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EFFECTIVENESS OF A CHAYOTE-BASED DIETARY INTERVENTION WITHIN COMPREHENSIVE MIDWIFERY CARE FOR CONTROLLING RISK FACTORS IN HIGH-RISK PREGNANCY

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ABSTRACT

High-risk pregnancy associated with conditions such as hypertension, obesity, and a history of abortion significantly increases the risk of maternal and perinatal complications. This study aimed to analyze the effectiveness of comprehensive midwifery care combined with non-pharmacological interventions in improving maternal condition and fetal outcomes. A descriptive-analytic approach was employed based on antenatal care monitoring, intervention implementation, and clinical evaluation. The interventions included dietary modification, consumption of chayote as a nutritional therapy, regular blood pressure monitoring, light physical activity (lifestyle modification), and continuous health education. The results demonstrated significant improvements in maternal condition, particularly in blood pressure reduction, control of obesity-related risk factors, and decreased subjective complaints. Fetal outcomes remained stable, with appropriate growth for gestational age and no significant complications. In conclusion, comprehensive midwifery care integrated with non-pharmacological interventions is effective in optimizing maternal and fetal health in high-risk pregnancies with complex comorbidities.

Keywords: High-risk pregnancy; Hypertension; Obesity; History of abortion; Non-pharmacological intervention

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INTRODUCTION

Pregnancy is generally considered a normal physiological process; however, under certain conditions, it can develop into a high-risk situation. Several maternal and obstetric factors-such as grand multiparity, a history of abortion, chronic hypertension, obesity, and advanced maternal age (over 35 years)-are known to substantially increase the likelihood of adverse outcomes for both mother and fetus(1). These risks may lead to serious complications, including preeclampsia, hemorrhage, preterm birth, intrauterine growth restriction (IUGR), and even perinatal mortality, which continue to be major global health concerns(2).

In Indonesia, particularly in regions such as East Java and Ngawi Regency, the prevalence of pregnancies with these risk factors remains relatively high. This reflects ongoing challenges in ensuring optimal maternal health services and highlights the need for more effective and responsive care strategies(3). Strengthening antenatal care through early risk identification, timely intervention, and continuous monitoring is therefore essential to improve pregnancy outcomes(4).

To address these challenges, the Indonesian government has implemented several programs, including the Birth Planning and Complication Prevention Program (P4K), the National Health Insurance (JKN), maternal health education classes, and community-based initiatives such as

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the Ojek Ibu Hamil. These efforts emphasize the importance of accessible, continuous, and high-quality maternal healthcare services[5].

Comprehensive midwifery care-covering systematic assessment, planning, implementation, and evaluation-plays a central role in reducing complications and promoting safe pregnancies[6]. In addition, non-pharmacological approaches, particularly dietary and lifestyle modifications, are increasingly recognized as effective strategies for managing conditions such as hypertension and obesity during pregnancy.

One such approach is the use of chayote (Sechium edule) as a nutritional intervention, which has potential benefits in supporting blood pressure control and overall maternal health[7].

Therefore, integrating evidence-based nutritional interventions, such as chayote consumption, into comprehensive midwifery care may offer a practical and effective strategy to optimize maternal and fetal outcomes, especially among women with high-risk pregnancies.

METHODS

This case report employed a descriptive design. The subject was a pregnant woman classified as grandemultigravida with a short interpregnancy interval, presenting at Puskesmas Ngrambe, Ngawi. The case criteria included a fifth pregnancy with a history of two abortions in the third and fourth pregnancies within less than 24 months. The mother was in stable condition, cooperative, and agreed to participate by signing an informed consent form.

Data collection was conducted at Puskesmas Ngrambe between February and March 2026. The methods included interviews, direct observation, physical examination, supporting investigations, and documentation review. Subjective data comprised pregnancy history (≥5 pregnancies, grandemultigravida) and recurrent abortion. Objective data were obtained from clinical findings such as blood pressure ≥140/90 mmHg indicating chronic hypertension, and anthropometric measurements showing a body mass index (BMI) ≥30 kg/m^2 consistent with obesity.

Data analysis integrated subjective and objective findings to establish a midwifery diagnosis of high-risk pregnancy due to grandemultigravida, chronic hypertension, obesity, and recurrent abortion. This condition requires intensive monitoring to prevent maternal and fetal complications. Ethical considerations included written informed consent, respect for persons, non-maleficence (no harm to subjects), anonymity (confidentiality of identity), Justice (fair treatment of participants).

RESULTS

This case report illustrates the implementation of comprehensive midwifery care for a grandemultigravida mother with a history of recurrent abortion, chronic hypertension, obesity grade II, and previous cesarean section due to preeclampsia, managed at Puskesmas Ngrambe, Ngawi. Monitoring was conducted through four antenatal visits.

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Table 1. Maternal characteristics

Variable	Findings
Initials	Mrs. S
Age	36 years
Gravidity/parity	G5P20022
Gestational age	17 weeks
Education	Elementary school
Occupation	Housewife
History of hypertension	Yes (±8 years)
History of abortion	2 times
Previous delivery	Cesarean section
History of preeclampsia	Yes
Nutrition status	Obesity grade II

Table 2. Baseline clinical and laboratotry findings

Parameter	Result
Blood pressure	166/108 mmHg
Mean arterial pressure (MAP)	127,3 mmHg
Pulse	88 beats/min
Respiration rate	22 breaths/min
Temperature	36,2°C
Hemoglobin	11,6 g/dL
Urine protein	Negative
Random blood glucose	108 mg/dL
Body mass index (BMI)	36,4 kg/m^2
BMI category	Obesity grade II

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Table 3. Maternal progress during intervention

Visit	GA (weeks)	Blood pressure (mmHg)	MAP (mmHg)	Weight (kg)	Symptoms	Clinical notes
1	17	166/108	127,3	83	Dizziness, nocturia. anxiety	Very high risk
2	23	142/87	105,34	80	Reduced dizziness	Intervention initiated
3	24	131/83	99	78	Mild dizziness	Condition improving
4	25	128/74	92	80	No complaints	Stable condition

Table 4. Fetal assessment outcomes

Parameter	Findings
Fetal heart rate	136-144 beats/min
Fetal movement	Active
Estimated fetal weight	1.860 grams (at 25 weeks)
Fetal position	Transverse lie
Fetal condition	Alive, intrauterine

Table 5. Effectiveness of interventions on maternal clinical outcomes

Indicator	Visit 1	Visit 2	Visit 3	Visit 4	Change	Interpretation
Blood pressure (mmHg)	166/108	142/87	131/83	128/74	Decreased significantly	Well controlled
Mean arterial pressure (mmHg)	127,3	105,34	99	92	$\downarrow 35{,}3$ mmHg	Improved hemodynamic status
Body weight (kg)	83	80	78	80	$\downarrow 3-5$ kg	Effective weight management
Body mass index (kg/m^2)	36,4	35,6	34,7	35,6	Decreasing trend	Improved nutritional status

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Dizziness	Present	Reduced	Mild	Resolved	Eliminated	Positive clinical response
Nocturia	Frequent	Reduced	Occasional	Resolved	Eliminated	Improved rest pattern
Anxiety level	High	Moderate	Mild	Stable	Decreased	Improved psychological adaptation
Dietary adherence	Poor	Initiated	Adherent	Consistent	Increased	Successful behavior change
Chayote consumption	None	Initiated	Regular	Consistent	Increased	Intervention compliance achieved
Physical activity (exercise)	None	Initiated	Regular	Regular	Increased	Improved adherence

Table 6. Evaluation of fetal outcomes during intervention

Parameter	Visit 2	Visit 3	Visit 4	Interpretation
Fetal heart rate (beats/min)	136	144	142	Within normal range
Fetal movement	Active	Active	Active	Normal
Estimated fetal weight (grams)	1.395	1.705	1.860	Appropriate for gestational age
Fetal position	Transverse lie	Transverse lie	Transverse lie	No positional change
Fetal condition	Stable	Stable	Stable	No signs of distress

DISCUSSION

This study demonstrates that comprehensive and continuous midwifery care, incorporating non-pharmacological interventions, can significantly improve maternal outcomes in a very high-risk pregnancy. The presence of multiple risk factors, including chronic hypertension, obesity, advanced maternal age, and a history of adverse obstetric outcomes, theoretically increases the likelihood of severe complications such as preeclampsia and impaired uteroplacental perfusion. However, the findings of this study indicate a progressive clinical improvement following structured and sustained interventions.

The substantial reduction in blood pressure, from 166/108 mmHg to 128/74 mmHg, along with a decrease in mean arterial pressure (MAP) of 35.3 mmHg, reflects a marked improvement in maternal hemodynamic stability. From a physiological perspective, dietary modification-

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particularly sodium restriction and increased intake of potassium-rich foods such as chayote (Sechium edule)-may contribute to reduced peripheral vascular resistance and improved fluid-electrolyte balance. These findings suggest that nutritional-based interventions are not merely supportive but may have a therapeutic role in the management of hypertension during pregnancy.

In terms of metabolic outcomes, the observed reduction in maternal body weight and body mass index (BMI) indicates successful lifestyle modification. Maternal obesity is a well-established risk factor for hypertensive disorders in pregnancy, and its improvement likely contributed to the overall stabilization of cardiovascular function.This finding reinforces the importance of weight management as an integral component of antenatal care, particularly in high-risk populations.

Improvements in subjective symptoms, including dizziness and nocturia, further support the effectiveness of the interventions. The resolution of these symptoms suggests improved circulatory function and better overall physiological adaptation. Additionally, the reduction in maternal anxiety highlights the critical role of psychological support in antenatal care. A history of recurrent pregnancy loss is known to increase maternal anxiety, which may adversely affect pregnancy outcomes. Therefore, the integration of emotional support, counseling, and family involvement appears to play a vital role in enhancing maternal psychological well-being.

Behavioral changes observed during the intervention period, such as increased adherence to dietary recommendations, consistent consumption of chayote, and regular physical activity (knee-chest exercise), indicate successful patient engagement and education. These findings underscore that the effectiveness of interventions is strongly influenced by patient compliance and active participation. Thus, a patient-centered and continuous care approach is essential to achieving optimal maternal outcomes.

From the fetal perspective, the findings indicate stable and reassuring conditions throughout the observation period. Fetal heart rate remained within the normal range, fetal movements were active, and estimated fetal weight increased appropriately according to gestational age. This suggests that improvements in maternal condition positively contributed to fetal well-being.

However, the persistence of a transverse fetal lie at 25 weeks of gestation warrants continued monitoring. Although this condition is still considered physiological in the second trimester, it may lead to complications if it persists into later gestation. Maternal positioning exercises, such as the knee-chest position, are expected to facilitate spontaneous correction of fetal position in subsequent weeks.

Overall, this study highlights that structured non-pharmacological interventions, when delivered through continuous and holistic midwifery care, can lead to significant improvements in maternal clinical status, psychological well-being, and fetal outcomes. These findings emphasize the importance of an integrated care approach that addresses physical, nutritional, and psychological aspects in the management of high-risk pregnancies.

CONCLUSION

Comprehensive midwifery care supported by structured non-pharmacological interventions was effective in improving maternal outcomes in a high-risk pregnancy, particularly in reducing blood pressure and enhancing hemodynamic stability. Improvements in nutritional status,

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reduction of clinical symptoms, and better psychological well-being indicate the success of a holistic care approach reinforced by positive behavioral changes. Fetal condition remained stable with appropriate growth for gestational age, although the persistence of transverse lie requires continued monitoring. Overall, an integrated and continuous care approach plays a crucial role in optimizing outcomes in high-risk pregnancies.

The implementation of comprehensive midwifery care should be strengthened by emphasizing education, counseling, and non-pharmacological interventions. Enhancing integrated antenatal care services and conducting further research with larger samples are recommended to strengthen the evidence base.

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