*Original Research Article*

# THE EFFECT OF LONG COVID SYNDROME DEGREESEVERITY ON THE QUALITY OF LIFE OF COVID-19 SURVIVORS AGED 15-64 YEARS OLD AT GOTONG ROYONG HOSPITAL, SURABAYA


**Aims:**Toanalyse the effect of the severity of long COVID syndrome on the quality of life of COVID-19 survivors at the age of 15-64 years old.
**Study design:** Cross-sectional observational study
**Place and Duration of Study:** Gotong Royong Hospital, Surabaya, Indonesia between July to September 2022
**Methodology:**This study uses a cross sectional design. The number of the samples used was 67 respondents who had been hospitalized at the Gotong Royong Hospital, Surabaya during the acute infection. The statistical analysis used was Spearman's correlation test with the sampling technique used was purposive sampling. The instruments used were the long COVID syndrome severity questionnaire and the WHOQOL Bref questionnaire.
**Results:**A significant effect (p = 0,000) was obtained between the severity of long COVID syndrome and the quality of life on the physical (correlation strength -0,918), mental (correlation strength -0,947), and social aspect (correlation strength -0,949).
**Conclusion:**There is a significant relationship between the degree of severity of long COVID syndrome and the quality of life of COVID-19 survivors at the age of 15-64 years old in three domains, that is physical, mental, and social aspect.


## ABSTRACT


*Keywords:COVID-19, long COVID syndrome, quality of life, productive age*


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## 1. INTRODUCTION

Corona Virus Disease 2019 (COVID-19) is a disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This disease is thought to begin in Wuhan, China and began to spread throughout the world since December, 2019. In Indonesia, COVID-19 cases have reached more than 5 million cases with a death rate of more than 140 thousand cases[1].

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COVID-19 is a disease with a wide range of clinical manifestasions ranging from asymptomatic to severe which is characterized by Acute Respiratory Distress Syndrome (ARDS), septic shock and organ system failure. Most of COVID-19 survivors will make a full recovery, but there have been reports of prolonged symptoms and complications. Reseacrh on 273.618 survivors of COVID-19 found that within 6 months of being diagnosed with COVID-19, 57% of survivors had at least one persistens clinical symptom[2].

The clinical manifestations of long COVID syndrome are very broad with the most common symptoms are fatigue, shortness of breath, myalgia,arthalgia,cough,headache, chest pain, anosmia, ageusia, gastrointestinal symptom such as diarrhea[3]. Although there is no data regarding the comparison of the prevalence of long COVID syndrome in the delta and omicron variants, based on a study of 63.002 COVID-19 survivors in the UK, it was found that the prevalence of hospitalization and duration of symptom is higher and longer in the delta variant than in the omicron variant[4].

The wide range of clinical manifestations of the long COVID syndrome can have an impact, especially in the productive age group. The study conducted by Poudel et al., found that the survivors of COVID-19 with long COVID syndrome experienced a decrease in quality of life[5]. The problem of quality of life is one of the health problems that we cannot ignore in survivors of productive age who experienced long COVID syndrome. The purpose of this study was to analyze the effect of the severity of long COVID syndrome on the quality of life of COVID-19 survivors aged 15-64 years old as a productive age group at the Gotong Royong Hospital, Surabaya.

## 2. METHODOLOGY

This study used an analytic observational method with a cross sectional design with a non-probability sampling technique, namely purposive sampling method. The study began with collecting medical record data and contacts of COVID-19 survivors with a history of hospitalization during the acute phase from January to September 2021 who fulfilled the inclusion an exclusion criteria. The study was completed with procedures for filling out the long COVID syndrome questionnaire and the WHOQOL Bref questionnaire. The data obtained will be analyzed using the Spearman correlation test on the Statistical Product and Service Solution (SPSS) version 26 application.

## 3. RESULTS AND DISCUSSION

### 3.1 RESULTS

**Table 1. Percentageof Each Long COVID Syndrome's symptom**

| Symptom | N (%) |
|---|---|
| Dispnea | 51 (76,12%) |

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Add the reference

| | |
|---|---|
| Fatigue | 58 (86,57%) |
| Palpitation | 30 (44,78%) |
| Difficulty in concentration (brain fog) | 55 (82,09%) |
| Insomnia | 57 (85,07%) |
| Headache | 27 (40,30%) |
| Chest pain | 25 (37,31%) |
| Myalgia | 48 (71,64%) |
| Arthalgia | 30 (44,78%) |
| Sore throat | 51 (76,12%) |
| Abdominal pain | 30 (44,78%) |
| Cough | 57 (85,07%) |
| Fever | 28 (47,79%) |
| Anosmia | 59 (88,06%) |
| Ageusia | 36 (53,73%) |



In this study, the most common symptoms of long COVID syndrome found in COVID-19 survivors of productive age were anosmia (88,06%), fatigue (86,57%), and cough (85,07%), Other symptoms that are less common are headache (40,30%) and chest pain (37,31%).

| **Age (Years)** | **Frequency (n)** | **Percentage (%)** |
|---|---|---|
| 15 – 24 | 9 | 13,43% |
| 25 – 34 | 6 | 8,96% |
| 35 – 44 | 7 | 10,45% |
| 45 – 54 | 18 | 26,86% |
| 55 – 64 | 27 | 40,30% |
| **Gender** | | |
| Male | 36 | 53,73% |
| Female | 31 | 46,27% |
| **Occupation** | | |
| Student/college student | 6 | 8,96% |

| | | |
|---|---|---|
| Private employee | 45 | 67,16% |
| Enterpreneur | 7 | 10,45% |
| Housewife | 9 | 13,43% |
| **Comorbidity** | | |
| No comorbidity | 37 | 55,22% |
| Hypertension | 17 | 25,37% |
| Diabetes mellitus | 7 | 10,45% |
| Hypertension and diabetes mellitus | 6 | 8,96% |

**TABLE2. DISTRIBUTION OF THE RESEARCH SAMPLE CHARACTERISTIC**

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Based on table 2, it was found that the respondents who experienced long COVID syndrome was dominated by the age group of 55-64 years (40,30%) and the age group of 45-54 years (26,86%). In this study, it was also found that the incidence of long COVID syndrome is higher in men (53,73%) than women (46,27%).

**Table 3. Distribution of the Research Sample Characteristic Based on the Severity of Long COVID Syndrome**

| The Severity of Long COVID Syndrome | Frequncy (n) | Percentage (%) |
|---|---|---|
| Mild long COVID syndrome | 26 | 38,81% |
| Moderate long COVID syndrome | 22 | 32,83% |
| Severe long COVID syndrome | 19 | 28,36% |
| **Total** | 67 | 100% |

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**Comment [ZS8]:** please mention base of each category in method

Based on table 3, it was found that 26 survivors (38,81%) survivors of COVID-19 experienced mild long COVID syndrome, 22 survivors (32,83%) of survivors experienced moderate long COVID syndrome, and 19 (28,36%) experienced severe long COVID syndrome.

**Table 4.** **Characteristic Distribution ofCOVID-19 Survivors with LongCOVID Syndrome Berdasarkan Comorbidity**

| | Degree Severity of Long COVID Syndrome n (%) | | |
|---|---|---|---|
| **Comorbidity** | **Mild** | **Moderate** | **Severe** |
| No comorbid | 22 (32,83%) | 9 (13,43%) | 6 (8,95%) |
| Hypertension | 3 (4,48%) | 7 (10,45%) | 7 (10,45%) |
| Diabetes mellitus | 1 (1,49%) | 3 (4,48%) | 3 (4,48%) |
| Hypertension and diabetes mellitus | 0 (0,00%) | 3 (4,48%) | 3 (4,48%) |
| **Total** | 26 | 22 | 19 |

Based on table 4, it was found that survivors who did not have comorbidities mostly exeperienced mild long COVID syndrome (32,83%), survivors with comorbid hypertension moslty experienced moderate (10,45%) and severe (10,45%) long COVID syndrome, survivors with comorbid diabetes mellitus mostly experienced moderate (4,48%) and severe (4,48%) long COVID syndrome, and survivors with both comorbidities, hypertension and diabetes mostly experienced moderate (4,48%) and severe (4,48%) long COVID syndrome.

**Table 5.** **Analysis the Effect of Comorbidityon theDegree Severity of Long COVID Syndrome**

| Variable | Analysis test | Sig. | Explanation |
|---|---|---|---|
| Comorbidity<br>1. No comorbid<br>2. One comorbid (hypertension or diabetes mellitus)<br>3. Two comorbidities (hypertension and diabetes mellitus) | Spearman test | 0,000 | Significant |

Based on data analysis using the Spearman test, the results showed that there was a significant effect between survivors without comorbid and with comorbid on the severity of the long COVID syndrome. The significance value obtained through the Spearman test is p = 0,000 with a correlation strength of 0,493 which means moderate.

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| Variable | Analysis test | Sig. | Explanation |
|---|---|---|---|
| Degree Severity of Long COVID Syndrome and Physical Aspect | Spearman test | 0,000 | Significant |
| Degree Severity of Long COVID Syndrome and Psychology/ Mental Aspect | Spearman test | 0,000 | Significant |
| Degree Severity of Long COVID Syndromeand Social Aspect | Spearman test | 0,000 | Significant |

**Table 6. Analysis the Effect of Degree Severity of Long COVID Syndrome on the Quality of Life**

Based on the Spearman test, it was found that there was a significant effect between the severity of long COVID syndrome and the quality of life for the physical health aspect with a value of p = 0,000 and the strength correlation was very strong with a value of -0,918, there was a significant effect between the severity of long COVID syndrome and the quality of life for the psychology/mental aspect with a value of p = 0,000 and the strength correlation was very strong with a value of -0,947, and there was a significant effect between the severity of long COVID syndrome and the quality of life for the social aspect with a value of p = 0,000 and the strength correlation was very strong with a value of -0,949.

### 3.2 DISCUSSION

In this study, data was obtained that survivors of COVID-19 with long COVID syndrome were dominated by the group of age 55-64 years old (40,30%) and 45-54 years old (26,86%). Research conducted by Daitch et al., showed that the older people heve greater risk of experiencing persistent symptoms of COVID-19[6]. Changes in immune function play a role in the emergence of long COVID syndrome. With increasing age there is a decrease in energy, decreased in muscle mass, increased inflammatory compounds, especially IL-6, and decreased differentiation and phagocytic function of macrophage cells and neutrophils. The existence of conditions that are prone to hyperinflammation causes the risk of prolonged symptoms in COVID-19 infection to increase[7].

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In this study, the comorbidities studied were hypertension and diabetes mellitus. Based on the result of the analysis of the effect of comorbidities on the severity of long COVID syndrome in productive age, the result obtained was p = 0,000 (p < 0,05) with a moderate correlation strength. These result indicate that although there is a significant influence between comorbidities and the severity of long COVID syndrome, comorbidities are not the main risk factor that influences the severity of long COVID syndrome. The result of this study is accordance with the previous studies which show that comorbidities affect the severity of long COVID syndrome[8]. This theory is supported by research conducted by Yong SJ et al., which explains that the degree severity of long COVID syndrome is multifactorial[9].

Based on the analysis of the effect of the severity of long COVID syndrome on the quality of life of COVID-19 survivors in the productive age, the result obtained were p = 0,000 (p < 0,05) with strong correlation strength in all three aspect of quality of life, namely physical, psychological, and social aspects. These result indicate that there is a significant effect between the degree of severity of long COVID syndrome and the level of quality of life in physical, psychological, and social aspects of COVID-19 survivors in productive age group. The result in this study is similars to Jacobs et al.,'s study which used the Patient Reported Outcome Measurement Information System intrument on 183 COVID-19 survivors[10].

Several factors that may influence the level of quality of life in this study are age, education level, gender, duration of hospitalization during the acute phase, occupation, and comorbidities. This theory is supported by research conducted by Todt et al., which explained that factors related to the level of quality of life in survivors of COVID-19 were female gender, presence of comorbidities, and the duration of hospitalization during acute phase[11].

## 4. CONCLUSION

Based on the research conducted at the Gotong Royong Hospital in Surabaya, it can be concluded that there is a significant effect between comorbidities and the severity of long COVID syndrome and there is a significant relationshop between the severity of long COVID syndrome and the level of quality of life of COVID-19 survivors of productive age in the three domains, which are physical, psychological/mental, and social aspects.

## CONSENT

Informed consent to fill the long COVID syndrome questionnaire and WHOQOL Bref questionnaire has been given to all respondents.

## ETHICAL APPROVAL

This research has been approved by the Ethics Committee of Widya Mandala Catholic University Surabaya. All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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**Comment [ZS16]:** Add more references in introduction, method, and discussion


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