RESEARCH ARTICLE
Article URL: https://ojs.poltekkes-malang.ac.id/index.php/HAJ/index

Midwifery Care For Pregnant Women Obesity And Hypertension : A Case Study

Ririn Indriani[1(CA)], Sri Winarni[2], Dhea Putri Nurul Aini [3], Helena Reka Fatricia[4]
[1,3,4] Midwife Professional Education, Poltekkes kemenkes Malang, Indonesia
[2] Health Promotion Study Program, Poltekkes Kemenkes Malang, Indonesia
Correspondence author's email ([CA]): ririnindrianimiori79@gmail.com

ABSTRACT

Obesity during pregnancy is defined as excessive weight gain exceeding 12–16 kg above the normal range. This condition can trigger metabolic and cardiovascular complications, including hyperglycemia, hypercholesterolemia, and hypertension. Gestational hypertension is characterized by an increase in blood pressure to 140/90 mmHg or higher after 20 weeks of gestation. Such conditions elevate the risk of complications and may potentially lead to mortality for both the mother and the infant. Objective: This study aims to examine the influence of obesity on hypertension in pregnant women and to identify preventive measures to reduce the risk of both conditions during pregnancy. Methods: A case study design was employed, focusing on a 36 year old pregnant woman (G2P1001) at 33–34 weeks of gestation with a single, viable intrauterine pregnancy, complicated by obesity and hypertension. Data were collected through interviews, physical examinations, observations, and documentation. The diagnosis was based on body mass index (BMI) assessment and blood pressure measurements. Interventions included pregnancy monitoring, nutritional counseling for a balanced diet, weight gain management, and health education. Results: The findings indicate a strong association between obesity and hypertension in pregnant women. Conclusion: Obesity influences the occurrence of hypertension in pregnant women

Keywords: Hypertension; pregnant women; pregnancy; obesity.

Copyright © 2026 by authors. This is an open access article under the CC BY-SA License (https://creativecommons.org/licenses/by-sa/4.0/)

INTRODUCTION

Obesity in pregnancy is a growing public health concern and a major risk factor for obstetric complications, including gestational hypertension (GH), gestational diabetes, and adverse neonatal outcomes [1], [2]. Maternal obesity increases blood pressure and metabolic dysfunction through insulin resistance, oxidative stress, and endothelial impairment, elevating the risk of hypertensive disorders of pregnancy (HDP) [3], [4].

Gestational hypertension, defined as blood pressure ≥140/90 mmHg after 20 weeks of gestation, is associated with maternal morbidity, preterm birth, fetal growth restriction, and future chronic

Submitted: 12 February 2026 Reviewed: 18 February 2026 Accepted: 21 October 2026
Doi: https://doi.org/10.31290/haj.v3i3.6276

hypertension [3]. Studies show that higher maternal BMI, particularly obesity class I–III, significantly increases the risk of GH and preeclampsia, with dose-response relationships observed for both pre-pregnancy BMI and other adiposity measures such as waist circumference and visceral fat [5], [6].
In Indonesia, obesity detected in the second trimester has been linked to increased risk of pregnancy-induced hypertension and impaired fetal well-being [7]. Advanced maternal age combined with high BMI further elevates this risk [8]. Mechanistically, high maternal BMI can impair early placental vascular development, predisposing to later hypertensive complications [9].

Although large-scale studies confirm the population-level association between obesity and HDP, there is limited evidence describing the clinical course in individual high-risk cases. This case study of a 36-year-old woman, G2P1001, at 33–34 weeks gestation with obesity and hypertension, provides insight into the interaction of maternal age, obstetric status, and gestational age with obesity-related hypertension. Understanding these individualized dynamics is essential for evidence-based, contextual midwifery care and prevention of disease progression [10].

METHODS

This study used a descriptive case study design aimed to describe in depth the clinical condition of a pregnant woman with obesity and hypertension. Data collection was conducted at the Ngadiluwih Community Health Center (Puskesmas) at 33–34 weeks of gestation, from December 2025 to March 2026. The population in this study was all pregnant women with metabolic and cardiovascular risk factors, particularly obesity and hypertension.

The research sample was a 36-year-old woman with obstetric status G2P1001, singleton live intrauterine pregnancy, gestational age 33–34 weeks, who experienced obesity and hypertension. Sample selection was carried out by purposive sampling, based on the inclusion criteria, namely: Pregnant women aged ≥35 years, singleton live intrauterine pregnancy, second trimester gestational age, having a body mass index (BMI) in the obesity category, experiencing increased blood pressure during pregnancy.

Data collection was conducted through several methods, including interviews, observation, physical examination, and documentation. The data obtained were analyzed descriptively and qualitatively by grouping and analyzing the data from interviews, observations, physical examinations, and documentation.

RESULT

Table 1. Patient Clinical Data

Variable	Result / Information	Category / Interpretation
Subject	36-year-old, female	G2P1001, female
Diet & Activity history	High – calorie diet, low physical activity	Obesity risk factor
Medical History	Mild hypertension prior to pregnancy	Risk factor for HDP
Height	153 cm	-
Pre – pregnancy Weight	85 kg	-
Current Weight	96,1 kg	-
BMI	41 kg/m²	Class I Obesity (WHO ≥30)
MUAC (Mid-Upper Arm Circumference)	31 cm	-
Vital Signs (visit 1)	BP 142/95 mmHg, Pulse 88 bpm, RR 20 x/minute, Temp 36,7°C, MAP 100,6 mmHg	Gestational hypertension
Complains (visit 1)	Occasional leg cramps	-
COC Intervention (visit 1)	Counseling on weight management, balanced nutrition, light physical activity	Complication prevention
Complains (visit 2)	None	Stable condition
COC Intervention (visit 2)	Education on healthy eating, small and frequent meals, increased vegetable & fruit intake, pregnancy classes, routine ANC check-ups	Complication prevention
Complains (visit 3)	None	Stable condition
COC Intervention (visit 3)	IEC: hydration, balanced nutrition, adequate rest, clean environment, awareness of infection signs	Complication prevention
Clinical Conclusion	Obesity + mild hypertension	High risk for maternal & neonatal complications

Maternal obesity results from excessive fat accumulation due to energy intake surpassing needs, hormonal changes, and genetic factors [3]. Obesity increases the risk of gestational hypertension and preeclampsia through mechanisms including insulin resistance, chronic inflammation, and endothelial dysfunction [5], [6].

Vital signs at the first visit included blood pressure 142/95 mmHg, pulse 88 bpm, respiration 20 breaths/min, body temperature 36.7°C, and mean arterial pressure (MAP) 100.6 mmHg, consistent with gestational hypertension [7],[8]. Hypertension likely resulted from increased vascular resistance and blood volume in the third trimester, amplified by obesity-related metabolic changes [9], [10].

The mother's mid-upper arm circumference (MUAC) was 31 cm. Counseling included weight management, balanced nutrition, and safe physical activity, such as prenatal exercise, to prevent obesity-related complications [11]. These interventions are supported by evidence that nutritional and lifestyle interventions reduce the risk of maternal and neonatal complications [12].

During the second visit, the mother reported no complaints. Physical examination and vital signs remained within normal limits. Education focused on healthy eating, increasing fruit and vegetable intake, attending pregnancy classes, and maintaining routine antenatal care. At the third visit, both mother and fetus were clinically stable. IEC (information, education, and communication) emphasized

hydration, balanced nutrition, rest, hygiene, and early medical consultation for any new symptoms. Regular prenatal monitoring and adherence to healthy lifestyle recommendations were reinforced.

Continuity of Care (COC) was conducted in three visits during the third trimester. At the first visit, the mother reported occasional leg cramps. Objective assessment showed she was alert, with a height of 153 cm, pre-pregnancy weight of 85 kg, and current weight of 96.1 kg, resulting in a BMI of 41 kg/m², categorized as Class I obesity [2], [3]. Weight gain of 11 kg exceeded the recommended range for obese pregnant women (5–9 kg) [4].

Overall, these findings highlight the critical role of COC-based midwifery care in managing obese pregnant women. Continuous monitoring, nutritional guidance, and lifestyle counseling are essential to prevent the progression of gestational hypertension and associated complications [13], [14]. The combination of obesity and hypertension in pregnancy, although common, requires targeted clinical attention to optimize maternal and neonatal outcomes [6], [12]. Furthermore, obesity remains an important determinant of hypertension among pregnant women, particularly when accompanied by excessive gestational weight gain [15]. Evidence also suggests that elevated maternal BMI may impair placental vascular development from the first trimester, thereby increasing susceptibility to hypertensive disorders later in pregnancy [16].

DISCUSSION

The case involved a 36-year-old woman, obstetric status G2P1001, with a singleton intrauterine gestation at 33–34 weeks. Interview data indicated a high-calorie diet, low physical activity, and a history of mild hypertension prior to pregnancy. These findings are consistent with evidence that high-calorie intake and low physical activity contribute to maternal obesity [1]

Hypertension categories :

1. Gestational hypertension: gestational age ≥20 weeks, blood pressure ≥140/90 mmHg, urine protein: negative
2. Pre-eclampsia : gestational age ≥20 weeks, blood pressure ≥140/90 mmHg, urine protein: positive
3. Chronic hypertension: gestational age <20 weeks, blood pressure ≥140/90 mmHg, urine protein: may be positive or negative
4. Eclampsia: gestational age ≥20 weeks, blood pressure >170/100 mmHg, urine protein: positive + seizures
5. Superimposed:

Chronic hypertension without proteinuria :

Sudden onset of : proteinuria ≥300 mg/24 hours or protein/creatinine ratio ≥0.3

Signs of superimposed condition : sudden, drastic rise in proteinuria (from +1 to +3); blood pressure becoming uncontrolled despite medication (≥160/110); platelet count dropping <100,000/μL; elevated SGOT and SGPT; HELLP syndrome.

Recent evidence further indicates that overweight and obesity during pregnancy are associated with various adverse maternal and neonatal outcomes, including hypertensive disorders, cesarean delivery, and neonatal complications, particularly in the third trimester [17]. In Mrs. F's case, a BMI of fourty one kg/m² indicates class I obesity, which aligns with evidence that obesity increases insulin resistance, chronic inflammation, and cardiovascular maladaptation, thus increasing the risk of gestational hypertension, preeclampsia, and labor complications [1], [2].

Mrs. F's subjective complaint of leg cramps is also common in obese pregnant women, due to a combination of increased weight, uterine pressure on lower extremity blood vessels, and impaired peripheral circulation [3]. These findings emphasize the importance of monitoring musculoskeletal and circulatory symptoms in obese mothers, who also frequently experience back pain, shortness of breath, and fatigue [4].

A recent meta-analysis demonstrated that multiple adiposity indicators, including BMI, waist circumference, and body fat percentage, are significantly associated with hypertensive disorders of pregnancy [18]. Similarly, a dose–response meta-analysis reported that increasing pre-pregnancy BMI proportionally elevates the risk of gestational hypertension and preeclampsia [19]. Obesity accelerates vascular maladaptation during this period, so blood pressure tends to rise toward the end of pregnancy [6]. Maternal age, more than thirty years, as in Mrs. F, is a factor. F, strengthens the risk of gestational hypertension, suggesting that obesity is an independent factor despite the presence of other risk factors [7].

The Continuity of Care (COC) approach implemented for Mrs. F included education on a balanced diet, weight control, light physical activity, and regular blood pressure monitoring. These non-pharmacological interventions are consistent with evidence that prenatal exercise can reduce the risk of metabolic complications and hypertension in obese mothers [8]. This case study emphasizes the importance of an individualized approach in midwifery practice, as most of the large literature is cohort-based and lacks detail on individual clinical characteristics [9].

While Mrs. F's findings align with the literature, the limitations of this study are clear: (1) the case study is observational and only features a single individual, thus limiting generalizability; (2) there was no longitudinal measurement of other metabolic variables such as insulin resistance or lipid profile; (3) the COC intervention was implemented by a single author, thus potentially biased in subjective evaluations; and (4) nutrition and physical activity data were obtained from interviews, which are susceptible to recall bias.

These findings are consistent with previous case–control studies showing that maternal obesity and hypertensive disorders contribute to unfavorable pregnancy outcomes and therefore require early identification and continuous antenatal surveillance [20]. Clinical practice can be improved through close monitoring, multidisciplinary collaboration, and family education to prevent maternal and neonatal complications.

REFERENCES

[1] W. A. A. Alannaz, A. Dawod, K. Gouda, F. A. A. El-soud, and M. R. Alanazi, "Obesity Prevalence and Its Impact on Maternal and Neonatal Outcomes among Pregnant Women : A Retrospective Cross-Sectional Study Design," pp. 1236–1250, 2024.

[2] K. Barbouni, V. Jotautis, D. Metallinou, A. Diamanti, and E. Orovou, "When Weight Matters : How Obesity Impacts Reproductive Health and Pregnancy - A Systematic Review," *Curr. Obes. Rep.*, 2025, doi: 10.1007/s13679-025-00629-9.

[3] B. M. M. Bicocca, Matthew J. MD; Mendez-Figueroa, Hector MD; Chauhan, Suneet P. MD, Hon DSc; Sibai, "Maternal Obesity and the Risk of Early-Onset and Late-Onset Hypertensive Disorders of Pregnancy," *Obstet. Gynecol.*, vol. 136(1), pp. 118–127, 2020, doi: 10.1097/AOG.0000000000003901.

[4] S. G. Bromfield, Q. Ma, A. Devries, T. Inglis, and A. S. Gordon, "The association between hypertensive disorders during pregnancy and maternal and neonatal outcomes : a retrospective claims analysis," *BMC Pregnancy Childbirth*, pp. 1–10, 2023, doi: 10.1186/s12884-023-05818-9.

[5] J. Chen, "Interaction Between Maternal Obesity and Metabolic Dysfunction in Gestational Hypertension and Preeclampsia : A Prospective Birth Cohort Study," pp. 1–10, 2026, doi: 10.1111/jch.70205.

[6] V. W. Gaillard, Romya, Steegers, Eric APd; Hofman, Albertb; Jaddoe, "Associations of maternal obesity with blood pressure and the risks of gestational hypertensive disorders. The Generation R Study," *J. Hypertens.*, vol. 29(5), pp. 937–944, 2021, doi: https://doi.org/10.1097/HJH.0b013e328345500c.

[7] R. Horgan, Y. Hage Diab, M. Costantine, G. Saade, and B. Sibai, "Diagnosis of hypertensive disorders in pregnancy," *Am. J. Obstet. Gynecol. MFM*, vol. 7, no. 7, Jul. 2025, doi: 10.1016/j.ajogmf.2025.101693.

[8] A. Kerrigan, H. Cheyne, E. Duncan, and C. Kingdon, "Being pregnant and obese: A qualitative study of the experiences of pregnancy and birth of women who are obese," *Midwifery*, vol. 141, p. 104257, 2025, doi: https://doi.org/10.1016/j.midw.2024.104257.

[9] J. Kuang, S. Sun, and F. Ke, "The effects of exercise intervention on complications and pregnancy outcomes in pregnant women with overweight or obesity: A systematic review and meta-analysis," *Medicine (Baltimore).*, vol. 102, no. 40, 2023, [Online]. Available: https://journals.lww.com/md-journal/fulltext/2023/10060/the_effects_of_exercise_intervention_on.16.aspx

[10] S. Manurung and I. Elina, "Obesity and Hypertension in Pregnant Women and Its Impact on Fetal Welfare," vol. XXVII, pp. 347–354, 2025.

[11] N. Partiwi, "Advances in Healthcare Research Impact of obesity , genetic predisposition , and comorbidities on pregnancy-related hypertension," vol. 3, no. 1, pp. 16–30, 2025.

[12] L. E. A. Martanti Ida; Sari, Sherly Permata, "Pregnancy Spacing and Obesity as Risk Factors for Preeclampsia During Pregnancy ," *HIGEIA (Journal Public Heal. Res. Dev.*, no. Vol 8 No 2 (2024) : April 2024, pp. 246–256, 2024, [Online]. Available : https ://journal.unnes.ac.id/sju/higeia/article/view/76450/27039

[13] C. Lazzari *et al.*, "The impact of maternal age and body mass index on hypertensive disorders of pregnancy: Moving beyond the cut-off effect," *Pregnancy Hypertens.*, vol. 40, p. 101219, 2025, doi: https://doi.org/10.1016/j.preghy.2025.101219.

[14] J. Ren, J. Li, Z. Fan, C. Zhao, Y. Wang, and S. Hua, "The correlation analysis of weight and blood pressure during the pregnancy and its influencing factors : a retrospective study," no. 23, pp. 1–13, 2025.

[15] D. A. Salsabilla, Bunga Najla Amelia, "Effect, The Obesity, Of The, On Of, Incident In, Hypertension Women, Pregnant Amelia, Bunga Najla Anggraini, Debie Baiturrahmah, Universitas," *Nusant. Hasana J.*, vol. 4, no. 2, pp. 109–117, 2024.

[16] N. Schenkelaars, S. Schoenmakers, M. M. Faas, S. P. Willemsen, E. S. de Vos, and R. P. M. Steegers-Theunissen, "The maternal body mass index and first-trimester placental (vascular) development," *Placenta*, vol. 160, pp. 126–134, 2025, doi: https://doi.org/10.1016/j.placenta.2024.12.015.

[17] F. Abdi, S. Alizadeh, N. Roozbeh, F. Montazeri, and M. Banaei, "Prepregnancy overweight and obesity and the risk of adverse pregnancy outcomes," pp. 1–9, 2025.

[18] C. Xiang, L. Sui, X. Ding, M. Cao, G. Li, and Z. Du, "Maternal adiposity measures and hypertensive disorders of pregnancy : a meta-analysis," 2024.

[19] Y. Xiong *et al.*, "The effect of maternal pre-pregnancy body mass index on hypertensive disorders of pregnancy (HDP): a systematic review and dose-response meta-analysis of cohort studies involving 50 million pregnancies," *eClinicalMedicine*, vol. 86, no. 37, p. 103395, 2025, doi: 10.1016/j.eclinm.2025.103395.

[20] Q. Yu *et al.*, "Risk factors and pregnancy outcomes of hypertensive disorders of pregnancy: a case-control study," *Midwifery*, vol. 153, p. 104684, 2026, doi: https://doi.org/10.1016/j.midw.2025.104684.