www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



Factors Associated with Sequelae in Post-Covid-19 Patients: A Retrospective Study of Patients 2 Years After Being Infected with Covid-19

Fentynnisa Nur Amalia¹, Irawaty Djaharuddin^{2*}, Erwin Arief³, Muh Ilyas⁴, Siti Nurisyah⁵, Bulqis Natsir⁶

^{1,2,3,4,5,6} Department of Pulmonology and Respiratory Medicine, Faculty of Medicine, Hasanuddin University, Perintis Kemerdekaan KM. 10, 90245, Makassar, Indonesia

^{2,3,4} Dr. Wahidin Sudirohusodo Hospital, Perintis Kemerdekaan KM. 10, 90245, Makassar, Indonesia

³Tadjuddin Chalid Hospital, Paccerakkang No. 67, 90241, Makassar, Indonesia

⁴Batara Siang Hospital, Sultan hasanuddin No. 7, Pangkajene, Indonesia

(Received: 0	4 February 2024 Revised: 11 March 2024 Accepted: 08 April 2024)			
	ABSTRACT:			
KEYWORDS	Background: Coronavirus disease 2019 (Covid-19) was first identified in December 2019 in			
Covid-19,	China and declared a pandemic in March 2020 by the World Health Organization (WHO).			
Risk factor,	Currently, the number of Covid-19 cases has decreased drastically. Some literature reports that			
Sequalae.	there are ongoing symptoms or sequelae in patients who have been infected with Covid-19. This			
	study aims to assess factors associated with the incidence of sequelae in those infected with			
	Covid-19 for 2 years.			
	Methods: This is a retrospective study. The samples in this study were patients infected with			
	COVID-19 who were hospitalized at Wahidin Sudirohusodo Hospital from January to August			
	2021, taken from medical records and interviewed by phone. The residual symptoms assessed in			
	this study were divided into 3 categories: respiratory, non-respiratory, and a combination of			
	respiratory and non-respiratory symptoms.			
	Results: A total of 200 post-covid-19 patients were involved in this study. There was a significant			
	relationship between age, smoking history, comorbidities, severity and Covid-19 vaccination			
	status on residual symptoms (p<0.05) in patients after being infected with Covid-19 during the			
	previous 2 years.			
	Conclusion: Based on this research, several factors were influenced, such as age, smoking			
	history, comorbidities, severity and Covid-19 vaccination status associated with sequelae			
	in post-Covid-19 patients.			

1. Introduction

Coronavirus, or severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a virus that attacks the respiratory system. The Corona Virus Disease 2019 (COVID-19) case first appeared in December 2019 in China and was declared a pandemic in March 2020 by the World Health Organization (WHO) (Baloch et al., 2020). Since the availability of Covid-19 vaccination, the number of transmission cases of Covid-19 has begun to decline, the result is that in May 2023 WHO revoked the pandemic status of Covid-19 (Flacco et al., 2022).

Even though the number of Covid-19 cases has decreased drastically, some literature reports ongoing or residual symptoms in patients infected with Covid-19. These prolonged symptoms of Covid-19 are commonly known as long Covid (Davis et al., 2023). Long covid is a health problem that must be watched out for in several cases of COVID-19 infection. Long covid is an individuals who experience ongoing symptoms or sequelae experienced after being infected with the COVID-19 virus. In some infected individuals, recovery is expected to improve at least four weeks after the initial infection; however, if symptoms are still felt and persist for 3 months or more, then the cause of long-term COVID-19 in that individual can be evaluated. (Raveendran et al., 2021)

Currently, the leading cause of long Covid is still unclear. However, several studies have reported that the more

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727

severe the COVID-19 infection, the higher the risk of long-term COVID-19 (Wong MCS et al., 2023). In addition, other studies report that demographic characteristics and risky lifestyles before being infected with COVID-19 also contribute to the incidence of longterm COVID-19 (Hu Y et al., 2023). This study aims to assess factors associated with the incidence of sequelae in those infected with Covid-19 for 2 years. The results of this research will increase scientific insight into the risk factors for long-term COVID-19.

2. Methods

This retrospective study aims to assess factors related to residual symptoms in patients 2 years after being infected with Covid-19. The samples in this study were patients infected with Covid-19 who were hospitalized at Wahidin Sudirohusodo Hospital in the period January-August 2021. The sample inclusion criteria in this study were patients aged 18 years and post-Covid-19 after 2 years. Patients confirmed to be immunocompromised or immunocompromised or other infectious lung diseases were excluded from this study.

Residual symptoms are assessed by conducting direct telephone interviews with patients. The residual symptoms assessed in this study were divided into three categories: respiratory symptoms, such as shortness of breath, cough, chest pain, and fatigue; non-respiratory symptoms, such as joint pain, muscle pain, anosmia, brain fog, headaches; insomnia; diarrhea; nausea; stomach pain; loss of appetite; and anxiety. Combined symptoms are assessed if the patient includes both categories of symptoms (respiratory and nonrespiratory).

The factors assessed in this study were age, smoking history, comorbidities, severity of Covid-19, and Covid-19 vaccination status. The comorbidities identified in this study were diabetes mellitus, hypertension, coronary heart disease, kidney failure and malignancy. Apart from that, the severity of Covid-19 is assessed according to WHO criteria divided into severe and non-severe degrees. The patient's vaccination status has received the Covid-19 vaccine (any dose) before being diagnosed with Covid-19.

All research data was collected and tabulated in Microsoft Office Excel. Statistical analysis used the *Statistical Package for the Social Sciences software* (SPSS) *version 27.0*. The frequency and percentage of each categorical data and the numerical data's mean, median, and standard deviation were calculated. The statistical test used is the chi-square test. The research results are presented in narrative form equipped with tables. Patients were given verbal and written informed consent before being included in the research sample. The ethical recommendations have been approved by the Hasanuddin University Faculty of Medicine Ethics Commission (No:715/UN4.6.4.5.31/PP36/2023)

3. Results

This research involved 200 post-covid-19 patients hospitalized at Wahidin Sudirohusodo General Hospital, Makassar, from January to August 2021. The respondents of this study had agreed and were willing to become research subjects, and then medical record data was taken, and interviews were conducted directly. The majority of the participants in this study were under 50 years old (79%), and most were female (61%). Post-COVID-19 patients in this study were divided into two groups based on the degree of severity, with severe symptoms consisting of 22 samples and non-severe symptoms consisting of 178 samples. Among the 22 samples in the severe category, there were 10 samples with a critical degree that previously required ICU treatment. Most of the patients in this study had received the Covid-19 vaccine (73%). (Table 1)

All samples in this study were categorized based on the degree of severity published by WHO, and most patients with severe symptoms had never been vaccinated before and had varying symptoms, including respiratory symptoms, non-respiratory symptoms, or a combination after hospitalization. Most post-COVID-19 patients in this study had no symptoms/asymptomatic (64.5%). However, 10% of the patients had respiratory symptoms, 16% complained of non-respiratory symptoms, and 9.5% complained of combined symptoms. (Table 1) In the research sample, it was also found that 2 patients with critical symptoms previously had non-respiratory symptoms after COVID-19, which were felt up to 2 years after being infected with COVID-19. This can be categorized as a symptom of sequelae caused by infection with the Sars-CoV-2 virus.

Another characteristic assessed in this study was smoking status. Of the 200 patients in this study, only 12 (6%) were smokers, while 94% were non-smokers. Apart



www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



from that, the most common comorbid history of patients in this study was diabetes mellitus in 8 patients (4%), then hypertension in 7 patients (3.5%), obesity in 5 patients (2.5%), coronary heart disease in 4 patients (2%), and one patient had bronchial asthma and hypothyroidism. (Table 1)

The relationship between age and residual symptoms of post-COVID-19 patients was assessed (can be seen in Table 2). Of the 129 post-Covid-19 patients who had no symptoms, 109 patients (84.4%) were <50 years old, while the other 20 patients (15.6%) who survived were ≥50 years old. Meanwhile, of the 20 post-covid-19 patients who experienced respiratory symptoms, 16 patients (80%) were <50 years old and 4 other patients (20%) were \geq 50 years old. Furthermore, of the 32 postcovid patients who experienced non-respiratory symptoms, it was recorded that 22 patients (68.75%) were aged <50 years, and 10 other patients (31.25%) were aged \geq 50 years. Meanwhile, of the 19 post-covid patients who experienced combination symptoms, 11 patients (57.9%) were aged <50 years, and 8 other patients (42.1%) were aged ≥ 50 years. The results of Chi-Square statistical analysis obtained a value of p = 0.023 (p=0.023< α =0.05). This shows a relationship between age and clinical symptoms of Covid-19 survivors. (Table 2)

Furthermore, the relationship between smoking history and post-Covid-19 residual symptoms. Of the 129 asymptomatic post-covid-19 patients, only 1 patient (0.8%) was a smoker. Meanwhile, of the 20 post-Covid-19 patients who experienced respiratory symptoms, 4 patients (20%) were smokers. Furthermore, of the 32 post-Covid-19 patients who experienced nonrespiratory symptoms, 6 of them (18.8%) were smokers. In addition, of the 19 post-Covid-19 patients who experienced a combination of symptoms, 1 patient was a smoker (5.3%). The results of the Chi-Square statistical analysis obtained a p <0.001. This means that there is a relationship between smoking history and the clinical symptoms of Covid-19 survivors. (Table 3)

124 asymptomatic post-Covid-19 patients (96.1%) had no history of comorbid diseases and the remaining 5 patients (3.9%) had a history of comorbid diseases. Furthermore, there were 11 post-Covid-19 patients (55%) who had residual respiratory symptoms and had a history of comorbid diseases. Then, 13 post-Covid-19 patients (40.6%) had non-respiratory sequelae and had a history of comorbid diseases. In addition, 11 post-covid-19 patients (57.9%) who experienced combination sequelae also had a history of comorbid diseases. The Chi-Square statistical analysis results show a significant relationship between the presence of comorbidities in Covid-19 patients and the residual symptoms felt by post-Covid-19 patients (p<0.001). (Table 4)

A significant relationship was also found between Covid-19 and post-Covid-19 sequelae severity. Only 3 of the 129 patients (2.3%) who were asymptomatic previously had severe Covid-19. Meanwhile, of patients with residual respiratory symptoms, 20% had previously suffered from severe symptoms. Of the patients who currently have non-respiratory sequelae, 18.8% of them had previous severe disease. Meanwhile, of patients who currently have combination residual symptoms, 36.8% of them suffer from severe degrees of Covid-19. The results of the Chi-Square statistical analysis also obtained a pvalue < 0.001, which means there is a relationship between the degree of severity and the clinical symptoms of Covid-19 survivors. (Table 5)

This study's results also report a significant relationship between vaccination status and the residual symptoms of post-covid-19 patients. Of the patients with no symptoms, 94.6% have a history of the Covid-19 vaccine. Meanwhile, of patients experiencing residual respiratory symptoms, 60% have not been vaccinated against Covid-19. Of patients experiencing nonrespiratory sequelae, 62.5% have not been vaccinated against Covid-19. The Chi-Square statistical analysis results show a relationship between vaccination status and residual symptoms in post-covid-19 patients (p<0.001). (Table 6)

4. Discussion

The research results show that post-COVID-19 patients aged \geq 50 years experience more sequelae. This study's results align with a study from Ganie (2021), which shows a relationship between advanced age and exposure to COVID-19 infection due to a decrease in the immune system's ability (Ganie SMF, 2021). Age \geq 50 years is the age that can be classified as menopause for women or changes in the immune system as a result of ageing factors. The very complex immune system functions to maintain body balance. Research by Widyastuti (2020) found that the elderly population is easily exposed to

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



complications from clinical manifestations of COVID-19 caused by immune system dysfunction (Widyastuti W, 2021). Older age is the leading risk factor for acute infections and the risk of long-term COVID-19. Considering that older patients tend to have pre-existing immunosensence conditions, which lead to more severe acute responses, the increased risk of long-term COVID-19 with advanced age is a secondary effect. Reduced mucociliary clearance due to decreased number and activity of cilia in the upper respiratory tract in old age can also reduce the ability of the respiratory system to neutralize viral infections (Hastie et al., 2023).

The results of statistical tests carried out also found a relationship between smoking history and the residual symptoms of post-COVID-19 patients. Berlin research (2020) found that smokers with Covid-19 infection had 1.4 times more severe symptoms and a 2.4 times higher risk. They died compared to non-smokers (Berlin I et al., 2020). In addition, the research results of Liu et al. (2020) also found in his research that only 3% of Covid-19 patients with a history of smoking improved (Liu W et al., 2020). Other research explains that ACE-2 receptor expression is upregulated in human lung tissue samples taken from active smokers, most likely mediated by the α subtype -7 of the nicotinic acetylcholine receptor (Smith JC et al., 2020).

Comorbidities are accompanying diseases that have developed over a long period, such as diabetes mellitus, hypertension, coronary heart disease, malignancy, heart failure and kidney failure, as written in the medical record. The statistical analysis results show a relationship between comorbid diseases and residual symptoms in post-COVID-19 patients. Based on the results of this study, it was found that diabetes mellitus is the most common comorbid disease suffered by post-Covid-19 patients. Diabetes mellitus is a form of low-grade inflammation that contributes to the severity of clinical symptoms faced by Covid-19 patients. Diabetes mellitus sufferers tend to be susceptible to infection because the ability of phagocytic cells is disrupted or reduced. An analytical study shows that diabetes mellitus patients have an increase in ACE-2 receptors, so this condition can increase the risk or worsen COVID-19 infection (Rao S et al., 2020). This study's findings align with the findings of Karya et al. (2021), who found a relationship between comorbid diseases and the clinical grade of COVID-19 (Karya KWS et al., 2021).

The degree of severity in this study is based on WHO criteria and is divided into severe and non-severe symptoms. This study's results show a relationship between the degree of severity and residual symptoms in post-Covid-19 patients. These results align with the study of (Iqbal et al., 2021), who reported a relationship between the severity of symptoms and the sequelae postcovid-19. The residual symptoms stated by Iqbal et al. (2021) were the same as the residual symptoms found in this study from post-covid-19 patients with severe degrees of severity, namely joint pain, chest pain, discomfort and anxiety (Iqbal et al., 2021). In this study, 2 patients with critical (severe) symptoms were also found who had non-respiratory sequelae that were felt for 2 years. These two patients both had symptoms of sequelae with neuromuscular disorders, namely one patient felt difficulty concentrating (brain fog), and one patient was found to have nervous disorders in the form of difficulty walking normally like before being infected with Covid-19. Neuropathology occurs in Covid-19 infection namely mechanisms due to microvascular thrombus, systemic inflammation, neurotoxicity due to viruses. Clinical conditions such as autonomic nervous disorders, limited physical activity, and post-traumatic stress disorder can contribute to the emergence of brain fog symptoms in patients post Covid-19 infection (Cysique LA et al., 2022).

This study's results also show a relationship between vaccination status and residual symptoms in post-covid-19 patients. Vaccination is one of the efforts to reduce the risk of transmission. The vaccine against COVID-19 is important to prevent and control the transmission of COVID-19 infection (Jęśkowiak Ι et al., 2021). The COVID-19 vaccine is useful for protecting the body from falling ill from COVID-19 by generating or stimulating specific immunity in the body. This process causes the vaccine to reduce the viral load during infection, thereby suppressing further transmission. This reduction in viral load suggests a lower potential for transmission, which further contributes to the vaccine's effect on the virus's spread (Levine-Tiefenbrun M et al, 2021). The study found that most post-covid-19 patients who had been vaccinated while being treated did not show residual symptoms during recovery.

On the other hand, post-Covid-19 patients who had not been vaccinated while being treated experienced residual symptoms. This research's findings align with findings

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



from Kornelis (2022), which found a relationship between vaccination status and residual symptoms in post-covid - 19 patients. The difference between Kornelis (2022) research and this research is in the research subjects where Kornelis (2022) uses health workers as Temporary research subjects in this study used post-hospitalization patients (Kornelis A, nd) Apart from the results of this study, there are several limitations of this study, the case control study design causes the possibility of recall bias due to the different memory abilities of each subject. Additionally, clinical symptoms are subjective and there may be differences and misperceptions. However, this study provides new

insights regarding factors related to residual symptoms in patients 2 years after being infected with Covid-19.

5. Conclusion

The results of this study found that age, smoking history, comorbidities, severity, and history of Covid-19 vaccination had a significant relation with the incidence of sequelae in post-Covid-19 patients after 2 years. Particularly can be a basis for paying more attention to Covid-19 patients who are elderly, have a history of smoking and comorbidities, and have no history of previous vaccination.

Acknowledgments

We would like to express our thanks to all parties involved in this research, including the Chairperson of Faculty of Medicine at Hasanuddin University and their staff and also the Chairperson of Wahidin Sudirohusodo Hospital and their staff.

Authors' Contributions

AB and CD were involved in concepting and planning the research, EF and GH performed the data acquisition/collection, EF and IJ calculated the experimental data and performed the analysis, AB drafted the manuscript and designed the figures, CD aided in interpreting the results. All authors took parts in giving critical revision of the manuscript.

References

- Baloch S, Baloch MA, Zheng T, Pei X. The Coronavirus Disease 2019 (COVID-19) Pandemic. Tohoku J Exp Med. 2020 Apr;250(4):271–8.
- [2] Flacco ME, Acuti Martellucci C, Baccolini V, De Vito C, Renzi E, Villari P, et al. COVID-19

vaccines reduce the risk of SARS-CoV-2 reinfection and hospitalization: Meta-analysis. Front Med (Lausanne). 2022;9:1023507.

- [3] Davis HE, McCorkell L, Vogel JM, Topol EJ. Long COVID: major findings, mechanisms and recommendations. Nat Rev Microbiol. 2023 Mar;21(3):133–46.
- [4] Raveendran AV, Jayadevan R, Sashidharan S. Long COVID: An overview. Diabetes Metab Syndr. 2021;15(3):869–75.
- [5] Wong MCS, Huang J, Wong YY, Wong GLH, Yip TCF, Chan RNY, et al. Epidemiology, Symptomatology, and Risk Factors for Long COVID Symptoms: Population-Based, Multicenter Study. JMIR Public Health Surveill. 2023 Mar 7;9:e42315.
- [6] Hu Y, Liu Y, Zheng H, Liu L. Risk Factors for Long COVID in Older Adults. Biomedicines. 2023 Nov 8;11(11):3002.
- [7] Ganie MSF. The Relationship of COVID-19 to the Elderly Society. Jurnal Medika Hutama (JMH). 2021;3(1):1304–8.
- [8] Widyastuti W. Immunosenescence and Vulnerability of the Elderly Population to Coronavirus Disease 2019 (Covid-19). Jurnal Respiratori Indonesia. 2019;40(3):182–91.
- [9] Hastie CE, Lowe DJ, McAuley A, Mills NL, Winter AJ, Black C, et al. True prevalence of long-COVID in a nationwide, population cohort study. Nat Commun. 2023 Nov 30;14(1):7892.
- [10] Berlin I, Thomas D, Le Faou AL, Cornuz J. COVID-19 and Smoking. Nicotine & Tobacco Research. 2020 Aug 24;22(9):1650–2.
- [11] Liu W, Tao ZW, Wang L, Yuan ML, Liu K, Zhou L, et al. Analysis of factors associated with disease outcomes in hospitalized patients with 2019 novel coronavirus disease. Chin Med J (Engl). 2020 May 5;133(9):1032–8.
- [12] Smith JC, Sausville EL, Girish V, Yuan ML, Vasudevan A, John KM, et al. Cigarette Smoke Exposure and Inflammatory Signaling Increase the Expression of the SARS-CoV-2 Receptor ACE2 in the Respiratory Tract. Dev Cell. 2020 Jun 8;53(5):514-529.e3.
- [13] Rao S, Lau A, So HC. Exploring Diseases/Traits and Blood Proteins Causally Related to Expression of ACE2, the Putative Receptor of SARS-CoV-2: A Mendelian Randomization Analysis Highlights Tentative Relevance of Diabetes-Related Traits. Diabetes Care. 2020 Jul;43(7):1416–26.
- [14] Karya KWS, Suwidnya IM, Wijaya BS. Hubungan penyakit komorbiditas terhadap derajat klinis COVID-19. Intisari Sains Medis. 2021 Aug 31;12(2):708–17.
- [15] Iqbal A, Iqbal K, Arshad Ali S, Azim D, Farid E,

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



Baig MD, et al. The COVID-19 Sequelae: A Cross-Sectional Evaluation of Post-recovery Symptoms and the Need for Rehabilitation of COVID-19 Survivors. Cureus. 2021 Feb 2;13(2):e13080.

- [16] Cysique LA, Jakabek D, Bracken SG, Allen-Davidian Y, Heng B, Chow S, et al. Post-acute COVID-19 cognitive impairment and decline uniquely associate with kynurenine pathway activation: a longitudinal observational study [Internet]. medRxiv; 2022 [cited 2024 Mar 10]. p. 2022.06.07.22276020. Available from: https://www.medrxiv.org/content/10.1101/2022.0 6.07.22276020v1
- [17] Jęśkowiak I, Wiatrak B, Grosman-Dziewiszek P, Szeląg A. The Incidence and Severity of Post-Vaccination Reactions after Vaccination against COVID-19. Vaccines (Basel). 2021 May 13;9(5):502.
- [18] Levine-Tiefenbrun M, Yelin I, Katz R, Herzel E, Golan Z, Schreiber L, et al. Initial report of decreased SARS-CoV-2 viral load after inoculation with the BNT162b2 vaccine. Nat Med. 2021 May;27(5):790–2.
- [19] Kornelis A. Hubungan Status Vaksinasi Tenaga Kesehatan Penyintas Covid - 19 Dengan Hasil Luaran Rawatan Covid - 19 RSU Se-kota Padang. Universitas Andalas.

Tables

Characteristics	Frequency (%)
Age	
<50 years old	158 (79,0%)
\geq 50 years old	42 (21,0%)
Gender	
Male	78 (39,0%)
Female	122 (61,0%)
Degree of severity	
Severe	22 (11,0%)
Non-severe	178 (89,0%)
Covid vaccination status	
Not vaccinated yet	54 (27,0%)
Vaccinated	146 (73,0%)
Post-covid-19 symptoms	
Respiratory symptoms	20 (10,0%)
Non-respiratory symptoms	32 (16,0%)
Combination	19 (9,5%)
No symptoms	129 (64,5%)
Smoking status	
Smoker	12 (6,0%)
Non smoker	188 (94%)
Comorbidities	
Diabetes Mellitus	8 (4,0%)
Coronary heart disease	4 (2,0%)
Hypertension	7 (3,5%)
Obesity	5 (2,5%)
Bronchial asthma	1 (0,5%)
Hypothyroid	1 (0,5%)

Table 2 Relationship between Age and Residual Symptoms in Post-Covid-19 Patients.

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



Symptoms	Age	Total	n voluo	
Symptoms	<50 years old	≥50 years old	Total	p-value
No symptoms	109 (84.4%)	20 (15.6%)	129	
Respiratory symptoms	16 (80.0%)	4 (20.0%)	20	0.022
Non-respiratory symptoms	22 (68.75%)	10 (31.25%)	32	0.023
Combination	11 (57.9%)	8 (42.1%)	19	

Table 3. Relationship between Smoking status and Residual Symptoms in Post-Covid-19 Patients.

Symptoms	Smoking status		Total	p-value
.	Non smoker	Smoker		•
No symptoms	128 (99.2%)	1 (0.8%)	129	
Respiratory symptoms	16 (80%)	4 (20%)	20	-0.001
Non-respiratory symptoms	26 (81.2%)	6 (18.8%)	32	<0.001
Combination	18 (94.7%)	1 (5.3%)	19	

Table 4. Relationship between comorbidities and Residual Symptoms in Post-Covid-19 Patients.

Symptoms	Comorbidities		Total	p-value
J I I I I	No	Yes		•
No symptoms	124 (96.1%)	5 (3.9%)	129	
Respiratory symptoms	9 (45%)	11 (55%)	20	<0.001
Non-respiratory symptoms	19 (59.4%)	13 (40.6%)	32	<0.001
Combination	8 (42.1%)	11 (57.9%)	19	

Table 5. Relationship between degree of severity and Residual Symptoms in Post-Covid-19 Patients.

Symptoms	Degree of Severity		Total	n voluo
Symptoms	Non-severe	Severe	Total	p-value
No symptoms	126 (97.7%)	3 (2.3%)	129	
Respiratory symptoms	16 (80%)	4 (20%)	20	-0.001
Non-respiratory symptoms	26 (81.2%)	6 (18.8%)	32	<0.001
Combination	12 (63.2%)	7 (36.8%)	19	

Table 6. Relationship between Vaccination status and Residual Symptoms in Post-Covid-19 Patients.

www.jchr.org

JCHR (2024) 14(3), 1219-1226 | ISSN:2251-6727



Symptome	Vaccination status		Total	n voluo
Symptoms	Vaccinated	Not vaccinated yet	Total	p-value
No symptoms	122 (94.6%)	7 (5.4%)	129	
Respiratory symptoms	8 (40%)	12 (60%)	20	-0.001
Non-respiratory symptoms	12 (37.5%)	20 (62.5%)	32	<0.001
Combination	4 (21.1%)	15 (78.9%)	19	