| Quality of sleep | | |
| Good | 9 | 22.0 |
| Poor | 32 | 78.0 |
| Cognitive function | | |
| Good | 39 | 95.1 |
| Poor | 2 | 4.9 |
| Total | 41 | 100.0 |

The results of the study found that most respondents had no comorbidities (87.8%), good physical function (95.1%), good cognitive function (95.1%), poor physical limitations (78.0%), and good physical pain (82.9%).

## b) Bivariate Analysis

**Table 3.** Relationship Between Comorbid Disease History and Physical Function

| Comorbid Diseases History | Physical Function | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 0 | 0.00 | 5 | 100 | 5 | 100 | 1.059 (0.978-1.146) | 1.000 |
| No | 2 | 5.6 | 34 | 94.4 | 41 | 100 | | |

Relationship between comorbid disease history and physical function found that in physical function, the majority of poor people are those who do not have a history of comorbid diseases (5.6%). While in physical function, the majority of good people are those who have a history of comorbid diseases (100%). There is no relationship between comorbid disease history and physical function (p = 1.000).

**Table 4.** Relationship Between Comorbid Disease History and Physical Limitations

| Comorbid Diseases History | Physical Limitations | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 4 | 80.0 | 1 | 20.0 | 5 | 100 | 1.029 (0.642-1.649) | 1.000 |
| No | 28 | 77.8 | 8 | 22.2 | 36 | 100 | | |

Relationship between comorbid disease history and physical limitations found that in physical limitations, the majority of poor people are those who have a history of comorbid diseases (80.0%). While in physical limitations, the majority of good people are those who do not have a history of comorbid diseases (22.2%). There is no relationship between comorbid disease history and physical limitations (p = 1.000).

**Table 5.** Relationship Between Comorbid Disease History and Physical Pain

| Comorbid Diseases | Physical Pain | | Total | 95% CI | p-value |
|---|---|---|---|---|---|
| | Poor | Good | | | |

| History | n | % | n | % | n | % | | |
|---|---|---|---|---|---|---|---|---|
| Yes | 3 | 60.0 | 2 | 40.0 | 5 | 100 | 5.400 (1.678-17.376) | 0.028 |
| No | 4 | 11.1 | 32 | 88.9 | 36 | 100 | | |

Relationship between comorbid disease history and physical pain found that in physical function, the majority of poor people are those who have a history of comorbid diseases (60%). While in physical pain, the majority of good people are those who do not have a history of comorbid diseases (88.9%). There is a relationship between comorbid disease history and physical pain (p = 0.028).

**Table 6.** Relationship Between Comorbid Disease History and General Health

| Comorbid Diseases History | General Health | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 1 | 20.0 | 4 | 80.0 | 5 | 100 | 0.400 (0.067-2.380) | 0.350 |
| No | 18 | 50.0 | 18 | 50.0 | 36 | 100 | | |

Relationship between comorbid disease history and general health found that in physical function, the majority of poor people are those who do not have a history of comorbid diseases (50%). While in general health, the majority of good people are those who have a history of comorbid diseases (100%). There is a relationship between comorbid disease history and general health (p = 0.350).

**Table 7.** Relationship Between Comorbid Disease History and Vitality

| Comorbid Diseases History | Vitality | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 1 | 20.0 | 4 | 80.0 | 5 | 100 | 1.440 (0.208-9.946) | 0.567 |
| No | 5 | 13.9 | 31 | 86.1 | 36 | 100 | | |

Relationship between comorbid disease history and vitality found that in physical function, the majority of poor people are those who do not have a history of comorbid diseases (50%). While in vitality, the majority of good people are those who do not have a history of comorbid diseases (86.1%). There is no relationship between comorbid disease history and vitality (p = 0.567).

**Table 8.** Relationship Between Comorbid Disease History and Social Function

| Comorbid Diseases History | Social Function | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 2 | 40.0 | 3 | 60.0 | 5 | 100 | 1.309 (0.402-4.265) | 0.645 |
| No | 11 | 30.6 | 25 | 69.4 | 36 | 100 | | |

Relationship between comorbid disease history and social function found that in physical function, the majority of poor people are those who have a history of comorbid diseases (40%). While in social function, the majority of good people are those who do not have a

history of comorbid diseases (69.4%). There is no relationship between comorbid disease history and social function (p = 0.645).

**Table 9.** Relationship Between Comorbid Disease History and Emotional Limitations

| Comorbid Diseases History | Emotional Limitations | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | N | % | n | % | | |
| Yes | 5 | 100 | 0 | 0.0 | 5 | 100 | 1.333 (1.104-1.610) | 0.568 |
| No | 27 | 75.0 | 9 | 25.0 | 36 | 100 | | |

Relationship between comorbid disease history and emotional limitations found that in physical function, the majority of poor people are those who have a history of comorbid diseases (100%). While in emotional limitations, the majority of good people are those who do not have a history of comorbid diseases (25%). There is no relationship between comorbid disease history and emotional limitations (p = 0.568).

**Table 10.** Relationship Between Comorbid Disease History and Mental Health

| Comorbid Diseases History | Mental Health | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 0 | 0.0 | 5 | 100 | 5 | 100 | 1.286 (1.080-1.531) | 0.563 |
| No | 8 | 22.2 | 28 | 77.8 | 36 | 100 | | |

Relationship between comorbid disease history and mental health found that in physical function, the majority of poor people are those who do not have a history of comorbid diseases (22.2%). While in mental health, the majority of good people are those who have a history of comorbid diseases (100%). There is no relationship between comorbid disease history and mental health (p = 0.563).

**Table 11.** Relationship Between Comorbid Disease History and Sleep Quality

| Comorbid Diseases History | Quality of Sleep | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |
| Yes | 4 | 80.0 | 1 | 20.0 | 5 | 100 | 1.029 (0.642-1.649) | 1.000 |
| No | 28 | 77.8 | 8 | 22.2 | 36 | 100 | | |

Relationship between comorbid disease history and sleep quality found that in physical function, the majority of poor people are those who have a history of comorbid diseases (80%). While in sleep quality, the majority of good people are those who do not have a history of comorbid diseases (22.2%). There is no relationship between comorbid disease history and sleep quality (p = 1.000).

**Table 12.** Relationship Between Comorbid Disease History and Cognitive Function

| Comorbid Diseases History | Cognitive Function | | | | Total | | 95% CI | p-value |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Good | | | | | |
| | n | % | n | % | n | % | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Yes | 0 | 0.0 | 5 | 100 | 5 | 100 | 1.059 (0.978-1.146) | 1.000 |
| No | 2 | 5.6 | 34 | 94.4 | 36 | 100 | | |

Relationship between comorbid disease history and cognitive function found that in physical function, the majority of poor people are those who do not have a history of comorbid diseases (5.6%). While in cognitive function, the majority of good people are those who have a history of comorbid diseases (100%). There is no relationship between comorbid disease history and cognitive function (p = 1.000).

## 2. Discussion

a. Respondent Characteristics

Age, gender, education level and type of employment are sociodemographic variables included in this study as characteristics of respondents where the majority of respondents are over 40 years old, female, have a Diploma/Bachelor/Professional/Master education level and work as health workers.

People aged 65 years and over and infants under 6 months of age are at higher than average risk of developing serious Covid-19 disease. This age group is at highest risk of requiring hospitalization for Covid-19. Infants under 6 months of age are not eligible for the Covid-19 vaccine, which adds to the risk. For older people, the challenge is that the immune system is less able to clear germs. In addition, medical conditions that increase the risk of severe Covid-19 are more likely to occur. In the United States as of March 2024, approximately 76% of all Covid-19 deaths occurred in people aged 65 years and over (Wolff et al., 2021).

Response to Covid-19 varies by gender. Men account for 59–68% of cases and have a higher mortality rate. Due to their weakened immune system, those over the age of 75 are more susceptible to the disease and its effects. The SARS-CoV-2 (SARS 2) coronavirus affects men and women differently. Other studies have found that men are at higher risk of contracting Covid-19 than women. One study found that male Covid-19 patients were 1.663 times more likely to develop a more serious illness. However, Covid-19 can affect anyone regardless of gender. Other studies have also shown differences in symptoms and incubation periods between men and women. Women tend to experience mild symptoms and a longer incubation period (Rashedi et al., 2020).

The effect of education level on the risk of Covid-19 is still a matter of debate. Some studies have shown no significant correlation, while others suggest that low education may be a risk factor. Further research is needed to determine the exact relationship, considering other factors such as access to information, compliance with health protocols, and social environment. It is important to remember that Covid-19 can affect anyone regardless of education level. People with higher education may be more aware of good health practices and more likely to follow health protocols, such as wearing masks and maintaining social distancing (Zhang et al., 2023).

Health workers are at high risk of being infected with Covid-19, up to 12 times higher than the general population. This risk is due to their direct and intense interaction with infected patients. Consistent self-protection is essential for health workers to reduce the risk of transmission. Another risk factor for Covid-19 transmission in health workers is the behavior of health workers themselves in their work environment (Mhango et al., 2020). The behavior of health workers related to efforts to prevent the transmission of Covid-19 is not a short-term response, but a long-term adaptive response. In this study, the behavior of health workers who work providing direct and indirect services to patients was good. This can be seen from the greater number of those who often and always than those who rarely and never take action to prevent the transmission of Covid-19 (Albitar et al., 2020).

This study is in line with previous studies that found that 71.4% of health workers providing direct services in the control group always provided direct services to patients. This percentage was higher in the case group (91.4%). This behavior results in a high risk of Covid-19 transmission to health workers (Nurmalela & Tenrilemba, 2024).

b. History of Comorbid Diseases and Quality of Life After Covid-19 Infection

The results of the study found that most respondents had no comorbidities as much as 87.8%, good physical function as much as 95.1%, poor physical limitations as much as 78.0% and good physical pain as much as 82.9%.

Severe Covid-19 disease is more likely to occur in people who have other health problems. Some common diseases associated with it include heart disease, diabetes mellitus which has a higher risk for type 1 and type 2. Chronic lung disease including respiratory tract disease and conditions that damage lung tissue increase the risk of severe Covid-19 disease. The risk increases with increasing body mass index, with the highest risk at BMI 40 or more.

Covid-19 patients with diabetes are the second most after hypertension. Diabetic patients are a high-risk group for Covid-19 infection. Researchers have identified that poor glycemic control is associated with poor outcomes in patients with severe Covid-19. Covid-19 patients with diabetes have a higher risk of hospitalization and ICU admission. Diabetes is one of the high-risk factors for severe Covid-19 infection that requires more attention and medical care (Cosma et al., 2021).

The presence of comorbidities in Covid-19 patients causes severity and decreased quality of life. Covid-19 negatively impacts quality of life after recovery, especially for those with comorbid non-communicable diseases (Cahuas et al., 2023). Studies show that the most frequently affected aspects of quality of life are pain or discomfort and anxiety or depression. Comorbidities exacerbate these negative impacts. Understanding this relationship is important for developing effective intervention strategies to improve quality of life in post-Covid-19 patients (Ravens-Sieberer et al., 2022).

c. Relationship Between Comorbid Disease History and Quality of Life

The results of the analysis found that respondents who had comorbid diseases were mostly those who had good physical function (100%), poor physical limitations (80.0%) and poor physical pain (60.0%). While most respondents who did not have comorbid diseases were mostly those who had poor physical function (5.6%), good physical limitations (22.2%) and good physical pain (88.9%). The results showed that there was no relationship between comorbid disease history and physical function (p = 1,000) and physical limitations (p = 1,000), there was a relationship between comorbid disease history and physical pain (p = 0.028).

In a previous study conducted by (Antar et al., 2024), it was stated that out of 651 health workers in a hospital in Germany, with female (n=453; 69.6% of participants) and male (n=192; 29.5%), showed no significant difference in quality of life in the four domains of physical health, mental health, social relationships, or the environment, both for workers who had been infected with Covid-19 and those who were not infected with Covid-19. This is in accordance with the results of this study which showed no difference or relationship between physical function and physical limitations with a history of comorbid diseases.

Hypertension as a comorbid can worsen Covid-19 because the consumption of Angiotensin-Converting Enzyme (ACE) inhibitors and Angiotensin Receptor Blockers (ARB) as hypertension drug interventions can actually worsen Covid-19. This virus will bind to Angiotensin Converting Enzyme 2 (ACE2) in the lungs and then penetrate into cells (Tignanelli et al., 2020). The results of the study conducted (Ping et al., 2020), found that respondents with chronic diseases had a lower quality of life than other respondents. Other studies have found that people who undergo quarantine have poor general health quality,

especially people with chronic diseases. This is due to a weakened immune system and organ damage due to chronic diseases which of course will affect the patient's quality of life (Schwartz & Oppold, 2020).

The results of the study showed that there was a significant difference in the quality of life of Covid-19 patients with comorbid diabetes mellitus and hypertension (Widiastuti, 2021). Chronic disease patients infected with Covid-19 will affect their health conditions and have an impact on the low quality of life of chronic disease patients. Covid-19 patients with DM tend to receive ICU care and invasive mechanical ventilation due to having a very severe inflammatory response (Roncon et al., 2020). Covid-19 patients with diabetes have a poor prognosis, resulting in a shorter life expectancy for patients with diabetes than those without diabetes. This happens because Covid-19 causes lung dysfunction and severe inflammation. If the amount of ACE 2 in Covid-19 patients increases and is excessive, it will increase the severity of the disease (Sasidharan et al., 2021).

Covid-19 patients with comorbid diabetes are at twice the risk of suffering from severe Covid-19 and are at risk of dying. These patients must take medication continuously (Burhan et al., 2020). The risk of this complication tends to be high, so it can shorten the patient's life expectancy (Huang et al., 2020). Covid-19 patients with diabetes mellitus tend to receive intensive care, have a very severe inflammatory response, have a poor prognosis so that the patient's life expectancy is shorter (Kumar et al., 2020).

Covid-19 patients with chronic diseases affect their health conditions and low quality of life. Research (Nguyen et al., 2021), states that patients with chronic diseases are a vulnerable population with a low quality of life during the Covid-19 pandemic. Research (Ping et al., 2020) found that respondents with three or more chronic diseases had a lower quality of life than other respondents.

Research found that long-term Covid-19 is influenced by comorbidities, type of care, and duration of care. Other factors including gender, age, type of work, vaccination history, and city of domicile were found to have no effect on long-term Covid-19. Research shows that asthma is the most common comorbidity suffered by respondents (5.94%), followed by hypertension (2.97%), and coronary heart disease (0.99%). Other literature states that someone with comorbidities has a 14.5 times greater risk of experiencing long-term Covid-19. Asthma, coronary heart disease, and lung disorders are comorbidities that need to be watched out for in Covid-19 patients because they are associated with accelerated disease severity which causes a decrease in the patient's quality of life.

Individuals with comorbid diseases often experience psychological problems such as depression, anxiety, sleep disorders, and post-traumatic stress disorder, which can lead to a decrease in quality of life. The comorbid diseases they experience are psychosocial stressors that cause anxiety related to the possibility of being reinfected with Covid-19 and suffering from more severe symptoms. Previous studies have shown that a number of individuals with comorbid diseases experience mild depression of 6.7%, moderate depression of 20%, and 6.7% experience severe and very severe anxiety. Some emotional problems that occur in those who are confirmed positive for Covid-19 include depression, hopelessness, sleep problems, deep sadness, helplessness, and anxiety. This causes the patient's quality of life to decline (Camila & Samaria, 2024).

External validity, or generalizability, in the context of research on comorbidity and quality of life in Covid-19 patients, is the extent to which research findings can be applied to a broader population. Existing research has focused on resilience in Covid-19 survivors with comorbidities and the use of questionnaires. To ensure generalizability, it is important to consider the characteristics of the study sample (e.g., age, gender, specific comorbidities) and compare them to the target population. The use of appropriate statistical testing methods (such as the Wilcoxon test) and validation of measurement tools (such as the HARS scale)

contribute to increased external validity. The results of these tests need to be interpreted with caution to avoid overly broad conclusions.

Existing studies show that there are efforts to analyze the relationship between comorbid history and quality of life in Covid-19 patients, as well as its impact on symptom severity. Several studies aimed to identify factors that influence quality of life in Covid-19 survivors. However, limitations in these studies may include: methodological variations, limited sample sizes, and lack of longitudinal data to track changes in quality of life over time. In addition, other factors such as differences in patient characteristics (age, gender, etc.) and variations in medical care also need to be considered.

## D. CONCLUSION AND SUGGESTIONS

The results of the analysis found that most respondents who had comorbid diseases were mostly those who had good physical function (100%), poor physical limitations (80.0%) and poor physical pain (60.0%). The results showed that there was no relationship between a history of comorbid diseases and physical function (p=1.000) and physical limitations (p=1.000), there was a relationship between a history of comorbid diseases and physical pain (p=0.028). Covid-19 greatly affects health-related quality of life, so a comprehensive post-recovery rehabilitation program and targeted public health interventions are needed. Efforts that can be made are to address socio-demographic disparities to reduce the impact of the pandemic on health-related quality of life. Policy makers and health care providers must implement strategies to support affected populations, emphasizing physical and mental health support, social support systems, and vaccination programs.

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