THE EFFECT OF SELF-MANAGEMENT BEHAVIOR ON BLOOD PRESSURE OF PREGNANT WOMEN WITH PREECLAMPSIA IN THE WORKING AREA OF THE PUBLIC HEALTH CENTER IN SURABAYA CITY

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Abstract. Preeclampsia is specific complication that often during pregnancy. Blood pressure is too high in pregnant women increases maternal and fetal morbidity and mortality. In fact, there are still many pregnant women have risky behaviors such as non-compliance with ANC, an uncontrolled diet, a lack of exercise, and non-compliance with taking medication. One effort to improve the quality of life of preeclampsia mothers by implementing self-management behaviors. The research design was quasy-experimental pretest-posttest control group design. The subjects of the study were 36 pregnant women with preeclampsia in May–July 2023 at Pucang Sewu and Tambakrejo Health Centers in Surabaya, which were divided into 18 treatment and control groups. Data were collected by measuring blood pressure and daily observation sheets and analyzing the data using the Mann-Whitney Wilcoxon sign rank test ($p \leq 0.05$). The results of this study showed that self-management behavior before being given treatment was more than half (56%) in the bad category, and after treatment, most (89%) were in the good category. The systolic and diastolic blood pressures of preeclampsia pregnant women in the pre-intervention group had an average value of 144.7/87.78 mmHg, and after the intervention, had an average value of 137.78/81.94 mmHg. There is an influence of self-management behavior on blood pressure of pregnant women with preeclampsia in the work area of the Surabaya City Health Center. So the researchers suggest pregnant women with preeclampsia always maintain a healthy lifestyle and obey the rules given by health workers.

Keywords: Self-Management Behavior, Blood Pressure, Preeclampsia

1 INTRODUCTION

Maternal mortality continues to increase in developing countries, especially Indonesia. Based on the cause, the majority of maternal deaths are caused by gestational hypertension, bleeding, and disorders of the circulatory system. Blood pressure that is too high in pregnant women increases maternal and fetal morbidity and mortality (Bello et al., 2021) (Garovic et al., 2022). One of the efforts to improve the quality of life for preeclampsia mothers is by implementing self-management behavior as a strategy to regulate self-behavior in dealing with illness (Cairns et al., 2018). Its implementation in preeclampsia women can be seen in blood pressure control and medication, lifestyle improvements, and the prevention of complications (Rosmadewi and Rudiyanti, 2018). The number of maternal deaths in Indonesia continues to increase; in 2021, there were 7,389 deaths compared to 4,627 deaths in 2020 (Kemenkes, 2021) Based on causes, the majority ofmaternal deaths in 2021 are related to COVID-19, bleeding, and hypertension (Dinkes Provinsi Jawa Timur, 2021). According to health profile data in East Java Province, in 2020 there were 152 cases, and in 2021 there were 123 maternal deaths due to gestational hypertension, although this has decreased but has not yet reached the targeted number. Furthermore, in 2021, in the city of Surabaya, there will be six cases of death due to pregnancy hypertension. Data obtained in 2021 from the Pucang Sewu Health Center showed 6.5% and from the Tambakrejo Health Center, as many as 10% of pregnant women were diagnosed with preeclampsia. Preeclampsia occurs in approximately 5% of all pregnancies, 10% in first child pregnancy and 20–

25% in pregnant women with a history of pre-pregnancy hypertension. (Masriadi, Idrus and Baharuddin, 2022).

Preeclampsia is defined as a group of symptoms that arise in pregnant, parturient and postpartum women consisting of hypertension, edema and proteinuria that appear at 20 weeks of pregnancy until the end of the first week after delivery (Muzalfah, et al., 2018). The causes of preeclampsia are influenced by several risk factors including reproductive factors, health status factors, health behavior factors, and supporting factors (Setyorini et al., 2017) (Shiozaki & Saito, 2018). Pregnant women often do not realize this because most of the signs and symptoms are not visible to the naked eye, so that in a short time further complications can arise including eclampsia, cerebral hemorrhage or cerebral edema, cortical blidness, retinal detachment, HELLP syndrome, hepatic hematoma/ liver rupture, DIVC, pulmonary edema, laryngeal edema, kidney failure, placental abruption and ending in death (Lalenoh, 2018). For mothers who have been diagnosed with preeclampsia, it is very necessary to pay attention to good and correct self-management behaviors, including blood pressure control and medication, improve their lifestyle with an appropriate diet and physical activity, control stress, and take medication as recommended (Chang et al., 2022) (Setyorini et al., 2019).. Based on the results of research from Masriadi, Idrus, and Baharuddin (2022), most pregnant women diligently check their pregnancies within a month, but there are still some mothers who check their pregnancies only occasionally. Physical activity and a proper diet for pregnant women are also still lacking. This happens because a lack of knowledge about the dangers of preeclampsia causes mothers not to maintain self-management behavior before or during pregnancy in an effort to prevent and control preeclampsia (Prasetyorini, Sukesi and Wahyuningsih, 2021).

The role of the nurse as an educator is to provide counseling about the application of self-management behavior in patients with preeclampsia and how this model can be applied in everyday life (Evi et al., 2020). Pregnant women are also encouraged to frequently check their pregnancies, such as by monitoring blood pressure (Xydopoulos et al., 2019). This measurement is very important to know the results of pregnant women's blood pressure and changes in high blood pressure for the better, so that it can improve the quality of life of pregnant women (Prasetyorini, Sukesi and Wahyuningsih, 2021).

2 METHOD

Types of Research

This research used a quasy-experiment pretest-posttest control group design.

Sample

Samples in this study of 36 pregnant women with primigravidity and preeclampsia in May–July 2023 in Puskesmas Pucang Sewu Surabaya and Puskesmas Tambakrejo, which was selected using a probability sampling technique of the purposive sampling.

Variable

The independent variable in this study is self-management behavior and the dependent variable is the blood pressure of the pregnant woman.

Research Instruments

The research instruments used in this research were a sphygmomanometer and daily observation sheets.

Data Collection

At the beginning of the research, the researcher gave the respondent a consent form for approval, then the respondent filled in the demographic data sheet, after that, respondents from the treatment group and control group underwent a pre-test by measuring blood pressure and filling in a self-management observation sheet, then in the treatment group, the research subjects were given treatment by means of counseling to control yourself against the symptoms you feel, namely hypertension, according to the leaflet created by the researcher (Nursalam, 2017). Furthermore, respondents in the treatment group were provided with observation sheets to take home and fill in every day for one week, while those in the control group were given counseling with different material. After one week, the researchers visited both groups at their homes to carry out post tests and take observation sheets and measure blood pressure (Notoadmojo, 2018).

Data Analysis

The analysis in this study uses a normality test to determine whether the data is distributed normally or not. The data is not distributed normal so it uses the Wilcoxon test to find out the influence of self-management behavior on the blood pressure of pregnant women with preeclampsia and as the Mann-Whitney test to compare blood pressure changes in the two groups

Ethics Approval

Ethics approval was obtained from the Surabaya Ministry of Health Poltekkes Ethics Institute No.EA/1846/KEPK-Poltekkes_Sby/V/2023. Administrative approval from the Health Service and DPMPTSP Surabaya City before collecting research data.

3 RESULTS

1. General Data

Table 1. Characteristics of Pregnant Women with Preeclampsia in May-July 2023 in the Working Area of the Surabaya City Health Center

Characteristics	Treatment Group		Control Group		Total	
	F	%	f	%	f	%
Age						
< 20	2	11	0	0	2	6
20-35	16	89	18	100	34	94
>35	0	0	0	0	0	0
Total	18	100	18	100	36	100
Education						
Junior High School	0	0	0	0	0	0
Senior High School	17	94	10	56	27	75
College	1	6	8	44	9	25
Total	18	100	18	100	36	100
Type of work						
Doesn't work	15	83	15	83	30	83
Entrepreneur	2	1	0	0	2	6

Private sector employee	1	16	2	11	3	8
Civil servants	0	0	1	6	1	3
Total	18	100	18	100	36	100
Gestational Age						
Trimester 2	4	22	7	39	11	31
Trimester 3	14	78	11	61	25	69
Total	18	100	18	100	36	100
Body Mass Index (BMI)						
< 18.5 kg/m2 (Less)	0	0	0	0	0	0
18.5-24.9 kg/m2 (Normal)	0	0	0	0	0	0
25-29.9 kg/m2 (Excessive)	8	44	7	39	15	42
>30 kg/m2 (Obesity)	10	56	11	61	21	58
Jumlah	18	100	18	100	36	100
Medication consumed						
Aspilet	12	67	11	61	23	64
Nifedipine	6	33	7	39	13	36
Total	18	100	18	100	36	100

Source: Primary Data2023

Based on the table 1, it is found that the characteristics of preeclamptic mothers are that most (94%) are aged 20-35 years, most (75%) have a high school education, most (83%) of the mothers do not work, more than half (69%) of the gestational age are in the third trimester. 3, more than half (58%) of the mothers' body mass index was included in the obese category and more than half (64%) of the medication consumed was aspirin.

2. Special Data

Specific data details in this study are as follows:

Table 2. Pre-Test Self Management Behavior of Pregnant Women with Preeclampsia in May-July 2023 in the Working Area of the Public Health Center in Surabaya City

Self Manageme Behavior	**Treatment Group**		**Control Grou**		**Total**	
	F	**%**	**F**	**%**	**f**	**%**
Good	8	44	10	56	18	50
Less	10	56	8	44	18	50
Total	18	100	18	100	36	100

Based on table 2, it shows that more than half of the pre-test self-management behavior in the treatment group (56%) was in the bad category, while in the control group more than half (56%) was in the good category.

Table 3. Post Test Self Management Behavior of Pregnant Women with Preeclampsia in May-July 2023 in the Working Area of the Public Health Center in Surabaya City

Self Manageme Behavior	**Treatment Group**		**Control Grou**		**Total**	
	F	**%**	**F**	**f**	**%**	**F**
Good	16	89	12	67	28	78
Less	2	11	6	33	8	22
Total	18	100	18	100	36	100

Based on table 3, it shows that the post test self management behavior in the treatment group was mostly (89%) in the good category, while in the control group more than half (67%) was in the good category.

Table 4. Pre-test Blood Pressure for Pregnant Women with Preeclampsia in May-July 2023 in the Working Area of the Public Health Center in Surabaya City

Blood Pressure	Treatment Group				Control Group			
	Mean	Std. Deviation	Min	Max	Mean	Std. Deviation	Min	Max
Sistol	144,7	6,243	140	160	145,56	6,157	140	160
Diastol	87,78	6,468	80	100	87,22	6,691	70	100

Based on table 4, it shows that the pre-test systolic blood pressure in the treatment group had a minimum value of 140 mmHg and diastolic pressure 80 mmHg. Meanwhile, in the control group, systolic pressure had a minimum value of 140 mmHg and diastolic pressure was 70 mmHg. The results of this study concluded that the average pre-test blood pressure of preeclamptic pregnant women in the treatment group was 144.7/87.78 mmHg and the control group was 145.56/87.22 mmHg.

Table 5. Post Blood Pressure Test for Pregnant Women with Preeclampsia in May-July 2023 in the Working Area of the Public Health Center in Surabaya City

Blood Pressure	Treatment Group				Control Group			
	Mean	Std. Deviation	Min	Max	Mean	Std. Deviation	Min	Max
Sistol	137,78	8,948	130	155	145,28	6,057	140	160
Diastol	81,94	7,503	70	90	86,94	6,216	80	100

Based on table 5, it shows that the post test diastolic blood pressure in the treatment group had a minimum value of 130 mmHg and diastolic pressure 70 mmHg. Meanwhile, in the control group, the systolic pressure had a minimum value of 140 mmHg and the diastolic pressure was 80 mmHg. The results of this study concluded that the average post test blood pressure in preeclamptic pregnant women in the treatment group was 137.78/81.94 mmHg and in the control group 145.28/86.94 mmHg.

Table 6. Comparison Test Results of Pre-Test and Post-Test Blood Pressure in the Treatment Group (Wilcoxon Signed Rank Test)

Blood Pressure	Mean		*P*
	Pre test (mmHg)	Post test (mmHg)	
Sistol	144,17	137,78	0,001
Diastol	87,78	81,94	0,003

The results of the Wilcoxon Signed Rank Test on pre- and post-test systolic blood pressure in the treatment group showed a p-value of 0.001 or $p < 0.05$, meaning that

there was an influence of self-management behavior intervention on systolic blood pressure in preeclamptic pregnant women. Meanwhile, in the pre and post test diastolic blood pressure in the treatment group, the p-value was 0.003 or $p < 0.05$, meaning that there was an influence of self-management behavior intervention on diastolic blood pressure in preeclamptic pregnant women.

Table 7. Comparison Test Results of Pre-Test and Post-Test Blood Pressure in the Control Group (Wilcoxon Signed Rank Test)

Blood Pressure	Mean		*P*
	Pre test (mmHg)	Post test (mmHg)	
Sistol	145,56	145,28	0,942
Diastol	87,22	86,94	0,739

The results of the Wilcoxon Signed Rank Test on pre and post test systolic blood pressure in the control group showed a p-value of 0.942 or $p > 0.05$. Meanwhile, the pre and post test diastolic blood pressure in the control group showed a p-value of 0.739 or $p > 0.05$, meaning there was no difference in the average between the systolic and diastolic blood pressure of preeclamptic pregnant women in the control group.

4 DISCUSSION

1. Self Management Behavior in Preeclampsia Mothers

Based on the results of the study, it was shown that the pre-test self-management behavior in the treatment group was more than half (56%) in the bad category, more than half (56%) in the control group was in the good category. While the results of the self-management behavior post test in the treatment group were mostly (89%) in the good category and more than half of the control group (67%) were in the good category.

Self management behavior is the behavior or ability of an individual in controlling his health. Self-management behavior is a person's ability to manage himself both biologically, psychologically, socially and spiritually with the aim of maximizing life processes in accordance with his life goals (Kurnia, 2020). Obesity sufferers will influence the occurrence of preeclampsia (Zahra Wafiyatunisa and Rodiani, 2016). Its implementation in preeclamptic women can be seen from blood pressure control and medication, lifestyle improvements and prevention of complications that will occur (Awalia, Sukmawati, and Witdiawati. 2020). Self-management behavior in women with preeclampsia must be considered to prevent more serious symptoms and death in pregnant women (Masriadi, Idrus and Baharuddin, 2022).

Based on the results of the study, it was found that half (50%) of the self-management behavior of preeclamptic mothers before being given health education related to it was in the bad category. Most pregnant women have not been able to apply a low salt diet. Reducing salt intake, increasing fiber, drinking coffee, utilizing vegetables and herbs helps in lowering blood pressure. This is in line with research conducted by Masriadi, Idrus and Baharuddin (2022) that some patients who adhere to a low-salt diet have a low relapse rate. In addition, more than half of mothers are obese after observing that most of the physical activities or sports of pregnant women are in the bad category where only a small number of mothers do prenatal exercises and walk in the morning. This is because physical activity is an activity in which daily activities are carried out including

physical activity, apart from that physical activity is an activity that is cheap, easy and healthy because doing physical activity makes systolic blood pressure drop by 4-9 mmHg (Prasetyorini, H., Sukesi, N. and Wahyuningsih., 2021).

Pregnant women who have not implemented self-management behavior properly are expected to always seek information related to diet and treatment of preeclampsia (Anasiru, 2019). Families can also provide support to preeclampsia mothers to always motivate mothers to maintain a lifestyle such as exercise, blood pressure control, adherence to taking medication and adequate rest to be able to control the stress or anxiety they experience. So that blood pressure is expected not to increase significantly.

2. Blood Pressure in Preeclampsia Mothers

The systolic and diastolic blood pressure of preeclamptic pregnant women in the pre-intervention group had an average value of 144.7/87.78 mmHg and after the intervention had an average value of 137.78/81.94 mmHg.

Blood pressure is the amount of pressure exerted on the bloodstream as it passes through the arteries. When it contracts, the left ventricle in the heart pushes blood out of the arteries. The main artery then expands to receive the incoming blood. The muscle lining of the arteries resists pressure, blood is forced out into the smaller vessels. The maximal arterial pressure associated with the contraction of the left ventricle is called the systolic pressure. The minimum pressure, which occurs when the heart is in a state of maximum relaxation, is called the diastolic pressure (Noroyono et al., 2016). Hypertension in preeclamptic pregnant women is defined as blood pressure of at least 140 mmHg systolic or 90 mmHg diastolic during 2 examinations 15 minutes apart using the same arm. Severe hypertension is defined as an increase in blood pressure of at least 160 mmHg systolic or 100 mmHg diastolic. This condition is included in severe preeclampsia (Noroyono et al., 2016).

Based on the results of the study, there was a difference in the systolic pressure of 6.92 and the diastolic blood pressure of 5.84 in the treatment group before being given health education. After implementing self-management behavior, there was a decrease of approx. This condition occurs due to various factors such as drug use, anxiety and others. Based on the research of Aulia, Ananto and Christiany (2018) the results of systolic and diastolic measurements after the self-control intervention was carried out in the treatment group obtained the highest systolic results of 140 mmHg and the highest diastolic of 90 mmHg. There was a significant decrease, namely for systolic around 20 mmHg and diastolic around 10 mmHg.

Pregnant women with preeclampsia who receive self-management behavior interventions are better seen from good daily observation results and decreased blood pressure results. This is due to the condition of pregnant women who must immediately receive appropriate treatment or therapy as needed. So that mothers are expected to always be able to carry out routine blood pressure and ANC checks because preeclampsia can be a condition that threatens the mother and fetus if left unchecked.

3. The Effect of Sefl Management Behavior on Blood Pressure

Based on the results of the Wilcoxon Signed Rank statistical test, it was found that systolic blood pressure was p-value 0.001 ($p < 0.05$) and diastolic blood pressure was p-value 0.003 ($p < 0.05$), which means that there is an effect of self-management behavior intervention on systolic blood pressure and diastole in preeclamptic mothers.

Preeclampsia is hypertension at 20 weeks' gestation or after delivery with blood pressure > 140/90 mmHg which is measured 2 times 4 hours apart (Lombo, Wagey and Mamengko, 2017). Programs that can be carried out to improve the quality of life of pregnant women diagnosed with preeclampsia are by using a self-management behavior model, a very inexpensive program that can help pregnant women in pain management, nutrition, exercise, drug use, emotions, and communication. Mothers can apply pharmacological and non-pharmacological treatments to prevent increased blood pressure and other serious complications of pregnancy (Prasetyorini, Sukesi and Wahyuningsih, 2021).

Based on the results of the study that there is an influence between self-management behavior on systolic and diastolic blood pressure in preeclamptic mothers. Significant differences were found in systolic and diastolic blood pressure in the treatment group after being given self-management behavior counseling treatment. When the mother applies good and correct self-management behavior, there is a decrease in blood pressure. According to research by Masriadi, Idrus and Baharuddin (2022) that self-management affects blood pressure in pregnant women with hypertension. The results of systolic blood pressure for pregnant women before and after being given self-management were 7.04 mmHg and the results for diastolic blood pressure for pregnant women before and after being given self-management were 3.02 mmHg.

Pregnant women are expected to always maintain their health by consuming a balanced nutritious diet, maintain personal hygiene and continue to practice physical activity in the form of pregnant women exercise/yoga/pilates/aerobic/stretching independently at home so that mothers stay fit and healthy. condition itself such as monitoring blood pressure and better so as to improve the quality of life of pregnant women.

5 CONCLUSION

More than half of the self-management behavior before being given health education in the treatment group was in the bad category. More than half of the self-management behavior before health education was given to the control group was in the good category. Most of the self-management behavior after giving health education to the treatment group was in the good category. More than half of self-management behavior after giving health education to the control group is in the good category. The systolic and diastolic blood pressure of preeclampsia pregnant women in the treatment group before being given the intervention had an average value of 144.7/87.78 mmHg. The systolic and diastolic blood pressure of preeclampsia pregnant women in the control group before being given the intervention had an average value of 145.56/87.22 mmHg. The systolic and diastolic blood pressure of preeclampsia pregnant women in the treatment group after being given the intervention had an average value of 137.78/81.94 mmHg. The systolic and diastolic blood pressure of preeclampsia pregnant women in the control group after being given the intervention had an average value of 145.28/ 86.94 mmHg. There is an influence of self-management behavior on the blood pressure of pregnant women with preeclampsia in the working area of the Surabaya City Health Center.

6 REFERENCES

Anasiru, M. A. (2019). Pengaturan Gizi Pada Penanganan Preeklampsia. *Health and Nutritions Journal*, *I*(1), 62–72.

Aulia, R. U., Ananto, D., & Christiany, I. (2018). Pengaruh Pengendalian Diri Berbasis Teori Self Care Terhadap Perubahan Tekanan Darah Pada Klien Hipertensi. *Jurnal Keperawatan*, *6*(2). https://doi.org/journal.poltekkesdepkes-sby.ac.id

Awalia, A., Sukmawati, & Witdiawati1. (2020). Penatalaksanaan Farmakologi Preeklampisa Pada Ibu Hamil : Literature Review. *Journal of Maternity Care and Reproductive Health*, *3*(4), 227–242.

Bello, N. A., Zhou, H., Cheetham, T. C., Miller, E., Getahun, D., Fassett, M. J., & Reynolds, K. (2021). Prevalence of hypertension among pregnant women when using the 2017 American College of Cardiology/American Heart Association blood pressure guidelines and association with maternal and fetal outcomes. *JAMA Network Open*, *4*(3), e213808–e213808.

Cairns, A. E., Tucker, K. L., Leeson, P., Mackillop, L. H., Santos, M., Velardo, C., Salvi, D., Mort, S., Mollison, J., & Tarassenko, L. (2018). Self-management of postnatal hypertension: the SNAP-HT trial. *Hypertension*, *72*(2), 425–432.

Chang, C.-W., Tsai, Y.-J., Hsu, Y.-Y., & Hou, T.-W. (2022). *Practical self-management system for women with postnatal hypertension*.

Dinkes Provinsi Jawa Timur. (2021). *Profil Kesehatan Provinsi Jawa Timur 2020*. Kementerian Kesehatan Republik Indonesia. www.dinkesjatengprov.go.id

Evi, N., Rachmawati, I., & Budiarti, T. (2020). Levin's Conservation Model And Unpleasant Symptoms Theory In Nursing Care Of Pregnant Women With Preeklamsia: A Case Study: LEVINE'S CONSERVATION MODEL AND UNPLEASANT SYMPTOMS THEORY IN NURSING CARE OF PREGNANT WOMEN WITH PREECLAMPSIA: A CASE STUDY. *Journal of Health Sciences*, *13*(01), 12–25.

Garovic, V. D., Dechend, R., Easterling, T., Karumanchi, S. A., McMurtry Baird, S., Magee, L. A., Rana, S., Vermunt, J. V, & August, P. (2022). Hypertension in pregnancy: diagnosis, blood pressure goals, and pharmacotherapy: a scientific statement from the American Heart Association. *Hypertension*, *79*(2), e21–e41.

Kemenkes, R. (2021). *Profil Kesehatan Indonesia 2020* (S. Jenderal & P. K. Indonesia, Eds.). Kementerian Kesehatan Republik Indonesia.

Kurnia, A. (2020). *Self-Management Hipertensi*. CV. Jakad Media Publishing.

Lalenoh, D. C. (2018). *Preeklampsia Berat dan Eklampsia: Tatalaksana Anestesia Perioperatif*. Deepublish.

Lombo, G. E., Wagey, F. W., & Mamengko, L. S. (2017). Karakteristik Ibu Hamil dengan Preeklampsia di RSUD Prof Dr. R. D. Kandou Manado. *IEEE Transactions on Systems, Man and Cybernetics, SMC-6*(12), 882–887. https://doi.org/10.1109/TSMC.1976.4309487

Masriadi, Idrus, H. H., & Baharuddin, A. (2022). Determinan Epidemiologi Kejadian Hipertensi Kehamilan. *Fakultas Kesehatan Masyarakat Universitas Muslim Indonesia*, *5*(2), 592–601. http://jurnal.fkmumi.ac.id/index.php/woh/article/view/woh5210

Muzalfah, R., Dyah, Y., Santik, P., & Wahyuningsih, A. S. (2018). Kejadian Preeklampsia pada Ibu Bersalin. *Higeia Journal Of Public Health Research Development*, *2*(3), 417–428.

Noroyono, W., Irwinda, R., Frisdianty, E., & Karkata, M. (2016). *Pedoman Nasional Pelayanan Kedokteran diagnosis dan Tatalaksana Preeklampsia*. POGI.

Notoadmojo. (2018). *Metodologi Penelitian Kesehatan*. Rineka Cipta.

Nursalam. (2017). *Metodologi Penelitian Ilmu Keperawatan* (4th ed.). Salemba Medika.

Prasetyorini, H., Sukesi, N. and Wahyuningsih. (2021). Pengaruh Self Manajement Terhadap Tekanan Darah Ibu Hamil Dengan Hipertensi Di Masa Pandemi Covid 19 Di Wilayah RW 13 Kelurahan Beringin. *Jurnal Manajemen Asuhan Keperawatan*. http://jurnal.d3per.uwhs.ac.id/index.php/mak/article/view/108.

Rosmadewi, & Rudiyanti, N. (2018). Pengaruh Senam Prenatal Yogaterhadap Kejadian Pre Eklampsia pada Ibu Hamil Trimester III di Puskesmas Wilayah Kerja Dinkes Kota Bandar Lampung. *Jurnal Kesehatan Metro Sai Wawai*, *11*(1), 33. https://doi.org/10.26630/jkm.v11i1.1767

Setyorini, D., Santoso, B., Martini, S., & Ernawati. (2017). Risk Factors of Preeclampsia and Eclampsia in Surabaya. *Dama International Journal of Researchers*, *2*(7), 63–66.

Setyorini, D., Santoso, B., Martini, S., Ernawati, & Cahyono, I. (2019). Early detection score of preeclampsia risk. *Indian Journal of Forensic Medicine and Toxicology*, *13*(4), 1717–1721. https://doi.org/10.5958/0973-9130.2019.00556.5

Shiozaki, A., & Saito, S. (2018). Risk factors for preeclampsia. *Preeclampsia: Basic, Genomic, and Clinical*, 3–25.

Xydopoulos, G., Perry, H., Sheehan, E., Thilaganathan, B., Fordham, R., & Khalil, A. (2019). Home blood-pressure monitoring in a hypertensive pregnant population: cost-minimization study. *Ultrasound in Obstetrics & Gynecology*, *53*(4), 496–502.

Zahra Wafiyatunisa, & Rodiani. (2016). Hubungan Obesitas dengan Terjadinya Preeklampsia Obesity Relationship with the Occurrence of Preeclampsia. *Majority*, *5*(5), 184–190.