

## Effect of Breathing Relaxation Techniques on Changes in Blood Pressure among Pregnant Women with Pre-Eclampsia

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### Abstract:

Hypertension in pregnancy is a pregnancy complication and is one of the three highest causes of mortality and morbidity. Deep breathing relaxation therapy can increase oxygen saturation, improve oxygenation in the blood, and create a relaxed state in the body. This study aims to analyze the effect of breathing relaxation techniques on changes in blood pressure of pregnant women with preeclampsia at the Obstetrics and Gynecology Polyclinic, Tongas Hospital, Probolinggo Regency. This study used a one-group pre-post test design (pre-experimental) using a cross-sectional study approach with 30 respondents using an accidental sampling technique. Data collection includes coding, editing, and tabulating, then analyzed manually and by computer with the Paired T-Test. Based on data from 30 respondents, the majority of pregnant women's blood pressure before being given a breathing relaxation technique experienced moderate blood pressure as many as 15 respondents (50%), while the blood pressure of pregnant women after being given a breathing relaxation technique experienced mild hypertension was 0.19 respondents (63, 3 %). obtained P Value: 0.000 and  $\alpha = 0.05$ , meaning  $r < \alpha$ , so that  $H_0$  is rejected, and  $H_a$  is accepted, and there is an influence of the breathing relaxation technique on changes in blood pressure of pre-eclampsia pregnant women at the Obstetrics and Gynecology Polyclinic, Tongas Hospital, Probolinggo Regency. Respiratory relaxation therapy can be done independently, is relatively easy to do compared to other non-pharmacological therapies, does not take long in therapy, and can reduce the side effects of pharmacological therapy. for pregnant women with hypertension.

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## INTRODUCTION

Every woman highly anticipates pregnancy because pregnancy is a significant life event, although major changes can occur that can endanger health (Laikodate et al., 2021). Every pregnant woman expects a healthy and comfortable pregnancy without any complications because every pregnant woman is at risk of death (Novelia et al., 2022). Preeclampsia is when hypertension occurs after the 20th week of pregnancy and is accompanied by proteinuria. In preeclampsia pregnancies, trophoblast cell invasion only occurs in a portion of the spiral arteries in the myometrium area resulting in impaired placental function, so the placenta does not meet the needs of blood for nutrients and oxygen to the fetus. The impaired placental function can cause stunted fetal growth. Intra Uterine Growth Restriction (IUGR) is one of the causes of low-birth-weight babies (LBW). Controlled treatment is needed for pregnant women with preeclampsia to avoid risk factors that can harm the mother and fetus during pregnancy and pregnancy. during labor (Haslan & Trisutrisno, 2022). Preeclampsia is characterized by increased blood pressure

after 20 (twenty) weeks of gestation, accompanied by proteinuria and generalized edema. Symptoms of preeclampsia can occur in pregnant women, during childbirth, and during the puerperium, characterized by hypertension, edema, and increased proteinuria (Komariah et al., 2023). This blood pressure can also affect other vital signs, such as pulse and respiratory rate (Fauzi et al., 2022).

In Indonesia, preeclampsia is one of the causes of high maternal mortality, which is 24% (Ministry of Health RI, 2015). The incidence of preeclampsia in East Java in 2010 was 26.92% which increased to 27.77% in 2011 and 34.88% in 2012. In 2014 preeclampsia was a problem that often occurred in pregnant women, amounting to 31.04% and becoming a cause of maternal death in East Java Province (East Java Provincial Health Office, 2015). Based on data from the Probolinggo Regency Health Office, Probolinggo Regency (2020), the incidence of pregnant women suffering from hypertension has increased yearly from 2017 to 2020, namely 34.3%, 36.2%, 38.1%, and 39.6%. One of the hospitals in Probolinggo Regency where the incidence of pregnant women suffering from hypertension in 2021 is quite high is in the working area of the Tongas Hospital, namely 25% (152 pregnant women).

Hypertension in pregnancy is a clinical symptom for which the exact cause is unknown. Still, several factors can influence the onset of this disease, namely primigravida, hyperplacenta of hydatidiform mole, twin pregnancies, diabetes mellitus, extreme age, family history of preeclampsia/eclampsia, kidney disease, and pre-eclampsia hypertension. pregnancy, and obesity (Ovelia et al., 2023). Complications of hypertension cause various health problems, such as kidney damage, heart attack, stroke, and Alzheimer's (Lestari et al., 2023). This can also cause excessive anxiety in patients and affect their health (Afandi et al., 2021). This anxiety can also affect families directly accompanying them (Putri et al., 2022). So that this can also affect and impact the quality of service in hospitals. (Princess et al., 2021).

Non-pharmacological treatment of hypertension in pregnant women has begun to be widely used to reduce morbidity, including deep breathing relaxation techniques. Breathing exercises can reduce stress hormones. Physiologically, the blood pressure of pregnant women tends to rise at gestational age in the third trimester. This condition also occurs due to the effects of pregnancy hormones which retain fluid and interfere with blood flow back to the heart, so blood pressure needs to be increased so that blood needs are met, and blood is forced to pass through the narrowed vessels. narrower than normal and causes an increase in blood pressure (Asramila et al., 2018).

Deep breathing relaxation is a form of midwifery care, which in this case, teaches the mother how to do deep breathing, slow breathing, and how exhale slowly. Besides that, it can reduce pain intensity, increase lung ventilation, and increase blood oxygenation. Deep breathing relaxation therapy can increase oxygen saturation, improve oxygenation in the blood, and create a relaxed state in the body (Asramila et al., 2018). Relaxation therapy is needed in hypertensive patients to relax blood vessels (Astuti et al., 2022), causes vasodilation and causing blood pressure to return to normal (Kurdi et al., 2021).

Based on the background above, the authors are interested in researching the effect of breathing relaxation techniques on changes in blood pressure of pre-eclampsia pregnant women at the Obstetrics and Gynecology Polyclinic at Tongas Hospital, Probolinggo Regency.

## METHOD

This study used a one-group pre-post test design (pre-experimental), a research method that uncovers cause-and-effect relationships by involving one group of subjects. In this method, the subject group is observed before the intervention is carried out, then observed again after the intervention. The population in this study were all pregnant women with pre-eclampsia in the Obstetrics and Gynecology Room of the Tongas Hospital, Probolinggo Regency, in May, with as many as 30 people. According to Nursalam (2017), the sample size's determinants are as many as 30 people, with the sampling technique using Total Sampling, i.e., everything in the population. Data collection using a checklist and carried out statistical tests a "Paired T-Test" with significance  $\leq 0.05$ .

## RESULT

### Characteristics of Respondents

Table 1. Characteristics of Respondents based on Age, Education, and Occupation (n=30)

Variables	Frequency	Percentage
Age (years)		
<20	12	40.0
21-35	14	46.7
>36	4	13.3
Education		
Elementary	13	43.3
Junior high school	11	36.7
Senior high school	6	20.0
University	0	0
Occupation		
Housewife	21	70.0
Farmer	7	23.3
Self-employed	2	6.7

Table 1 shows that the most significant percentage of respondents is mostly aged 21-35 years, namely several 14 respondents (46.7%). The largest percentage of respondents is in elementary education, with 13 people (43.3%). The most significant percentage of respondents are housewives, with 21 respondents (70%).

### Blood Pressure of Pre-Eclampsia Pregnant Women Before and After Giving Breathing Relaxation Techniques

Table 2. Relationship Between Weaning Age and The Nutritional Status of 2-Year-Old Toddlers

Blood Pressure	Before Breathing Relaxation Techniques	After Breathing Relaxation Techniques
	n (%)	n (%)
Normal	1 (3.3)	4 (13.3)
Mild Hypertension	9 (30.0)	19 (63.3)
Moderate Hypertension	15 (50.0)	7 (23.3)
Severe Hypertension	5 (16.7)	0 (0)

Based on Table 2 shows that most of the blood pressure before giving the breathing relaxation technique experienced moderate hypertension in the amount of 15 respondents (50%). After administering breathing relaxation techniques, most of the blood pressure experienced mild hypertension in 19 respondents (63.3%).

## The Influence of Breathing Relaxation Techniques on Changes in Blood Pressure in Pre-Eclampsia Pregnant Women

Table 3. Cross-tabulation of the Effect of Breathing Relaxation Techniques on Blood Pressure Change among Pregnant Women with Pre-Eclampsia

Before	After								Total		p-value
	Normal		Mild hypertension		Moderate hypertension		Severe hypertension				
	n	%	n	%	n	%	n	%	n	%	
Normal	0	0	1	3.3	0	0	0	0	1	3.3	0,000
Mild Hypertension	4	13.3	5	16.7	0	0	0	0	9	30	
Moderate Hypertension	0	0	12	40	3	10	0	0	15	50	
Severe Hypertension	0	0	1	3.3	4	13.3	0	0	5	16.7	
Total	4	13.3	19	63.3	7	23.3	0	0	30	100	

From Table 3 above, of the 30 respondents, most blood pressure pregnant women, before being given a breathing relaxation technique, experienced moderate blood pressure, amounting to 15 respondents (50%). In comparison, the blood pressure of pregnant women after a breathing relaxation technique was given had hypertension, a mild number of 19 respondents (63.3%). Based on the analysis results. From paired t-test analysis, obtained  $p\text{-value}=0.000 < 0.05$ , there is an effect of breathing relaxation techniques on changes in blood pressure for pre-eclampsia pregnant women at the Obstetrics and Gynecology Polyclinic at Tongas Hospital, Probolinggo Regency in 2022.

## DISCUSSION

### Identifying Changes in Blood Pressure of Pre-Eclampsia Pregnant Women Before Giving Breathing Relaxation Techniques

Most of the blood pressure which gave the breathing relaxation technique experienced moderate hypertension in 15 respondents (50%). Deep breathing relaxation is a form of midwifery care, which in this case, teaches the mother how to do deep breathing, slow breathing, and how to exhale slowly. Besides that, it can reduce pain intensity, increase lung ventilation, and increase blood oxygenation. Deep breathing relaxation therapy can increase oxygen saturation, improve oxygenation in the blood, and create a relaxed state in the body (Asramila et al., 2018). According to the researchers' assumption that pregnant women, especially first pregnancies who are going give birth, experience anxiety and even stress because the emotional condition of pregnant women who are unstable during labor is in the form of a feeling of tension in the muscles and fatigue, especially in the muscles of the chest, neck and back, anxiety and disturbances. sleep and stomach complaints. This emotional lability can also be shown by crying for no reason and sometimes laughing.

## Identifying Changes in Blood Pressure of Pre-Eclampsia Pregnant Women after Giving Breathing Relaxation Techniques

Most of the blood pressure after giving the breathing relaxation technique experienced mild hypertension, with a total of 19 respondents (63.3%). Physiologically, the blood pressure of pregnant women tends to rise at gestational age in the third trimester. This condition also occurs due to the effects of pregnancy hormones which retain fluid and interfere with blood flow back to the heart, so blood pressure needs to be increased so that blood needs are met, and blood is forced to pass through the narrowed vessels. narrower than normal and causes an increase in blood pressure (Asramila et al., 2018). The use of more than one type of drug and long-term use of drugs will increase the risk of drug-related problems, where unwanted conditions are experienced by patients who are involved and are caused or suspected to involve medical therapy given to patients, which can actually or potentially affect patient conditions such as non-compliance, drug interactions, allergies to prescribed drugs. In addition, long-term treatment may cause side effects of drugs that cause organ damage.

## Analyzing the Effect of Breathing Relaxation Techniques on Changes in Blood Pressure in Pre-Eclampsia Pregnant Women

It can be seen that of the 30 respondents, the majority of blood pressure in pregnant women, before being given a breathing relaxation technique, experienced moderate blood pressure, amounting to 15 respondents (50%). In contrast, the blood pressure of pregnant women after a breathing relaxation technique was given had hypertension. the mild number of .19 respondents (63.3%). From paired t-test analysis, obtained  $p\text{-value}=0.000 < 0.05$ , there is an effect of breathing relaxation techniques on changes in blood pressure for pre-eclampsia pregnant women at the Obstetrics and Gynecology Polyclinic at Tongas Hospital, Probolinggo Regency in 2022.

Eclampsia is hypertension that occurs in pregnant women with the clinical criteria of preeclampsia accompanied by tonic-clonic seizures followed by coma. Hypertension in pregnancy is (5-15%) complicating pregnancy and is one of the three highest causes of mortality and morbidity. In cases of pregnancy with hypertension, preeclampsia syndrome, either isolated or overlapping with chronic hypertension, is the most difficult case. Non-pharmacological treatment of hypertension in pregnant women has begun to be widely used to reduce morbidity, including deep breathing relaxation techniques. Breathing exercises can reduce stress hormones (Asramila et al., 2018).

Preeclampsia is characterized by increased blood pressure after 20 (twenty) weeks of gestation, accompanied by proteinuria and generalized edema. Symptoms of preeclampsia can occur in pregnant women, during childbirth, and during the puerperium, characterized by hypertension, edema, and increased proteinuria (Komariah et al., 2023). According to the researchers' assumption that this study uses non-pharmacological management of deep breathing relaxation therapy to reduce blood pressure in pregnant women with hypertension because deep breathing relaxation therapy can be done independently, is relatively easy to do compared to other non-pharmacological therapies, does not require a long time for therapy, and can reduce the adverse effects of pharmacological therapy for pregnant women with hypertension.

## CONCLUSION

From the research results and discussion of the above, it can be concluded that breathing relaxation techniques influence changes in blood pressure in pregnant women with pre-eclampsia at the Obstetrics and Gynecology Polyclinic at Tongas Hospital, Probolinggo Regency.

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## CONFLICT OF INTEREST

There is no conflict of interest in this article.

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