


Profile of the using antihypertension pre-eclampsia patients at hospital

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Article Info	ABSTRACT
Keywords: effectiveness, drug use, nifedipine, pre-eclampsia	Pre-eclampsia was a class of hypertension in pregnancy. Based on WHO in 2015 the prevalence of preeclampsia in developed countries was around 1.3-6% while in developing countries it was around 1.8-18%. Antihypertensive therapy in pre-eclampsia patients was calcium channel blockers. Nifedipine was a dihydropyridine calcium channel blocking agent used as a first-line antihypertensive treatment for pre-eclampsia. The used of hypertension drugs in pregnancy can be said to be successful and effective when blood pressure reaches the target of <140/90 mmHg. The purposed of this study was to analyze the profile of the effectiveness of using nifedipine in pre-eclampsia patients at Hospital. This research was a quantitative research with a retrospective descriptive design. The total sample was 91 patients. The data source used medical record data from pre-eclampsia patients at Hospital in the 2022 period. The sampling used was simple random sampling technique and data was displayed in the form of frequency and percentage. The results of this studied indicate that the used of the drug nifedipine 10 mg (13%) nifedipine 3x10 mg (87%), the average blood pressure before 161.37/101.26 mmHg, the average blood pressure after 132.97/85.60 mmHg and the effectiveness of using nifedipine was 100% effective. Thus it could be concluded that the profile of the effectiveness of using nifedipine was said to be effective because it could reduce blood pressure. Nifedipine was recommended in pre-eclampsia patients to lower blood pressure.
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INTRODUCTION

Hypertension was a condition where there was a chronic increase in blood pressure in the blood vessels. An increase in blood pressure occurs because the heart works harder to pump blood to meet the body's oxygen and nutritional needs. Hypertension in pregnancy (HDK) affects 10% of pregnant women worldwide. Hypertension was a non-communicable disease that can cause maternal death and also the main cause of maternal death [Alatas, 20219].

Pre-eclampsia was a type of hypertension in pregnancy [Alatas, 2019]. Pre-eclampsia was a disorder in pregnant women characterized by hypertension and proteinuria after 20 weeks of gestation. This disorder in pregnant women was characterized by blood pressure $\geq 140/90$ mmHg and proteinuria ≥ 300 mg/24 hours [Saraswati et al, 2016]. Pre-eclampsia

has a bad impact on the mother and fetus or baby. The impact of pre-eclampsia on mothers is HELPP syndrome, stroke, various organ problems such as pulmonary edema, kidney failure, liver failure, blood clotting disorders. The impact of pre-eclampsia on the fetus or baby is that the baby is at risk of being born prematurely, fetal death in the womb or death immediately after birth, impaired fetal growth in the womb, and low birth weight [Danu, 2020].

According to the World Health Organization (WHO), pre-eclampsia cases are seven times higher in developing countries than in developed countries. The prevalence of pre-eclampsia in developed countries is around 1.3-6%, while in developing countries it is around 1.8-18%. Until now, pre-eclampsia was one of the direct causes of maternal and infant mortality [WHO, 2015]. In 2019, the recorded maternal mortality rate reached 4,221, the majority of which was caused by hypertension in pregnancy, which reached 1,066 deaths or around 25.2% of the total maternal mortality rate in Indonesia [Kemenkes, 2020]. The maternal mortality rate in East Java in 2019 reached 89.81 per 100,000 live births. This figure has increased compared to 2020 which reached 98.39 per 100,000 live births [Dinas Kesehatan, 2020]. In 2020, the maternal mortality rate in Jember Regency was 173.53 per 100,000 live births, 61 people [Dinas Kesehatan, 2020].

Nifedipine was a dihydropyridine calcium channel blocking agent used as a first-line antihypertensive treatment for pre-eclampsia and preterm labor. The mechanism of nifedipine as an antihypertensive is to reduce intracellular calcium, thereby inhibiting smooth muscle cell contraction and causing arterial dilation which can reduce myocardial oxygen, peripheral resistance and blood pressure [Smith, 2000]. The purposed of this study was to analyze the profile of the effectiveness of using nifedipine in pre-eclampsia patients at Hospital.

METHODS

This study was designed and approved by the university ethics committee dr. Soebandi with reference number 019/KEPK/UDS/II/2023, and has obtained a permit to conduct research at the hospital. the data used in this study was secondary data, namely data from patient medical records. In this study used a a quantitative research with a retrospective descriptive design. The population in this study were all inpatients with a diagnosis of Pre-eclampsia at Hospital for the period Januari-Desember 2022 totaling 118 patients, then 91 samples were obtained according to the inclusion and exclusion criteria. Inclusion data in this study were medical records of patients in hospital, pregnant women diagnosed with pre-eclampsia and receiving nifedipine drug therapy, while the exclusion data in this study were medical record data is incomplete. Data that complied with the inclusion and exclusion criteria data were collected and then tabulated in percentage form.

RESULT AND DISCUSSION

Data in this study which were obtained retrospectively showed that the number of patients suffering from Pre-eclampsia during the Januari-Desember 2022 period was 118 patients

from medical record data where this number was the total population. After grouping according to the inclusion criteria, a total of 91 samples were obtained. The implementation of data collection was carried out in accordance with hospital procedures. The results of data obtained from this study include general data and specific data. General data included age, pregnancy age, while specific data includes using of the drug nifedipine, identify blood pressure, effectiveness of using the drug nifedipine. The authors can describe the results of the research in the exposure below:

Table 1. Frequency distribution of respondents based on age in pre-eclampsia patients at Hospital in 2022.

No.	Age	Frequency	Percentage %
1.	20-35 year	61	67%
2.	36-45 year	30	33%
	Total	91	100%

Table 1 based on of the age in pre-eclampsia patients, the most vulnerable aged 20-35 years with a total of 61 patients or as much as 67%. The patient's age was within the productive age range. This happen because the risk factors for pre-eclampsia such as hereditary history, obesity and previous history of hypertension [Sudarman, 2021].

Table 2. Frequency distribution of respondents based on pregnancy age in pre-eclampsia patients at Hospital in 2022.

No.	Pregnancy Age (Trimester)	Frequency	Percentage %
1.	Trimester I (0-14 weeks)	1	1%
2.	Trimester II (15-28 weeks)	5	6%
3.	Trimester III (29-42 weeks)	85	93%
	Total	91	100%

Table 2 shows the results of data on pregnancy age in pre-eclampsia patients with 85 patients or as much as 93% of III trimester of pregnancy. In the third trimester, the mother's weight reaches its maximum, excessive weight gain will double the risk of pre-eclampsia. As pregnancy progresses, almost all of the body's organs work harder than usual due to the burden of pregnancy, the pressure in the body also increases, which can also increase blood pressure in pregnant women so that the risk of pregnancy complications such as pre-eclampsia increases [Andriana, 2018].

Table 3. Frequency distribution of using the drug nifedipine pre-eclampsia patients at Hospital in 2022.

No.	Using the drug Nifedipine	Frequency	Percentage %
1.	Nifedipine 10 mg	12	13%
2.	Nifedipine 3x10 mg	79	87%
	Total	91	100%

Table 3 shows that the results from using the drug nifedipine are 13% with the used of 10 mg and 87% with the used of 3x10 mg. The used of nifedipine monotherapy can be given to both patients with mild pre-eclampsia and severe pre-eclampsia. Nifedipine can reduce blood pressure gradually, thereby preventing complications such as brain hemorrhage or eclampsia. Apart from that, nifedipine can also provide a tocolytic or contraction-inhibiting effect for the mother [Nurizawati, 2018].

There are two types of nifedipine drug used, namely nifedipine 10 mg and nifedipine 3x10 mg with a duration of taking the drug for two days. In this study, there was no difference in the used of nifedipine because nifedipine 10 mg and 3x10 mg were used to lower blood pressure. However, nifedipine 10 mg was recommended for mild pre-eclampsia, namely blood pressure $\geq 140/90$ mmHg, while nifedipine 3x10 mg was recommended for severe pre-eclampsia, namely blood pressure $\geq 160/110$ mmHg.

The main side effect of nifedipine was caused by excessive vasodilation. Symptoms include dizziness or headache due to dilated meningeal arteries, hypotension, reflex tachycardia, flushing, nausea, vomiting, peripheral edema, cough and pulmonary edema [Hapsari, 2012].

Table 4. Blood pressure data before administering nifedipine to pre-eclampsia patients at Hospital in 2022.

No.	Blood Pressure Before	Statistics	Result
1.	Systolic	N	91
		Mean	161.37
		Std. Deviation	14.946
2.	Diastolic	N	91
		Mean	101.26
		Std. Deviation	8.320

Table 5. Blood pressure data after administering nifedipine to pre-eclampsia patients at Hospital in 2022.

No.	Blood Pressure After	Statistics	Result
1.	Systolic	N	91
		Mean	132.97
		Std. Deviation	6.624
2.	Diastolic	N	91
		Mean	85.60
		Std. Deviation	4.991

Tables 4 and 5 show the blood pressure results of nifedipine administration which reduced the average systolic blood pressure from 161.37 mmHg to 132.97 mmHg and diastolic blood pressure from 101.26 mmHg to 85.60 mmHg.

The choice of type of antihypertensive was very influential in achieving blood pressure targets for various pre-eclampsia conditions experienced by patients. The antihypertensive drug nifedipine given to pregnant women with pre-eclampsia was

characterized by systolic blood pressure ≥ 160 mmHg and diastolic blood pressure ≥ 110 mmHg. A randomized controlled trial study conducted showed that the use of nifedipine was able to achieved significant blood pressure target outcomes compared to the group using methyldopa and labetalol [Easterling, 2019].

The results of this study show that the majority of pre-eclampsia patients who were discharged from the hospital experienced a decrease in systolic blood pressure and diastolic blood pressure were in the hypertension phase 1, prehypertension and normal blood pressure. Research conducted also showed that the condition of pre-eclamptic patients leaving the hospital was in the prehypertension phase. This is in accordance with the PNPk Pre-eclampsia [Tyashapsari, 2012].

Table 6. Frequency distribution of the effectiveness of using the drug nifedipine in pre-eclampsia patients at Hospital in 2022.

No	Effectiveness of using the drug Nifedipine	Frequency	Percentage %
1.	Effective	100	100%
2.	Ineffective	0	0%
	Jumlah	91	100%

Table 6 shows that 100% of pre-eclampsia patients are said to be effective because pre-eclampsia patients experience a decrease in blood pressure. According to the JNC Joint National Committee Guideline 8, the main goal of hypertension therapy was to achieve and maintain target blood pressure (Mayasari, 2020). Most of the clinical studied that show the effectiveness and benefits in treating hypertension are based on blood pressure measurements, if the patient experiences a decrease in blood pressure so there was an increase in the effectiveness of drug use. It was said to be effective if blood pressure decreases and reaches the therapy target. Effective blood pressure reduction can prevent blood vessel damage and has been proven to reduce morbidity and mortality rates (Mayasari, 2020)

Effectiveness profile of nifedipine drug use at Hospital was said to be effective because it reduces blood pressure and used the right medication. Pre-eclampsia patients who received nifedipine therapy at Hospital had achieved the therapy target when the patient left the hospital.

CONCLUSION

The results of the effectiveness of using nifedipine in pre-eclampsia patients was used of the drug nifedipine in pre-eclampsia patients at Hospital was almost entirely nifedipine 3x10 mg. The average blood pressure of pre-eclampsia patients before entering the hospital at Hospital was 161.37/101.26 mmHg, and the average blood pressure of pre-eclampsia patients leaving the hospital at Hospital was 132.97/85.60 mmHg. Overall used of nifedipine in pre-eclampsia patients at Hospital was said to be effective.

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