



Effect of motivational interviews on blood pressure in women with postpartum hypertension: a quasi-experimental study in Gorontalo, Indonesia

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ABSTRACT

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This study aimed to assess the effectiveness of Motivational Interviewing (MI) in reducing blood pressure among postpartum women diagnosed with hypertension at Sitti Khadijah Hospital. A quasi-experimental design incorporating pre-test and post-test measurements with a control group was employed, involving 30 postpartum hypertensive mothers selected through total sampling. Participants were divided into two groups: an intervention group (n=15) receiving MI and a control group (n=15). Data analysis was conducted using the Wilcoxon and Mann-Whitney tests. In the intervention group, mean systolic blood pressure decreased by 25.33 mmHg and diastolic by 14.67 mmHg ($p = 0.000$). Meanwhile, the control group showed a relatively smaller reduction, with systolic pressure declining by 8.67 mmHg ($p = 0.000$) and diastolic by 5.33 mmHg ($p = 0.005$). The Mann-Whitney test indicated a significant difference in blood pressure reduction between the two groups ($p < 0.05$). The MI intervention was found to be effective in lowering both systolic and diastolic blood pressure in postpartum mothers with hypertension by increasing motivation, enhancing medication compliance, and promoting healthier lifestyle behaviors. Accordingly, this approach can be employed as a non-pharmacological intervention in obstetric care.

INTRODUCTION

Postpartum hypertension is an important maternal health concern because it can cause dangerous complications, both for the mother and the baby. The postpartum period extends from childbirth to six weeks (42 days) after delivery. In this vulnerable period, the mother needs special treatment considering the potential for physical and psychological disorders, such as postpartum hemorrhage and puerperalis sepsis. Postpartum hypertension is recognized through an increase in blood pressure that exceeds the threshold of 140/90 mmHg. If not managed properly, this condition can result in various deadly complications, including damage to kidney function, heavy bleeding, and maternal death¹.



Globally, the World Health Organization (WHO) estimates that around 1.28 billion adults aged 30-70 years have hypertension. This condition makes hypertension one of the main factors causing maternal death, both during pregnancy and after childbirth. In Indonesia, the prevalence of hypertension is also relatively high. Basic Health Research (Riskesdas) data in 2018 recorded that the prevalence of hypertension in the population aged >18 years reached 34.1% or estimated at 63,309,620 cases, with the number of deaths reaching 427,218 cases. Hypertension is most commonly found in the productive and adult age groups. Based on diagnostic and treatment behavior data, of the total prevalence, as many as 13.3% of patients diagnosed with hypertension do not take medication and 32.3% do not regularly take medication. This shows the low awareness and compliance of the community in managing the hypertension they suffer from².

At the regional level, the Gorontalo Provincial Health Office in 2016 reported as many as 7,116 cases of hypertension in the province. Gorontalo Regency reported the highest number of cases, namely 2,258 people, followed by Gorontalo City in second place with 1,349 cases. The problem of hypertension in Gorontalo is not only experienced by the elderly population, but also begins to spread to the productive age group. The high incidence of hypertension in this region is triggered by various risk factors, including unbalanced food consumption patterns, lack of physical activity, high levels of emotional stress, and low awareness to undergo periodic blood pressure checks. Specifically at the research site, based on preliminary data from Sitti Khadijah Hospital, 68 cases of postpartum mothers who experienced hypertension were found in the last six months. The high number confirms the urgency of implementing a more intensive and comprehensive treatment in postpartum health services³.

Hypertension management involves more than pharmacological treatment alone.. It is necessary to address some of the psychosocial factors that will help patients stick to their prescribed medications and make positive changes in how they live. Motivational interviewing (MI) is another non-pharmacological approach that has potential. Motivational interviewing is a client-centered counseling approach that focuses on developing motivation and awareness in individuals to help them change their behavior on their own and sustain the change. In MI, clients are assisted in identifying internal conflict and ambivalence regarding the decision to change, and also finding motivation within themselves to make healthy choices⁴.

Various previous studies have confirmed the effectiveness of MI in treating patients with chronic diseases. Ridho (2025) stated that the MI approach was effective in reducing systolic and diastolic blood pressure and increasing adherence to a healthy lifestyle in hypertensive patients⁵. Abdulloh (2025) reported that MI is able to improve blood pressure control and blood glucose levels in patients who have hypertension and diabetes comorbidities⁶. Meanwhile, Smith et al. (2022) emphasized that MI is able to significantly increase medication adherence in people with cardiovascular disease. In postpartum mothers, the MI approach has great potential because it can provide psychological support, relieve emotional tension, and strengthen adherence to postpartum blood pressure control management⁷.

There is, however, little research examining whether motivational interviewing is effective in treating hypertension among women who have recently given birth (postpartum). The postpartum period is an important time for treating hypertension because it will help avoid potential long-term cardiovascular complications. Also, the effectiveness of motivational interviewing must be studied within the framework of primary healthcare settings and hospitals in Indonesia to provide relevant data that may be used to develop practical applications for motivational interviewing in the national obstetric services system.

Based on the identified research gap, the researcher intends to conduct a study to analyze the effectiveness of Motivational Interviewing in lowering blood pressure in postpartum mothers who experience hypertension at Sitti Khadijah Hospital.

METHODS

This quantitative study employed a quasi-experimental design using a pretest-posttest control group approach. This design was used to measure and compare changes in systolic and diastolic blood pressure in the treatment group before and after the intervention, as well as compare it with the control group. The study was conducted at Sitti Khadijah Gorontalo Hospital from May to September 2024.

The study population included all postpartum mothers with hypertension aged 20–40 years and were recorded at the hospital for the last six months, namely 30 people. Total sampling was employed, so that all members of the population who met the inclusion criteria were designated as research samples ($N = 30$). The sample was divided equally into two groups: 15 people were included in the intervention group who received three sessions of Motivational Interviewing (MI) counseling in addition to hospital standard care, and 15 people were included in the control group who received only standard care according to hospital operating procedures without MI.

Blood pressure was measured using a digital sphygmomanometer that had gone through a calibration process, covering three main stages. The first stage was a pretest, which was the measurement of systolic and diastolic blood pressure in all respondents from both groups before the intervention began. The second stage was the implementation of the intervention, where the intervention group underwent three individual Motivational Interviewing (MI) sessions aimed at exploring internal motivation, reducing ambivalence, managing emotional stress, and developing personal strategies to improve medication adherence and the implementation of a healthy lifestyle; meanwhile, the control group only received standard care education from health facilities. The third stage was posttest, which was the re-measurement of systolic and diastolic blood pressure in both groups after the entire series of interventions was completed to test the effects of the treatment that had been given.

The collected quantitative data were processed using computerized methods through univariate and bivariate analysis. Univariate analysis was used to describe the characteristics of blood pressure before and after the intervention in each group, which were presented as means, standard deviations (SD), and minimum and maximum values. The bivariate analysis was carried out using a paired test (Wilcoxon Signed-Ranks Test) to examine the difference in average blood pressure before and after intervention in each group, as well as a non-paired test (Mann-Whitney U Test) to examine the difference in blood pressure changes (posttest) between the intervention group and the control group at a significance level of < 0.05 .

RESULT AND DISCUSSION

Table 1. Systolic blood pressure before and after intervention in the intervention group

Blood pressure	Mean (SD)	Mean difference	Min-max	p-value
Pretest	152.00 (10.823)	25.33	140-170	0,000
Posttest	126.67 (6.172)		120-140	

As shown in Table 1, the average systolic blood pressure in the intervention group decreased significantly, from 152.00 mmHg to 126.67 mmHg with an average difference of 25.33 mmHg. This reduction was reflected not only in the mean value, but also in the shift in the range of values (minimum–maximum) to a lower direction and the reduction of standard deviation. This showed that the intervention provided was not only effective in lowering blood pressure, but also resulted in a more uniform response among the participants.

The results of the Wilcoxon test showed a p value of 0.000 ($p < 0.05$), which confirmed that the decrease in systolic blood pressure was statistically significant. Thus, it can be concluded that the intervention applied had a significant impact on the reduction of systolic blood pressure in the intervention group.

Table 2. Diastolic blood pressure before and after intervention in the intervention group

Blood pressure	Mean (SD)	Mean difference	Min-max	p-value
Pretest	100.00 (6.547)	14.67	90-100	0,000
Posttest	85.33 (6.399)		80-100	

As shown in Table 2 which presents diastolic blood pressure data, the intervention group showed a similar pattern of decrease, from 100.00 mmHg to 85.33 mmHg with an average difference of 14.67 mmHg. This decrease was significant and was reinforced by changes in minimum, maximum, and standard deviation values that indicated more stable conditions after the intervention.

The results of the Wilcoxon test with a value of $p = 0.000$ ($p < 0.05$) indicate that this change is statistically significant. These findings prove that the intervention not only affects systolic pressure, but is also effective in lowering diastolic pressure.

Table 3. Systolic blood pressure before and after intervention in the control group

Blood pressure	Mean (SD)	Mean difference	Min-max	p-value
Pretest	156.67 (14.960)	8.67	140-180	0,000
Posttest	148.00 (15.213)		130-170	

Based on the data in Table 3, the control group experienced a decrease in mean systolic blood pressure by 8.67 mmHg, from 156.67 mmHg (SD = 14.96) to 148.00 mmHg (SD = 15.21). Although the results of the Wilcoxon test showed a statistically significant decrease ($p = 0.000$), the magnitude of the decrease was relatively small when compared to the intervention group. Furthermore, the posttest standard deviation was still relatively high (SD = 15.21), which indicates a wide variation between respondents.

Table 4. Diastolic blood pressure before and after intervention in the control group

Blood pressure	Mean (SD)	Mean difference	Min-max	p-value
Pretest	100.00 (9.258)	5.33	80-110	0,005
Posttest	94.67 (7.432)		80-100	

As shown in Table 4, the control group showed a decrease in diastolic blood pressure from 100.00 mmHg to 94.67 mmHg, with an average difference of 5.33 mmHg. This decrease was relatively small when compared to the decrease achieved by the intervention group.

Although the test results showed a significant $p = 0.005$ ($p < 0.05$), this decrease was not very large. This indicates that without intervention, changes in blood pressure tend to be small and can be affected by external factors.

These findings reinforce the conclusion that there are statistically significant differences in systolic and diastolic blood pressure between postpartum mothers who received Motivational Interviewing intervention and mothers who only underwent standard care.

The main findings of this study confirm that the Motivational Interviewing (MI) intervention is effective in lowering systolic and diastolic blood pressure in postpartum mothers with hypertension at Sitti Khadijah Gorontalo Hospital. The decrease in blood pressure in the intervention group (systolic: 25.33 mmHg; diastolic: 14.67 mmHg) was shown to be much greater than that of the control group (systolic: 8.67 mmHg; diastolic: 5.33 mmHg). The magnitude of this decrease has important clinical relevance because it is able to direct the blood pressure of respondents from the hypertension category close to the normotension range⁸.

The effectiveness of MI in the postpartum maternal population can be understood through interrelated psychological and physiological mechanisms. The postpartum period is a transitional period that is susceptible to emotional stress, physical fatigue, hormonal changes, and the high demands of a new role as a mother. These postpartum anxiety and stress conditions can trigger the overactivation of the sympathetic nervous system and the release of the cortisol and catecholamines, which have the potential to increase vascular vasoconstriction and blood pressure⁹. With a client-focused MI approach,

postpartum mothers are helped to resolve ambivalence, manage psychological tension, and develop adaptive coping mechanisms. This decrease in psychosocial stress levels contributes to a decrease in sympathetic nerve activity, resulting in blood vessels becoming more relaxed and cardiovascular stability restored¹⁰.

From a theoretical perspective, the findings of this study strengthen the application of Bandura's Self-Efficacy Theory. The theory states that an individual's belief in their ability to perform an action (self-efficacy) is the main driving factor for sustainable health behavior change¹¹. The provision of empathetic and collaborative MI counseling also increases the mother's self-efficacy in identifying personal barriers and formulating the right strategy. This increase in self-efficacy is reflected in real changes in health behavior, including adherence to taking antihypertensive drugs, awareness of carrying out a low-salt diet, restriction of strenuous physical activity, and readiness to carry out routine health control¹².

The decrease in blood pressure in the intervention group is related to the mechanism of action of MI that is designed to affect the psychological and physiological aspects of the individual. In the context of postpartum motherhood, the early postpartum period is often a stressful period, both physically and emotionally. MI helps the mother to better understand her condition, identify the stressors she is experiencing, and find internal motivation to make healthier behavior changes¹³. This approach plays a role in relieving mental tension, anxiety, and negative emotional responses that can activate the sympathetic nervous system. Overactivation of the sympathetic nervous system is known to increase blood pressure¹⁴.

Although the control group also showed a statistically significant decrease in blood pressure, the magnitude of the decrease was relatively small and the variability of the data was still high. The limitations of the decline in the control group were thought to be related to the standard pharmacological therapy received as well as the body's natural recovery process (involution) postpartum¹⁵. However, without MI support to strengthen internal motivation and stress management, the response to blood pressure reduction became less optimal and tended to vary. Thus, Motivational Interviewing has been shown to provide strong added value as a non-pharmacological complementary intervention in obstetric care for the management of postpartum hypertension¹⁶.

These findings are in line with Khadoura's research which reported that MI was able to improve patient adherence to treatment while contributing to a decrease in systolic blood pressure in hypertensive patients¹⁷. A meta-analysis by Huang also confirmed that MI provides a clinically meaningful systolic reduction compared to minimal or no counseling intervention¹³. The study by Putri suggested that psychosocial interventions such as MI can decrease sympathetic nerve activity which plays a role in increased blood pressure, resulting in more stable cardiovascular parameters, including diastolic blood pressure¹⁸.

Overall, this shows that MI is not only statistically effective, but also has a significant physiological impact. During the postpartum periods, mothers often experience increased stress and sympathetic nerve activity due to fatigue, hormonal adjustments, and postpartum emotional demands¹⁹. Through MI, mothers become better able to manage stress, increase self-awareness, and strengthen intrinsic motivation in maintaining health. This condition encourages the body's response in the form of reducing nervous system tension, so that blood pressure can return to stability. The results of this study are in line with Bandura's Self-Efficacy Theory which explains that a person's belief in his or her ability to perform certain actions greatly determines the success of health behavior changes. Individuals with high self-efficacy are better able to manage stress, adhere to medication, and make healthy lifestyle changes²⁰.

These findings indicate that MI is able to assist postpartum mothers in recognizing their health conditions, managing stress, and improving adherence to medication and therapy recommendations. As the mother's ability to understand and regulate health behaviors increases, blood pressure becomes more stable during the postpartum period. Thus, MI can be seen as an effective and relevant counseling approach in the management of postpartum hypertension. This approach not only provides education, but also builds internal motivation and psychological support that directly contributes to the improvement of the mother's cardiovascular condition.

Table 5. Comparison of posttest blood pressure between groups

Variable	Group	Mean (SD)	<i>p-value</i>
Systolic Blood Pressure	Intervention	126.67 (6.17)	0.000
	Controls	148.00 (15.21)	
Diastolic Blood Pressure	Intervention	83.33 (6.40)	0.003
	Controls	94.67 (7.43)	

Based on Table 5, the average post-systolic blood pressure in the intervention group was recorded at 126.67 mmHg (SD = 6.17), which was much lower than the control group with an average of 148.00 mmHg (SD = 15.21) and a *p* value = 0.000 ($p < 0.05$). The same pattern was seen in diastolic blood pressure, where the intervention group had an average of 85.33 mmHg (SD = 6.40), while the control group reached 94.67 mmHg (SD = 7.43) with a *p* value = 0.003 ($p < 0.05$).

CONCLUSION

Based on the findings and analysis that have been presented, the Motivational Interviewing (MI) intervention has been shown to have a significant effect in reducing systolic and diastolic blood pressure in postpartum mothers who experience hypertension when compared to conventional treatment. By strengthening intrinsic motivation and self-efficacy, MI is able to improve compliance and stress management, making it suitable as one of the applicable non-pharmacological therapies in postpartum obstetrics services ($p < 0.05$).

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CONFLICT OF INTEREST

The author states that there is no conflict of interest associated with this study.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors utilized Gemini (Google) to help improve the language and grammar of the manuscript. All content generated or suggested by the tool was thoroughly reviewed and verified by the authors to ensure its accuracy and integrity.

AUTHOR CONTRIBUTIONS

PAWB conceptualized and designed the study, carried out data collection, and prepared the initial draft of the manuscript. ELR contributed to the methodology design and performed the data and statistical analysis. FZ critically revised the manuscript for significant intellectual content and assisted with the literature review. LS supervised the overall research, verified the findings, and gave final approval for the manuscript. All authors have reviewed and consented to the published version of the manuscript.

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