

Self-Management of Covid-19 Patients with Commorbid Hypertension: Case Study

Lilis Setyowati^{1*}, Aprilia Ayu Mawardini², Nur Aini³, Ollyvia Freeska Dwi Marta⁴, Erma Wahyu Mashfufa⁵

^{1,2,4,5}Nursing Department, University of Muhammadiyah Malang, East Java,

³School of Nursing, College of Nursing, Taipei Medical University, Taipei

Corresponding Author: Lilis Setyowati lilis@umm.ac.id

ARTICLE INFO

Keywords: Experience, Self-Management, Covid-19, Hypertension

Received : 18, July

Revised : 20, August

Accepted: 26, September

©2023 Setyowati, Mawardini, Aini, Marta, Mashfufa: This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



ABSTRACT

Most COVID-19-positive patients with comorbidities, especially HT (hypertension), are still being debated. Self-management is very useful for improving the quality of life and changing behavior. This study aimed to determine the self-management experience of COVID-19-positive patients with comorbid hypertension. The method used in this study is qualitative research with a case study approach strategy (case study research), using the nursing process approach, obtained using purposive sampling, interviews, physical assessments, and environmental observation. The results of this study obtained self-management carried out by patients: stress management and lifestyle. Even though self-management has been carried out, they are still exposed to COVID due to age and obesity. Discipline toward self-management prevents the transmission of the virus.

INTRODUCTION

Factors that exacerbate the condition of Covid-19 disease are endurance, age, and comorbid diseases such as diabetes mellitus (DM), chronic respiratory disease and hypertension (HT). HT sufferers have a greater risk, because high blood pressure levels cause the body's response to the virus to weaken so that it is susceptible to infection and the risk of causing death is the highest (Gunawan et al., 2020). Increased anxiety, stress has an impact on sleep difficulties and disturbances, due to the stigma of spreading Covid-19 (Kartiningrum & Fitria, 2021). In Indonesia, positive cases of Covid-19 with HT were 49.9%, diabetes mellitus 37%, and 16.8% had a history of heart disease. In East Java, 39.1% of 256 positive cases with comorbid HT were reported (COVID-19 Spread Map, 2021). There is an increase in cases and recurrent attacks due to the non-compliance of HT patients with the therapy given (Puspita et al., 2017). Self-management is one of the interventions that can be used to prevent and recurrence or exposure to Covid-19 (Prasetyorini et al., 2021).

Self-management is able to reduce the increasing number of cases and increase in transmission Covid-19 especially in comorbid HT sufferers. Self-management is a self-effort to change, control and evaluate the disease suffered from a sick condition to be healthy (Prabasari, 2021). Doing good self-management can improve the quality of life, and vice versa if self-management is not done properly it can worsen health and can even cause more severe disease complications (Lestari & Isnaini, 2018). Self-management can be achieved with a great will from sufferers to live healthier.

IFLS-5 data, the prevalence of hypertension sufferers is very high in Indonesia, but only 42.9% are aware of their disease. 11.5% of HT patients routinely seek treatment, and 14.3% have check-ups. Based on the fact that the majority of HT sufferers do not carry out proper self-management. Salami (2021) there are still many HT sufferers who still like high-salt foods and lack of activity.

Participants in this study were a man aged 68 years, with a height of 170 cm, weight 60 kg, BMI 27.3 (Obesity). Has 3 children, with Elementary school Education background. Participant 1 (P1) is Mr. S. He was the subject of this study with comorbid hypertension for 10 years, diligently controlled and took medication regularly. Doing sports around his house almost every day in the morning. He was diagnosed with Covid-19 and was hospitalized for 2 weeks in an isolation room. The second participant (P2) is the wife of the first participant Mrs. S, who is a housewife and keeps her personal shop, aged 61 years. The last education is junior high school. The second participant is the person closest to the first participant, directly involved in the nurse, so that the data to be obtained is in accordance with the theme under study. While the third participant (P3) is the 3rd child of P1 and P2, Nn.P, 21 years old. a law student at a state university in Malang City. The third participant acts as a validator of the data obtained from P1 and P2. P3 directly participates in P1's treatment because of one house, so that the information and data validity will be in accordance with the theme under study

THEORETICAL REVIEW

Concept of Covid-19

Coronavirus Disease 2019, or Covid-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV-2). Coronavirus 2 is a new type of coronavirus that has never been previously identified in the human body (Dinar, 2021). Signs and symptoms are felt from mild to severe, namely, fever, cough, shortness of breath and even difficulty breathing. The vital signs found in Covid-19 patients are increased pulse, temperature and breathing frequency. Breath sounds are heard, coarse crackles, retractions of respiratory muscles, and faint in the consolidated part, which can be found during a thoracic examination (Morfi et al., 2020).

The incubation period for Covid-19 is, on average, 5-6 days, and the longest is 14 days. Other symptoms are pain, nasal congestion, headache, sore throat, diarrhea and anosmia (loss or decreased ability to smell and taste). Anosmia occurs suddenly and can be experienced by asymptomatic Covid-19 patients. The symptoms experienced by everyone are different from mild or even severe (Kiay et al., 2021). Fadaka et al. (2020) symptoms that can be felt but rarely occur are nausea, vomiting, coughing up blood, and red eyes. Vital signs can change, such as increased heart rate and decreased blood pressure, in conditions with chronic diseases, especially in the elderly, thus triggering a higher risk of complications and death.

The majority of people infected with Covid-19 have mild symptoms without complications. However, as many as 14% require treatment from health services and require oxygenation for symptoms accompanied by complications, and 5% are treated in the ICU (Senewe et al., 2021). Complications of Covid-19 that occur due to comorbid diseases will increase the mortality and morbidity of Covid-19. The severity of complications, clinical manifestations, and increased risk of death is due to factors from the comorbidities themselves (Kristanto, 2021).

Hypertension Concept

High blood pressure is blood pressure above normal limits and continues to increase. HT can be called a "silent killer" because some sufferers are affected without previous symptoms (Tumanduk et al., 2019). Classification of HT based on its aetiology is grouped into two groups: primary or essential HT and secondary HT. Primary HT is an HT condition with an unknown cause and tends to occur at 25-55 years old. At the same time, secondary HT can be controlled with medication or surgery because the aetiology and pathophysiology can be found, for example, renovascular, renal parkin, endocrine, and Cushing's syndrome (Irawan et al., 2019).

Every HT sufferer has different signs and symptoms; in some people, there are no significant symptoms. Common symptoms are headaches, but severe HT conditions can experience nausea, vomiting, anxiety, shortness of breath, malaise, blurred vision, disturbed sleep, feeling heavy in the back of the neck, and palpitations (Tiara, 2020).

Management of non-pharmacological HT including 1) reducing excess body weight, 2) limiting salt consumption, 3) creating a relaxed atmosphere, 4) exercising, 5) quitting smoking, 6) Dietary approaches to Stop Hypertension (DASH) diet is a diet for HT sufferers by increasing consumption of fruits, vegetables, dairy products and avoiding foods with high cholesterol or saturated fat content (Widiyanto et al., 2020)

Self-Management Concept

Self-management methods can be carried out, among others: 1) Adhere to the Diet HT sufferers must know the limits of food consumed and how many servings are recommended. Physical activity It is recommended to carry out regular physical activity to improve blood circulation; 2) Simple activities that can be done, such as walking in the morning, heart exercises and other activities that are not done excessively; 3) Social support for sufferers of HT is significant, especially from family, friends and people around them to be enthusiastic about being obedient in carrying out self-care; 4) Controlling Blood Pressure by participating in posyandu activities; 5) Reducing Alcohol Consumption; 6) Stress Management and Maintaining Sleep Patterns; 7) Quit Smoking (Umbas et al., 2019); 8) Adhere to Taking Medicine (Wahyudi et al., 2017). The purpose of this study is to find out more about the self-management experience of positive Covid-19 patients who have comorbidities.

METHODOLOGY

The research design uses a case study research approach. This research was conducted at the participants' Bumiaji District, Batu City, East Java - Indonesia province, when the research was conducted in February - March 2022. The research was conducted at the respondent's house, located precisely in the living room, in the Bumiaji District, Batu City, East Java Province - Indonesia. The interview was conducted in the living room of Mr S, which has sofa chairs, tables, and a clean living room. At the time of the interview with P1, the family was away from home, as well as during the interview with P2 and P3, it was conducted differently on the day, date and time, even though it was in the same place. Each interview was conducted for 30-45 minutes for each data collection of the respondent. They were using structured questions, with the same questions for all participants. When the interview took place, the researcher sat facing the participants with writing and cellphone as a recorder during the interview. When taking data, a blood pressure meter is used to observe P1 blood pressure.

Method of Collecting Data

The data collection method is a technique for obtaining data or information which will then be analyzed as research. From this, data collection aims to find data or information needed by research. Researchers in qualitative research carried out the research technique. Data collection was carried out by researchers using the following three ways, namely observation, interviews and documentation.

This type of interview is semi-structured in the in-depth interview category. Whereas in interviews, it is freer or more effective to find problems openly. In this qualitative research, data can be collected through observations, interviews and documentation, where participants were asked for opinions and ideas.

Data Validity Test Method (Source Triangulation Test)

This data source triangulation method uses 3 participants, namely P1 (Mr S), P2 (Mrs S), and P3 (Nn. P). In data collection, P1 is the priority as a resource person because most of the data obtained comes from Mr S. After the researcher collected all the data obtained from Tn.S, the next step was to validate the data obtained from the 3 participants who had been interviewed to find out the truth from P1.

Data Analysis Methods

In this study, the researcher will collect data using domain analysis, namely after the researcher enters the research object, which is a social situation consisting of place, actor and activity (PAA). Data were obtained from the grand tour and minitour questions, namely a general description of the object under study, which had never been known before. In this data analysis, information has not been obtained in-depth, it is still on the surface, but domains have been found.

RESULTS

Table 1. Sub Themes and Themea

No	Sub themes	Theme
1	Instrumental Support	The role in the family in caring
2	<ul style="list-style-type: none">• Share stories with family• Calm down	Stress management
3	Carry out health protocols	Efforts to prevent re-exposure to Covid-19
4	<ul style="list-style-type: none">• Treatment Management• Lifestyle• Sleep pattern	Self-Management Actions

The Role of the Family in Caring

During P1's illness, the family plays a significant role in providing support, support, enthusiasm, fulfilling or preparing all needs and providing entertainment. Those are the participants' statements regarding the family's role in caring for P1 during illness. The following interview results can be seen as evidence:

"All the family will definitely support you, erm... especially the children who always look after me when I'm in the hospital, my wife cooks and accompanies me at home, while my other children always give me money for treatment, it's the wife who always reminds me to take medicine..." (P1/18)

"...as a wife, I always take care of you, prepare all your needs, bathe when you can't do it yourself, I always hope that you can return to normal..." (P2/28)

"I always accompany you when you are in the hospital, when you are at home you are mostly with your mother, helping with all your needs, picking up food, like stuffing your body like that, changing your diapers, yo often telling funny stories, inviting you to chat..." (P3/27)

Stress Management

When having a problem, P1 has a way to overcome it by sharing or telling stories with his wife and children, and occasionally, P1 is just silent to find a solution to the problem he is facing. The following interview results can be seen as evidence:

Sharing Stories with Family

"When I was in the hospital, I was especially stressed, so when they visited, we definitely chatted, so there was, um... what's the joke, the laughter, so we can relieve the stress, sis..." (P1/69)

"Talking with my children, I once felt very hopeless, but sometimes he felt it was hard to be alone later when he was a little relieved to tell us..." (P2/91)

"... it's like splice or what's the name... splice to me, tell me a story like that, ask how is it good..." (P3/77)

Calm Down

"Yes, that's right, Ms. ee.. distract what's the mind, okay? We do small sports.." (P1/73)

"What the father did was to calm down, he went to the garden to look at his plantations... he also took walks in the morning like that.." (P2/95)

P3/79: "...I usually calm down, I usually go to the orchard to take care of apples like that, take a walk like that so I forget a bit" (P3/79)

Efforts to Prevent Exposure to Covid-19 Are Back

The data found during interviews, that participants tightened health protocols in the form of wearing masks, washing hands and keeping their distance. An effort to prevent re-exposure to the Covid-19 virus. The following is evidence of statements from interviews submitted by participants:

Wearing a Mask

"...we have to carry out strict prokes, everywhere now I always wear a mask..." (P1/39)

"...yes, now you must wear a mask..." (P2/104)

"Yes, you still have to wear a mask, you have to do it when you leave the house, you want to go anywhere..." (P3/55)

Washing Hands

"...besides washing your hands especially when you want to eat, but you still forget when you want to enter the house you don't wash your hands..." (P1/39)

"...washing hands and reducing outdoor activities ee..." (P2/104)

"...always bring a hand sanitizer, wash your hands frequently like that, but often forget when you come from outside the house to wash your hands.." (P3/55)

Keep the Distance

"...rarely crowds of people, I like sports and sunbathing near the house..." (P1/39)

"...stay away from crowds, rarely do you leave the house, get together, most do sports by yourself..." (P2/61)

"...just take care more so that you don't catch Covid again, you can do it yourself, you are more protective now..." (P3/88)

Self-Management

Conducting self-management carried out by participants includes drug therapy, control, maintaining lifestyle, and sleep patterns. The following interview results can be seen as evidence: Management Treatment.

"Yes, I take medicine every day before I get sick. I also always take medicine, Ms. If I control blood pressure, I go to the Posyandu, sometimes I go to the doctor at the hospital with my child..." (P1/9)

"Eh.. for the problem of medicine for you before being positive, Candra's doctor has always been routine..." (P2/77)

"In the past, the control was in so-and-so, Dr. Chandra, but for now, after Covid, he's moved to Hermina Hospital, uh... once a week for control." (P2/14)

"In the past, the treatment was at Dr. Chandra is in the Malang area, but after Covid he moved to Hermina Hospital..." (P3/11)

*"Eh.. for your medication, it was routine before Covid, it was routine, check **with ...**" (P3/62)*

Lifestyle

Dietary Restrictions

There are things... I avoid, miss, especially foods that contain salty and fatty foods..." (P1/12)

"... don't let the father eat salty things to keep um... the high blood pressure earlier, reduce the fat for the vegetables that use coconut milk..." (P2/19)

"Erm... is there anything to avoid like fatty pickles..." (P3/19)

Physical Activity

"...after dawn, sis, I walked around in front of the house, maybe around 20 minutes to 30 minutes..." (P1/16)

"... usually in the morning after the morning prayer, we walk in front of the house, the term for young people is jogging, right..." (P2/23)

"Yeah, that was light exercise like walking..." (P3/23)

Habit

"As for emm... I used to be a young smoker sis, but now I don't anymore, I mean already taking medicine and control regularly but still getting covid too..." (P1/14)

"... moreover, the drinks containing alcohol are never at all miss..." (P1/14)

"Now you don't smoke anymore..." (P2/22)

"...never drink alcohol..." (P2/22)

"...only smoking, yes, but it used to be easy, now it's old... it's old so stop..." (P3/22)

"Erm.. if you're alcoholic.. don't you drink alcohol.." (P3/22)

Sleep Pattern

"...before I got Covid, it seemed like it was easy to wake up sis. I often woke up in the middle of the night and had trouble sleeping again..." (P1/30)

"When I was in the hospital, of course my sleep was a bit disturbed because it was noisy and there were nurses, but during the day I could sleep even though it wasn't long..." (P1/74)

"...after leaving the hospital, she slept well, sis, I felt comfortable sleeping..." (P1/31)

"For the father, before Covid, the father often woke up, could sleep for a long time but still in bed.." (P2/43)

"When it relapsed, especially when Covid was admitted to the hospital, when he slept, he often complained, it was like his sleep often woke up..." (P2/97)

"... when he recovered and came home from the hospital, he slept quite well, unlike before..." (P2/43)

"If you had a sleeping pattern before Covid, you often woke up..." (P3/39)

"What's the problem with sleeping at the hospital... you don't sleep well, you often wake up like that..." (P3/81)

"... thank God I slept pretty well, I didn't wake up anymore..." (P3/39)

DISCUSSION

Self-Management

The results of the interview with P1 found that he had suffered from HT nine years ago by always maintaining self-management with the support of his wife and children. Self-management carried out by P1 includes taking regular medication every day since the diagnosis of HT, controlling the doctor, maintaining a lifestyle such as adhering to a diet by maintaining a diet reducing fatty and salty foods, stopping smoking, never consuming alcohol, doing simple physical activities, and maintaining sleep patterns by always going to bed at night, mainly. Self-management regulates everything in life in an arranged manner, managing time, choices, needs, activities, and balancing physically and mentally (Asbari et al., 2020). However, P1 still contracted COVID-19.

Age is an underlying medical condition related to the severity and mortality of COVID-19 disease. In addition, obesity is a crucial problem that needs special attention, often accompanied by hypertension and recognized as a new risk factor for COVID-19. Both of these factors, if they are in someone with HT, can also determine the severity of the disease. Someone with obesity can worsen the clinical COVID-19. Obesity can reduce the expiratory reserve volume, inhibit diaphragm movement, and limit ventilation to decrease lung expansion. In addition, abdominal obesity increases inflammatory cytokines and oxidative stress and causes hypertension, diabetes and dyslipidemia (Simonnet et al., 2020). Comorbidities can accelerate atherosclerosis, and

become cardiovascular complications and can increase the severity and death from COVID-19 (Shibata et al., 2020).

Drug Therapy Management

The drugs consumed by the participants for a long time were hypertension drugs. By taking the drug regularly, the participants' blood pressure is at a stable or controlled number. Harahap et al., (2019) the success of hypertensive patients in controlling blood pressure is by complying with medication. He also takes medication regularly and goes to the clinic for control. Routine control of health services will determine the quality of a person's health (Emiliana et al., 2021).

Lifestyle

Abstinence

P1 said he always avoids eating salty, coconut milk and fatty foods; P2 and P3 also confirmed this. Avoid or reduce foods that are fatty, salty or rich in vegetables. As long as they have hypertension, the participants maintain their diet for their health. The diet consumed by the participants can help change lifestyles so that hypertension can be controlled. The factors of developing hypertension are eating fatty and high-salt or salty foods (Kiha et al., 2018). Restrictions on foods high in salt must be applied daily to keep blood pressure consistent. The diet for people with hypertension is to eat foods rich in minerals, fruits and potassium, such as vegetables and green bean porridge. The diet that can be done is to reduce foods high in salt and fat, fast food, durian and tape (Princess, 2020).

Physical Activity

The physical activity carried out by the participants from the results of the interviews conducted was light exercise such as walking in front of the house after every morning prayer with a duration of \pm 15-30 minutes. Hypertension sufferers can do light physical activities such as walking, sitting, and mopping. Regular exercise of at least 30 minutes can prevent high blood pressure.

Non-Compliance with Health Protocols

The interviews found that even though they are disciplined in taking medication, doing physical activity, maintaining their diet, and having good habits or behavior, they still risk being exposed to the Covid-19 virus due to non-compliance with health protocols. It was found that participants often left the house and met many people during the current pandemic. That issue is one of the factors causing participants to be exposed to Covid-19.

This opinion is supported by research (Yunida, 2021) that not following health protocols causes someone to be positive for Covid-19. It can be seen from the fact that most of the people in Indonesia are still in groups, do not keep their distance and do not use masks, which is the trigger for the high number of positive cases in Indonesia.

Based on the statement above, it can be concluded that positive causal factors for Covid-19 can occur due to non-compliance with health protocols. One of the non-compliance occurred during the current pandemic. They carried out activities outside the home by not keeping their distance. So this is one of the triggers for someone to be exposed to Covid-19.

Sleep Pattern

The interviews with the participants showed differences in sleep patterns before being positive for Covid-19, while in the hospital and during the recovery period. At the time before being positive for Covid-19, participants often woke up due to disturbing thoughts. While in the hospital with a favourable condition for Covid-19, the participant was in the ICU room, where there were monitor sounds, so his sleep was disturbed. However, this changed during the recovery period as participants could sleep soundly compared to before. Participants went to sleep early at 8 or 9 pm with a duration of \pm 6-7 hours without any disturbances such as waking up at night. Management of good sleep patterns can affect the healing process and minimize high blood pressure.

Disturbance of sleep patterns impacts blood pressure (Madeira et al., 2019). In addition, environmental factors are also one of the factors that cause sleep disturbances. Environmental factors that participants feel, namely when they are in the hospital, there is a disturbing monitor sound so that sleep patterns are not fulfilled, which results in uncontrolled hypertension and can affect immunity can worsen the sick condition (DEWI et al., 2020).

Family Role

Children and wife as a family provide support in every way, treat them as best they can, and meet all needs starting from preparing food, wiping when sick, changing diapers and providing entertainment. The support provided by the family can reduce stress for P1. In addition, the support provided by the family is in the form of meeting all needs, starting from preparing food, wiping when sick, and changing diapers, where this support is in the form of facilitating all needs, such as providing basic needs, health care, protection from harm and financial needs and support in the form of being present when the family is sick (Muslim, 2020). The interaction between families is nothing but strengthening one another so that the family is directly involved in supporting the participant's healing process (Yusselda & Wardani, 2016).

Stress Management

Participants in this study explained that stress management is done by controlling oneself or calming the mind by doing positive things such as watching plantations and sports. Besides that, coping relieves stress due to illness and the situation during COVID by telling stories or chatting with family to reduce disturbing thoughts. That self-control is one of the eight strategies of stress management in psychology; by controlling oneself, a person can control

his emotional response to stress so that it does not hurt himself and others (Muslim, 2020)

Efforts to Prevent Re-Exposure to Covid-19

One of the efforts that can be made to prevent the transmission of Covid-19 is by changing behavior in the form of complying with health protocols (Pasaribu et al., 2021). The results of participant observations always use a mask whenever they leave the house. Washing hands and maintaining distance are essential things that should be addressed to help break the chain of transmission of Covid-19. It is minimizing the transmission of the Covid-19 virus, namely maintaining a distance by staying away from crowds of at least 2 meters between individuals, especially if that person has symptoms that lead to Covid-19, such as sneezing or coughing (Lotfi et al., 2020). Efforts to prevent exposure to the Covid-19 virus are wearing a mask, keeping a distance and washing hands.

CONCLUSIONS AND RECOMMENDATIONS

The experience of participants exposed to Covid-19 accompanied by comorbid hypertension obtained four themes: 1. Self-management, 2. Role of the Family, 3. Stress management, 4. Efforts to prevent re-exposure to Covid-19. Even though someone has done good self-management, the factors of age and obesity, which are sometimes ignored, are the main factors a person is exposed to COVID-19. Someone who is disciplined in self-management can reduce exposure to the Covid-19 virus. Participants can change their behaviour to comply with health protocols to prevent fear of being re-exposed to the Covid-19 virus and have a high awareness of the importance of the health of themselves and others.

FURTHER STUDY

Limitations in this study with only one respondent. Future research to improvise data so that it is not homogeneous using many participants with the same comorbidities

ACKNOWLEDGMENT

Thank you to the respondents who were willing to publish their cases, and thanks to the Nursing Study Program and D-3 in Nursing, the Muhammadiyah University of Malang's research and community service institute for supporting this research.

REFERENCES

- Asbari, M., Pramono, R., Kotamena, F., Juliana, Sihite, OB, Alamsyah, VU, Imelda, D., Setiawan, ST, & Purwanto, A. (2020). Working While Studying in a Self-Management Perspective (Ethnographic Study of Javanese Ethnic Employees in the Thousand Industrial City of Tangerang). *Edumaspul - Journal of Education*, 4(1), 253–263.

- <https://doi.org/10.33487/Edumaspul.V4i1.363>
- Dewi, NPRI, Lestari, NKY, & Dewi, NLPT (2020). Correlation of Stress Levels with Sleep Quality in the Elderly. *Bali Medika Journal*, 7(1), 61–68. <https://doi.org/10.36376/Bmj.V7i1.108>
- Emiliana, N., Fauziah, M., Hasanah, I., & Fadlilah, DR (2021). Analysis of Adherence to Treatment Control of Outpatient Hypertension Patients in Visitors to the Pisangan Health Center in 2019. *Journal of Public Health Research and Development*, 1(2), 119–132.
- Fadaka, AO, Sibuyi, NRS, Adewale, OB, Bakare, OO, Akanbi, MO, Klein, A., Madiehe, AM, & Meyer, M. (2020). Understanding The Epidemiology, Pathophysiology, Diagnosis And Management Of Sars-Cov-2. *Journal Of International Medical Research*, 48(8), 1–23. <https://doi.org/10.1177/0300060520949077>
- Gunawan, A., Prahasanti, K., & Utama, MR (2020). The Effect of Comorbid Hypertension on the Severity of Patients Infected with Covid 19. *Journal of Implementa Husada*, 1(2), 136. <https://doi.org/10.30596/Jih.V1i2.4972>
- Harahap, DA, Aprilia, N., & Muliati, O. (2019). Relationship between Hypertension Sufferers' Knowledge of Hypertension and Compliance with Taking Antihypertensive Medications in the Work Area of the Kampa Health Center in 2019. *Journal of Nurses*, 3(2), 97–102.
- Irawan, D., Muhimmah, I., & Yuwono, T. (2019). Smart Instrument Prototype for Classifying Hypertension Based on Jnc-7. *Journal of Applied and Information Technology*, 4(2), 125–132. <https://doi.org/10.25047/Jtit.V4i2.68>
- Kartiningrum, ED, & Fitria, A. (2021). Majapahit Medicine. *Majapahit Medica Journal*, 13(1), 1–18.
- Kiay, M., Pelealu, OCP, & Mengko, SK (2021). Anosmia in Coronavirus Disease 2019 (Covid-19). *Journal of Biomedics : Jbm*, 13(2), 167–174. <https://doi.org/10.35790/Jbm.13.2.2021.31827>
- Kiha, RR, Palimbong, S., & Kurniasari, MD (2018). The Effectiveness of Low-Salt Diet I on Regular and Soft Foods on the Length of Recovery in Hypertension Patients. *Journal of Muhammadiyah Nursing*, 3(1), 74–89. <https://doi.org/10.30651/Jkm.V3i1.1574>
- Kristanto, DB (2021). Comorbid Factors of Covid-19 in Indonesia Scoping Review. *Journal of Health Sciences*, 9(1), 51–59.
- Lestari, IG, & Isnaini, N. (2018). The Effect of Self Management on Blood Pressure in Elderly People with Hypertension. *Indonesian Journal For Health Sciences*, 2(1), 7–18. <https://doi.org/10.24269/Ijhs.V2i1.2018.Pp7-18>
- Lotfi, M., Hamblin, MR, & Rezaei, N. (2020). Covid-19: Transmission, Prevention, And Potential Therapeutic Opportunities. *Clinica Chimica Acta*, 508(April), 254–266. <https://doi.org/10.1016/J.Cca.2020.05.044>
- Madeira, A., Wiyono, J., & Ariani, NL (2019). The Relationship between Sleep Pattern Disorders and Hypertension in the Elderly. *Nursing News Scientific Journal of Nursing*, 4(1), 29–39.
- Morfi, CW, Elesmita, E., Asrini, DN, Pangestu, F., Lestari, DM, Medison, I.,

- Russilawati, R., Fauzar, F., Kurniati, R., & Yani, FF (2020). Latest Study on Coronavirus Disease 2019 (Covid-19). *Indonesian Journal of Health Sciences*, 1(1), 1-8. <https://doi.org/10.25077/jikesi.V1i1.13>
- Muslim, M. (2020). Stress Management During the Covid-19 Pandemic. *Journal of Business Management*, 23(2), 192-201.
- Pasaribu, VLD, Syafei, AN, Farhan, A., Aufaizah, A., Irani, C., & Firtiayani, SR (2021). Effect of Health Protocol Discipline on Prevention of Covid-19 Virus Transmission. *Journal of Abdimas Tri Dharma Management*, 2(2), 91-98. <https://doi.org/10.32493/abmas.V2i2.P91-98.Y2021>
- Covid-19 Distribution Map*. (2021). Task Force for Handling Covid-19.
- Prabasari, NA (2021). Self Efficacy, Self Care Management, and Compliance in Elderly Hypertension (Phenomenological Study). *Journal of Nursing Malang*, 6(1), 1-10.
- Prasetyorini, H., Sukei, N., & Wahyuningsih, W. (2021). The Effect of Self Management on the Blood Pressure of Pregnant Women with Hypertension During the Covid-19 Pandemic in the Rw 13 Area, Beringin Village. *Journal of Nursing Care Management*, 5(1), 63-71.
- Puspita, E., Oktaviarini, E., & Santik, YDP (2017). The Role of Families and Health Workers in Adherence to Treatment of Hypertension Sufferers at the Gunungpati Health Center in Semarang City. *Journal of Indonesian Public Health*, 12(2), 25-32.
- Putri, ES (2020). Strategic Interventions to Optimize Self-Management of Elderly with Hypertension. *Journal of Voice Health Research Forikes*, 11, 22-29.
- Salami. (2021). Self Care Management Behavior of Hypertension Sufferers: Qualitative Study. *Journal of Nursing 'Aisyiyah*, 8(1), 87-99. <https://doi.org/10.33867/jka.V8i1.261>
- Senewe, FP, Pracoyo, NE, Marina, R., Letelay, AM, & Sulistiyowati, N. (2021). The Influence of Comorbid Diseases and Individual Characteristics with the Incidence of Covid-19 in Bogor City in 2020. *Journal of Health Ecology*, 20(2), 69-79.
- Shibata, S., Arima, H., Asayama, K., Hoshide, S., Ichihara, A., Ishimitsu, T., Kario, K., Kishi, T., Mogi, M., Nishiyama, A., Ohishi, M., Ohkubo, T., Tamura, K., Tanaka, M., Yamamoto, E., Yamamoto, K., & Itoh, H. (2020). Hypertension And Related Diseases In The Era Of Covid-19: A Report From The Japanese Society Of Hypertension Task Force On Covid-19. *Hypertension Research*, 43(10), 1028-1046. <https://doi.org/10.1038/s41440-020-0515-0>
- Simonnet, A., Chetboun, M., Poissy, J., Raverdy, V., Noulette, J., Duhamel, A., Labreuche, J., Mathieu, D., Pattou, F., Jourdain, M., Caizzo, R., Caplan, M., Cousin, N., Duburcq, T., Durand, A., El Kalioubie, A., Favory, R., Garcia, B., Girardie, P., ... Verkindt, H. (2020). High Prevalence Of Obesity In Severe Acute Respiratory Syndrome Coronavirus-2 (Sars-Cov-2) Requiring Invasive Mechanical Ventilation. *Obesity*, 28(7), 1195-1199. <https://doi.org/10.1002/oby.22831>
- Tiara, UI (2020). The Relationship between Obesity and Hypertension. *Journal*

- Of Health Science And Physiotherapy, 2(2), 167-171.
<https://doi.org/10.35893/jhsp.v2i2.51>
- Tumanduk, WM, Nelwan, JE, & Asrifuddin, A. (2019). Hypertension Risk Factors Playing a Role in Robert Wolter Mongisidi Hospital. *Journal of E-Clinic (Eci)*, 7(2), 119-125. <https://doi.org/10.35790/ecl.v7i2.26569>
- Umbas, IM, Tuda, J., & Numansyah, M. (2019). Relationship Between Smoking and Hypertension at the Kawangkoan Health Center. *Journal of Nursing*, 7(1), 1-8. <https://doi.org/10.35790/jkp.v7i1.24334>
- Wahyudi, CT, Ratnawati, D., & Made, SA (2017). Effects of Demographics, Psychosocial, and Length of Suffering from Primary Hypertension on Compliance with Taking Antihypertensive Medications. *Journal of Jkft*, 2(2), 14-28. <https://doi.org/10.31000/jkft.v2i1.692>
- Widiyanto, A., Atmojo, JT, Fajriah, AS, Putri, SI, & Akbar, PS (2020). Hypertension Prevention Health Education. *Empathy Journal*, 1(2), 96-190. <https://doi.org/10.37341/jurnalempathy.v1i2.27>
- Yusselda, M., & Wardani, IY (2016). The Impact of Family Support on the Quality of Life of the Elderly. *Journal of Nursing*, 8(1), 9-13.