



## **Epidemiological characteristics and sleep quality in covid-19 survivors in Nuha district, east Luwu regency in 2021**

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### **ABSTRACT**

Coronavirus Disease 2019 (Covid-19) is an infectious disease that has never been identified before in humans. Covid-19 is caused by a new type of coronavirus, namely SARS-CoV-2. This study aimed to determine the picture of epidemiological characteristics and sleep quality in Covid-19 survivors with comorbidities in Nuha District, East Luwu Regency in 2021. This research was quantitative research with a descriptive approach. The samples in this study were patients who had recovered from Covid-19 with comorbidities, namely 146 out of 229 populations using purposive sampling techniques with inclusion criteria aged 15 years. Exclusion criteria: unwilling to be interviewed, quarantined, and have passed away. This study showed that most respondents had comorbid hypertension, aged 26-45 years, were male-gendered and married, were Buginese and Muslims, have good sleep pattern, domiciled in Sorowako villag, and were confirmed to be diagnosed on March. It was recommended that Covid-19 survivors with comorbidities should always monitor and evaluate their health and comply with health protocols, so that the government and related agencies are more active in screening and supervising and keep implementing strict health protocol discipline.

**Keywords:** Covid-19; epidemiological characteristics; comorbid; sleep quality

## 1. INTRODUCTION

Covid-19 was discovered in 2019 which is a new viral disease that was previously considered not dangerous to human being (Zulva, 2020) but then later discovered that Covid-19 was very pathogenic and easily spread out, so that was why World Health Organization (WHO) declared it a Public Health Emergency of International Concern (PHEIC) on January 30th 2020 and then on March 11th it was declared a pandemic (WHO, 2020) in (Setyaningrum & Yanuarita, 2020). Covid-19 has infected 142,072,345 (142 million) people with a total death rate of 3,034,587 (3 million) people in various countries (Worldometers, 19 April 2021). USA (32,404,463 total cases, 581,061 people died, 24,961,229 recovered), Brazil (13,943,071 total cases, 373,442 people died, 12,391,599 recovered), and India (15,061,919 total cases, 178,793 people died, recovered 12,953,821) are the 3 countries with the highest cases of Covid-19 in the world (Worldometers, 19 April 2021). The death rate for Covid-19, also known as the Case Fatality Rate (CFR) for Covid-19, varies in different countries. The global standard or WHO mortality rate (CFR) for Covid-19 is 2.2%. (Berdaya, n.d.)

In the Southeast Asia region, the total number of confirmed cases had reached more than 17 million cases with more than 236 thousand deaths as of April 19, 2021 (RI Ministry of Health, 2021). The death rate for Covid-19 cases in Myanmar was 2.3% (3,205/142,340), Philippines 1.9% (13,149/702,847), Vietnam 1.4% (35/2,586), Malaysia 0.4% (1,249/339,443), Thailand 0.3% (92/28,577), and 0.05% in Singapore (30/60,265) (Worldometers, 19 April 2021). Indonesia has the highest death rate in Southeast Asia, which is 2.7%, much higher than the global death rate, which is 2.2% (Ministry of Health, 2021) in (Senewe et al., 2021)

The Centers for Disease Control and Prevention in China also reported that 44,000 people had confirmed Covid-19 by laboratory tests. Old age, heart and blood vessel disease, diabetes, respiratory diseases, hypertension, and cancer are associated with a high risk of death (Wu Z, 2020). Age, gender, diabetes, obesity, and hypertension variables affect the risk of death from Covid-19 (Gaspar et al, 2020), (Hussain, 2020), (Bai et al., 2020). Covid-19 patients with obesity, hypertension and diabetes have a higher risk of death than patients without comorbidities (Meara, 2020) in (Surendra et al., 2021).

Indonesia reported on March 2nd 2020 its first case of Covid-19. In less than a month, exactly on April 10th 2020, it had spread to all provinces in Indonesia. On March 11th 2020, the first death due to Covid -19 occurred (Vermonte & Wicaksono, 2020). The number of confirmed cases of Covid-19 had exceeded 1 million, ranking 18th in the number of global cases. As of April 19th 2021, 1,609,300 cases have been confirmed. A total of 1,461,414 patients have recovered, 43,567 people have died, and ongoing

104,319 active cases (Ministry of Health, 2021) in (Roeroe et al., 2021) The number of confirmed cases of Covid-19 in Indonesia tested positive based on the results of RT-PCR laboratory tests (Ministry of Health, 2020).

The longest incubation period was 14 days with an average of 5-6 days, with different symptoms for each person. Fever, cough and fatigue were common symptoms, while symptoms of difficulty breathing, chest pain, loss of ability to speak or move were serious symptoms (Covid-19 Prevention Guidelines, 2020). Groups with older ages and those with comorbidities were at risk of experiencing more severe symptoms and even death.

South Sulawesi ranked 5th for the highest number of confirmed Covid-19 cases and ranks 7th highest for death cases after East Java, followed by Central Java, DKI Jakarta, West Java, East Kalimantan and Bali (Ministry of Health, 2021). The first case was in South Sulawesi on March 19th 2020, and had infected 61,137 people, 919 died, 59,612 recovered, and 606 active cases as of April 19th 2021 (South Sulawesi Covid-19 Task Force, 2021) in (Azwar et al., 2020)

Based on data from the East Luwu Regency Health Office, the number of confirmed cases was 3,803,3,683 people recovered, and 62 people died, with three sub-districts with the highest cases of Covid-19, namely Nuha District, with 1,552 confirmed cases, 1,518 recovered cases, and 8 dead cases. Towuti Subdistrict had 815 confirmed cases, 799 recovered cases, and 6 deaths, and Wasuponda Subdistrict had 417 confirmed cases, 406 recovered cases, and 3 deaths.

Hypertension, heart disease, diabetes mellitus, COPD, tuberculosis, kidney disease, and autoimmune were comorbid diseases that commonly occurred in Covid-19 patients (Guan et al., 2020; PDPI et al., 2020) in (Drew & Adisasmita, 2021 ). Patients died with an average age of > 45 years and a history of comorbidities 26.08%, diabetes comorbidities had a 4,384 times greater risk of death, and heart co-morbidities had a 4,319 times greater risk of death. The risk factors for death from Covid-19 were comorbid diabetes and heart disease. (Satria et al., 2020).

Apart from comorbidities, sleep quality and epidemiological characteristics based on person (age, gender, race/ethnicity, marital status), place and time could also affect the recovery of Covid-19 survivors. Therefore, a study was conducted to describe the epidemiological characteristics and sleep quality of survivors of Covid 19 with comorbidities in Nuha District

## 2. METHODS

This study aimed to describe the epidemiological characteristics and sleep quality of Covid-19 survivors with comorbidities in Nuha District, East Luwu Regency in 2021. The type of research used was quantitative research with a descriptive approach. The population in this study were all 229 people in Nuha District in East Luwu Regency who recovered from Covid-19 with comorbidities and 146 people as the sample selected by purposive sampling with inclusion criteria aged  $\geq 15$  years, and survivors with comorbidities. The instruments used were questionnaires and medical record data at the Nuha Health Center, and cell phone cameras, and the data were analyzed univariately.

### 3. RESULTS AND DISCUSSION

#### Results

**Table 1.** Distribution of Respondents Based on Comorbidities in Covid-19 Survivors in Nuha District, East Luwu Regency in 2021

Comorbid	n	Percentage (%)
Hypertension	78	53,4
Diabetes Mellitus	55	37,7
Cardiac Disease	4	2,7
Lung Disease	4	2,7
<b>Total</b>	<b>146</b>	<b>100</b>

Source: Primary Data, 2021

Based on Table 1, it can be seen that of the 146 total respondents, the highest comorbid was hypertension with 78 people (53.4%), and the lowest was heart disease with 4 people (2.7%).

**Table 2.** Distribution of Respondents Based on Individual and Comorbid Characteristics For Covid-19 Survivors in Nuha District, East Luwu Regency, 2021

Variabel	Hypertension		Diabetes Mellitus (n=55)		Comorbid Cardiac Disease (n=4)		Lung Disease (n=9)		Total (n=146)	
	n	%	n	%	n	%	n	%	N	%
12-25	9	6.1	3	2.1	1	0.7	0	0	13	8.9
26-45	34	23.3	19	13.0	2	1.3	6	4.1	61	41.7
Age 46-65	27	18.5	27	18.5	1	0.7	3	2.1	58	39.8

(years old)	>65	8	5.5	6	4.1	0	0	0	0	14	9.6
Sex	Male	36	24.6	33	22.6	4	2.7	8	5.5	81	55.4
	Female	42	28.8	22	15.1	0	0	1	0.7	65	44.6
	Marriage	68	46.5	53	36.3	2	1.4	9	6.1	132	90.3
	Widower (Male)	4	2.7	1	0.7	0	0	0	0	5	3.4
	Widower (Female)	3	2.1	0	0	0	0	0	0	3	2.1
	Not Marriage	3	2.1	1	0.7	2	1.4	0	0	6	4.2
	Bugis	60	41.0	51	34.9	2	1.4	8	5.4	121	82.7
Marital Status	Toraja	3	2.0	0	0	0	0	0	0	3	2.0
	Padoe	3	2.0	0	0	0	0	0	0	3	
	Ethnic										
	Bali	2	1.4	2	1.4	1	0.7	1	0.7	6	2.0
	Sorowako	10	7.0	0	0	1	0.7	0	0	11	7.7
	Jawa	0	0	2	1.4	0	0	0	0	2	1.4
Religion	Islam	59	40.4	50	34.2	3	2.1	7	4.7	119	81.4
	Christian	18	12.3	3	2.1	1	0.7	2	1.4	24	16.5
	Hindu	1	0.7	2	1.4	0	0	0	0	3	2.1

Sumber : Data primer, 2021

Table 4.2 shows that of the 146 respondents, the majority of respondents were aged 26-45 years (41.7%), male (55.5%), married (90.3%), Bugis (82.9%), and Muslim (81.5 %).

**Table 3.** Distribution of Respondents Based on Sleep Quality in Covid-19 Survivors in Nuha District, East Luwu Regency, 2021

Time need to fall asleep (minutes)	Long sleep		Hours	%	n	%
	≤6-8 hours	>8 h				
5	29	19.8	1	0.7	30	20.5
10	72	49.4	0	0	72	49.3
15	4	2.7	1	0.7	5	3.4

<b>20</b>	1	0.7	0	0	1	0.7
<b>30</b>	25	17.1	0	0	25	17.1
<b>Sleep</b>	13	9.0	0	0	13	9.0
<b>Immeditaly</b>						
<b>Total</b>	144	98.6	2	1.4	146	100

Source: Primary Data, 2021

Based on Table 4.3, it is known that of the 146 total respondents, the majority of respondents (49.4%) needed 10 minutes to fall asleep with sleep duration of  $\leq 6-8$  hours/day.

**Table 4.** Distribution of Respondents Based on Location Characteristics of Covid-19 Survivors with Comorbidities in Nuha District, East Luwu Regency in 2021

Village	Comorbid									
	Hypertension		Diabetes Mellitus		Cardiac Disease		Lung Disease		n	%
	n	%	n	%	n	%	n	%		
<b>Magani</b>	23	15.7	10	6.8	2	1.4	2	1.4	37	
<b>Nikkel</b>	26	17.8	15	10.3	1	0.7	5	3.4	47	
<b>Sorowako</b>	29	19.9	30	20.5	1	0.7	2	1.4	62	
<b>Total</b>	78	53.4	55	37.6	4	2.8	9	6.2	146	

Source: Primary Data, 2021

Based on Table 4.4, it can be seen that of the 146 total respondents, the majority of respondents with comorbid hypertension (19.9%) and Diabetes Mellitus (20.5%) live in Sorowako Village, comorbid heart disease (1.4%) and lung disease (3.4%) domiciled in Magani Village.

**Table 5.** Distribution of Respondents Based on Time Characteristics (Confirmation Month) In Survivors of Covid 19 with Comorbidities in Nuha District East Luwu Regency, 2021

Confirmation Month	N	%
January	13	8.9
February	17	11.6
March	22	15.1
April	20	13.7
May	18	12.3
June	14	9.6
July	14	9.6
August	6	4.1
September	9	6.2
October	3	2.1
November	6	4.1

December	4	2.7
Total	146	100

Source: Primary Data, 2021

Based on Table 4.5, it can be seen that of all the 146 total respondents, the majority of respondents were confirmed positive for Covid 19 with comorbidities in March 2021 as many as 22 people (15.1%).

## Discussions

### 1) Comorbid characteristics

Comorbidity is a comorbid disease that survivors of Covid-19 have suffered all their lives. Someone who has comorbidities will be more susceptible to being infected with Covid-19 which can increase the high number of cases in an area, because comorbid hinder the patient's recovery process. Based on the results of the study, it was found that the comorbidities suffered by Covid-19 survivors were hypertension 78 people (53.4%), diabetes mellitus 55 people (37.7%), heart disease 4 people (2.7%), and lung disease 9 people (6.2%). A person with hypertension has a risk of decreasing health conditions up to 2.5 times. (Gunawan et al., 2020) Research conducted in Hubei Province, China showed that deaths with comorbid diabetes mellitus were 7.8% higher. However, controlled blood sugar levels would reduce the risk of death because it requires slight intervention and fewer complications (Ramadhani, 2020) in (Berdaya, n.d.)

### 2) Characteristics of Respondents

#### a. Age

Age is the length of a person's life since birth which is calculated in time (years). Respondents who were sampled in this study were aged 20-75 years, with the majority of the population affected by Covid-19 and having comorbidities being aged 26-45 years (41.7%). People under the age of 45-60 years exposed to the Corona Virus was highly vulnerable, and even experienced clinical deterioration which led to high death rates during the Covid-19 pandemic.

At an advanced age, the human body experiences degenerative anatomy and physiology, which causes a person to be susceptible to disease, both infectious and non-communicable diseases. Older people also tend to be negligent in implementing health protocols, this is what causes the high risk of transmission of Covid-19 to the elderly. In addition, this is the reason why some respondents did not get vaccinated, with the assumption that they are >60 years old and should not receive vaccinations because it would affect their health condition, and they thought that vaccination would

pose a great danger to them in the sense of playing god. Unlike the case with early adulthood, which is a productive age that allows a person to receive health information, especially regarding efforts to prevent Covid-19. However, early adulthood sometimes still has high ego traits, which causes a person to neglect taking on a responsibility. The influence of age plays an important role in solving problems, one of which is health problems that are in the family (Buana, 2020) in (Pratiwi et al.,2020).

This study was also in accordance with Sugiharto's study which stated that the age of 50-60 years is the age when there is an increase in the incidence of hypertension, and is a risk factor for the occurrence of hypertension. This is in line with Rahajeng's research in 2013, that the risk of hypertension increases significantly with age and the age group > 75 years has a risk of 11.53 times.

#### b. Gender

Green's theory says that gender is a predisposing factor or enabling factor that contributes to a person's health behavior. Female gender is a vulnerable group if they are pregnant and have comorbidities, such as hypertension which is common in pregnant women. In addition, the female gender has good behavior in reducing the transmission of Covid-19, in the sense that the female is more obedient in implementing health protocols in an effort to break the chain of transmission of Covid-19.

Differences in chromosomal factors and hormonal factors in the male gender can be a risk factor in Covid-19 infection, the many activities that are done by men outside the room, become one of the easy triggers for the male sex to contract Covid-19. Cases of Covid-19 deaths in Indonesia are dominated by male gender. This is thought to be related to men who often leave the house compared to self-isolation at home (F.Arihatun, 2016; Susilo 2020).

This study is in line with the results of a study conducted by Sedayu B, et al, in ) which showed that there were more female hypertension patients (64.3%) than men (35.7%). However, it is different from the research conducted (Kurnia year...) in the Internal Medicine Section of Padang Panjang General Hospital where the percentage of hypertension in women was greater, which was 61.2%. It is stated that before the age of 45 years, more men suffer from hypertension and after the age of 45 years, the ratio between men and women who suffer from hypertension is the same. Women who are obese and use oral contraceptives have a higher risk of suffering from hypertension (Paru et al., 2019)

#### c. Marital status



Marital status is a bond formed by two people based on a legal basis to form a family and strengthening family relationships.

Based on the results of the study, 132 people (90.3%) were married, 6 people (4.2%) were not married, 5 people (4.2%) were widowers, and 3 people (2.1%) were widows.

Someone who is married tends to be easily infected with Covid-19, because one of them is either a husband or a wife who provide care for their partner who can easily be infected with COVID-19 and carry out treatment at home by means of independent isolation.

Husband or wife provide the best service such as regulating their food consumption and providing support to each partner so that they are enthusiastic about recovering and motivating them to always comply with implementing health protocols so that they do not contract Covid-19 again. Married people were 2.6 times more at risk to suffer from a confirmed case of Covid-19 when compared to unmarried people; People who suffer from DM were 3 times more at risk of suffering from a confirmed case of Covid-19 when compared to people who do not have DM. People in the age group 18-59 years had a risk of 3.4 times suffering from a confirmed case of Covid-19 when compared to those who are not in the age group 18-59 years, these 3 factors had a concurrent risk of 65.1% of being able to suffer a case Covid-19 (Senewe et al., 2021).

#### d. Race and Religion

Religion is a belief system that is adhered to everyone that is used as a guide for life and contains rules of life, as a direction in carrying out an act. Based on the results of the study, the majority of the beliefs held by the people of Nuha Subdistrict were Muslim as many as 119 people (81.5%). Where based on the sub-district profile, that the community had a variety of beliefs, namely Islam, Catholic Christianity, Protestant Christianity, Hinduism, and Buddhism and was supported by worship facilities in Nuha District.

The people in Nuha Subdistrict had various ethnic groups because they were migrants who come from different areas, namely Toraja, Sorowako, Padang, Javanese, and Balinese ethnicities. The majority of the ethnic population is the Bugis tribe as many as 121 people (82.9%).

Indonesian society is a pluralistic society, because it comes from various ethnicities, religions, races and cultures. Research conducted by Public Health England (2020) stated that the highest rate of diagnosis of Covid-19 per 100,000 population was in people from the black ethnic group (486 women and 649 men) and the lowest was in people

from the white ethnic group (220 women and 224 men) and death rates from Covid-19 were higher in black and Asian ethnic groups when compared to white ethnic groups. (Patel et al., 2020).

#### e. Sleep Patterns

The Ministry of Health of the Republic of Indonesia in the Guidelines for Balanced Nutrition (PGS) provides recommendations related to rest periods that should be applied, namely at least 6- 8 hours a day. Sleep time has an important role for the body with its mechanism in maintaining homeostatic balance which can affect one's health (Magnavita, 2014). Even though it is known that the good effects that will be obtained if you have a good bedtime, in practice, there are still very few people who adopt a healthy sleep pattern. Based on the research results, it was found that as many as 32 people or 34.8% of health workers had sleep patterns that were not in accordance with PGS (Heriyana & Setyaningtyas, 2021)

There were 60 health workers with sleep patterns that were categorized according to PGS (65.2%). Health workers who work and have direct contact with patients during the Covid-19 pandemic have a high risk of experiencing sleep pattern disturbances up to 2.97 times that of ordinary people (Lai et al, 2020). Health workers often experience concerns related to personal health, infecting family members, workload, and self-isolation which could be factors that can disrupt sleep patterns of health workers during the Covid-19 pandemic (Singh et al., 2020) in (Heriyana & Setyaningtyas, 2021). Sleep pattern is the length of time a person needs to sleep in order to feel comfortable and have good quality sleep, in order to accelerate the improvement of their health condition. The results showed that as many as 62 people (42.5%) started sleeping at 22:00, the many activities carried out outside the home caused a person to get tired more easily and immediately wanted to rest through sleep at night. The length of time it takes to fall asleep from lying down ranges from 5-30 minutes, and those who fall asleep immediately. As many as 72 people (49.3%) need 10 minutes to fall asleep. As many as 59 people (40.4%) wake up at 05:00 to perform their obligations, like morning prayers for Muslims, because the majority of the population is Muslim. The length of time the respondents slept ranged from 6-9 hours. As many as 51 people (34.9%) slept for 7.5 hours, this is in line with research by Heriyana & Setyaningtyas (2021).

Some of the complaints experienced during the quarantine period were not being able to fall asleep for 30 minutes after lying down, waking up in the middle of the night or early in the morning, waking up to go to the bathroom, not being able to breathe freely, and coughing or snoring. While sleep problems that had never been experienced during the quarantine period were cold at night, overheating at night, nightmares, and feeling pain.

There was a difference in sleep quality between the quarantine period and after recovery. Many of the respondents complained of sleep disturbances, such as frequently waking up to go to the bathroom and experiencing coughing.

### 3) Characteristics of the Place

This research was conducted in 3 areas, namely Sorowako Village, Magani Village, and Nikkel Village in Nuha District, East Luwu Regency. Most cases from the sample of respondents were found in Sorowako Village which is the largest area in Nuha District. It was found that there were 62 people (42.5%) contracted with COVID-19 from Sorowako Village. The large number of residents in an area is a trigger for the easy spread of Covid-19.

The existence of a traditional market which is quite busy and even visited every day by the community and traders in the Nikkel Village area was also one of the causes of the high and fast transmission process of Covid-19. There is also a pier where the crossing is always crowded with people when they want to visit a place, such as Matano Village and Nuha Village which require a person to cross to travel.

Based on field conditions in Nuha District, almost all community houses were made into boarding houses occupied by newcomers, both students and workers. The close distance between each house can contaminate the breathable air because of the narrow ventilation of the house.

Population density and altitude have the potential to be a risk factor for the occurrence of Covid-19 but further research needs to be carried out to see the effect of population density and altitude on the incidence of Covid-19, especially in the city of Manado. (Medical, 2020),

### 4) Time Characteristics

Covid-19 first appeared on April 2020, which means it had been more than 1 year since the first case come out. The first family case affected by Covid-19 in Nuha District had symptoms such as high fever, cough, flu, loss of smell and taste. A long period of time will continue to increase cases of transmission of Covid-19 if someone is not strict in implementing health protocols for prevention efforts.

## 4. CONCLUSION

The most common comorbidity that had appeared in Nuha District was hypertension. The people contracted the COVID-19 were aged between 26 to 45 years, male-gendered and married, had Buginese ethnicity and Muslims. They were domiciled

in Sorowako village, and were confirmed to be diagnosed on March. It was also found that most health workers in Nuha District had slightly bad sleep pattern due to their weariness on handling the overwhelming wave of COVID-19 patients. It was recommended that Covid-19 survivors with comorbidities should always monitor and evaluate their health and comply with health protocols, so that the government and related agencies are more active in screening and supervising and keep implementing strict health protocol discipline.

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