

The Correlation Between Knowledge Levels Regarding Gestational Hypertension and Its Prevalence: A Cross-Sectional Study Among Pregnant Women

Lisnawati¹, Sarliana², Henrietta Imelda Tondong², Sri Yanti Kusika², Niluh Nita Silfia², Ilma Cahya Putri², Nasrul¹, Zainul¹, Anna Veronica Pont², Taqwin^{1*}

¹ Department of Nursing, Poltekkes Kemenkes Palu, Indonesia

² Department of Midwifery, Poltekkes Kemenkes Palu, Indonesia

Corresponding Author Email: taqwin.sahe78@gmail.com

Copyright: ©2026 The author(s). This article is published by Media Publikasi Cendekia Indonesia.

ORIGINAL ARTICLES

Submitted: 03 February 2026

Accepted: 23 April 2026

Published: 01 August 2026

Keywords:

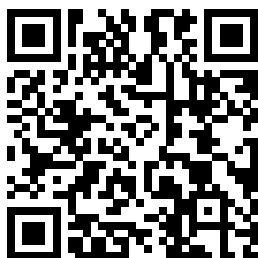
Health Education, Hypertension of Pregnancy, Knowledge, Pregnant Women

OPEN  ACCESS



This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

Access this article online



Quick Response Code

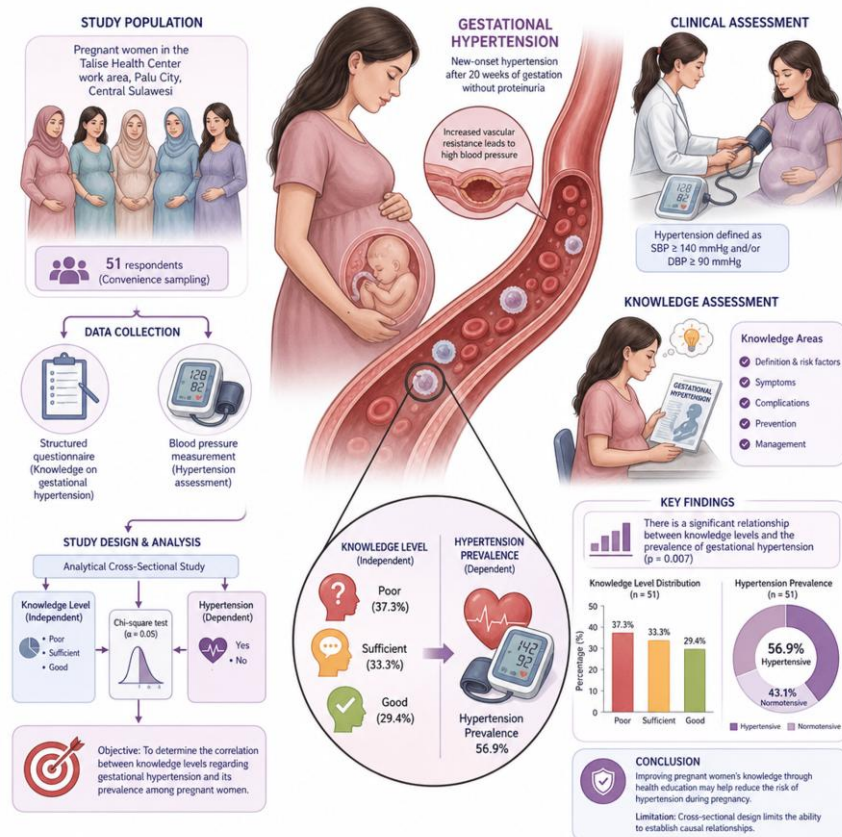
ABSTRACT

Hypertension during pregnancy is one of the most serious complications that can increase the risk of morbidity and mortality for the mother and fetus. Pregnant women's understanding of hypertension during gestation plays a very important role in the prevention and management of these conditions. This study aims to analyze the relationship between pregnant women's knowledge of gestational hypertension and the prevalence of hypertension in the Talise Health Center's work area in Palu City, Central Sulawesi. This study used an analytical cross-sectional design with 51 respondents selected through convenience sampling. Data were obtained through a structured questionnaire to assess knowledge levels and through blood pressure checks to detect hypertension. Data analysis was performed using the chi-square test. The study found that the majority of respondents' knowledge fell into the poor (37.3%), sufficient (33.3%), and good (29.4%) categories. The prevalence of hypertension among respondents was 56.9%. Statistical tests showed that there was a significant relationship between knowledge about gestational hypertension and the prevalence of hypertension ($p=0.007$). These findings suggest that improving maternal knowledge through health education may help reduce the risk of hypertension during pregnancy. However, the cross-sectional design of this study limits the ability to establish causal relationships.

Key Messages:

- Lower maternal knowledge is significantly associated with a higher prevalence of gestational hypertension.
- Targeted antenatal health education is essential to prevent hypertension-related pregnancy complications.

GRAPHICAL ABSTRACT



INTRODUCTION

Pregnancy is a critical period in a woman's life requiring specialized health monitoring. Globally, hypertensive disorders in pregnancy affect approximately 10–15% of all pregnancies and remain one of the leading causes of maternal and perinatal morbidity and mortality worldwide (1). Hypertension is one of the most common complications during pregnancy and a leading cause of maternal morbidity and mortality (1,2). If not treated appropriately, hypertension during pregnancy can increase the risk of preeclampsia, eclampsia, and even death for the mother and baby (3).

At the national level, gestational hypertension is still a significant public health problem in Indonesia, contributing substantially to maternal mortality (4). The prevalence of hypertension in pregnant women in Indonesia is still relatively high and is still a public health problem that needs attention (4). Data from the Central Sulawesi Provincial Health Office indicate that the incidence of gestational hypertension in 2022 was 21%, an increase from 19% in 2021 (5). In addition, the cause of maternal death due to hypertension ranks second after bleeding, with a percentage of 26.67%, and Palu City ranks second out of 13 districts/cities (5). At the local level, this increasing trend indicates an urgent need for targeted interventions, especially in areas such as the Talise Health Center work area, where the burden of disease continues to rise. Thus, more research is needed to identify various factors related to hypertension.

One important factor associated with the occurrence of gestational hypertension is the level of maternal knowledge. Theoretically, knowledge influences health behavior through cognitive processes, such that individuals with an adequate understanding are more likely to adopt preventive behaviors, recognize early symptoms, and seek timely medical care (6,7). In the context of gestational hypertension, insufficient knowledge may lead to delayed detection, poor adherence to antenatal care, and unhealthy lifestyle practices, all of which can increase the risk of hypertension (8,9). Conversely, adequate knowledge can encourage early recognition of warning signs, compliance with medical recommendations, and engagement in preventive behaviors, thereby reducing the likelihood of hypertensive complications.

Several previous studies have shown that the level of knowledge of pregnant women plays an important role in the prevention and treatment of gestational hypertension. A study suggests that pregnant

women with adequate knowledge about hypertension tend to identify red flags and seek help more quickly (10,11). Another study reported that increasing pregnant women's knowledge through health education programs implemented across several regions in Indonesia reduced the incidence of hypertension (12–14). In addition, other studies emphasize the importance of community-based education in increasing pregnant women's knowledge (15,16). Most studies examine this issue in broader contexts and do not focus on specific regions with unique population characteristics.

Although many studies have examined the relationship between maternal knowledge and health, there are still gaps in local research, especially in the Talise Health Center work area. Based on data from interviews with the Talise Health Center coordinator, the number of pregnant women from 2023 to May 2024 is 103. During the preliminary survey, 20 pregnant women had little knowledge about gestational hypertension. In addition, 10 pregnant women said they had high blood pressure and said they did not know the causes, signs, symptoms, or prevention. This condition reflects the urgent need to investigate the relationship between the level of knowledge and the prevalence of hypertension among pregnant women, specifically in the region. This data provides an opportunity to identify risk factors that can intervene in the next period.

Therefore, the purpose of this study is to analyze the relationship between pregnant women's knowledge of hypertension during pregnancy and the prevalence of hypertension in the Talise Health Center's working area.

METHODS

Research Design

This study uses an analytical cross-sectional design. This study employed this approach to determine the relationship between the level of knowledge of pregnant women about hypertension due to pregnancy and the prevalence of hypertension at the same time. This study was conducted from May to June 2024 at the Talise Community Health Center, Palu City, Central Sulawesi.

Population and Sample

The study population comprised all pregnant women recorded in the Talise Health Center's working area, with a sample of 51 respondents. The sample size in this study was determined using a minimum sample size approach for cross-sectional studies, considering the total accessible population of 103 pregnant women in the study area. Based on feasibility, time constraints, and the inclusion criteria, 51 respondents were recruited, representing nearly 50% of the population and considered adequate to detect an association between variables in an analytical cross-sectional design. A convenience sample technique was used in this study with the inclusion criteria of pregnant women who were domiciled in the working area of the Talise Health Center, willing to participate in the study by signing informed consent, gestational age in the first to third trimester, and being at the Talise Health Center when the study was conducted. Exclusion criteria include pregnant women who do not complete the questionnaire and cannot be revisited for data clarification if needed. The questionnaire was adapted from previous studies and reviewed for content validity before use.

Research Variables

The independent variable is the level of knowledge of pregnant women about gestational hypertension, referring to the extent to which pregnant women understand the concept, causes, signs and symptoms, risks, and prevention of hypertension during pregnancy. This knowledge is measured using a structured questionnaire consisting of multiple-choice questions. Knowledge scores are categorized as either if the score is $\geq 76\%$, enough if the score is $56\text{--}75\%$, or less if the score is $\leq 55\%$ of the total maximum score.

The dependent variable is the incidence of hypertension in pregnant women, defined as the blood pressure of pregnant women measured with a sphygmomanometer. Hypertension is defined as systolic blood pressure ≥ 140 mmHg and/or diastolic pressure ≥ 90 mmHg (17). This variable was measured once during a visit to the Talise Health Center. The measurement results are categorized as non-hypertension if blood pressure is $< 140/90$ mmHg and as hypertension if blood pressure is $\geq 140/90$ mmHg.

Data Analysis

Univariate analysis used frequency distribution to describe respondent characteristics (age, parity, education, occupation), level of knowledge, and prevalence of hypertension. Bivariate analysis used the chi-square test to examine the relationship between pregnant women's knowledge level and hypertension prevalence, with a significance level of 95% ($p < 0.05$).

CODE OF HEALTH ETHICS

This research has obtained ethical approval from the KEPK Poltekkes of the Ministry of Health Palu with the number 000817/KEPK POLTEKKES OF THE MINISTRY OF HEALTH PALU on May 9, 2024. Each participant has been provided with information about the study and given written consent before participating.

RESULTS

The study findings, based on 51 respondents, are presented in the following tables.

Table 1. Frequency Distribution of Respondent Characteristics.

Characteristic	n=51	%
Age		
16-24 Years	18	35.3
25-33 Years	21	41.2
34-43 Years	12	23.5
Gestational Age		
First Trimester	3	5.9
Second Trimester	25	49.0
Third Trimester	23	45.1
Education		
Secondary Education	38	74.5
Higher Education	13	25.5
Occupation		
Homemaker	48	94.1
Self-Employed	1	2.0
Contract Worker	2	3.9

Table 1 shows the frequency distribution of respondent characteristics in this study (n=51). Overall, the majority of respondents were in the productive age group (25–33 years), with most pregnancies occurring in the second and third trimesters. Regarding education, respondents were predominantly at the secondary level, and almost all were homemakers. These findings indicate that the study population is largely composed of non-working pregnant women with moderate educational backgrounds, which may influence their access to health information and health-seeking behavior.

Table 2 presents the distribution of maternal knowledge and the prevalence of hypertension among pregnant women.

Research Variables	n=51	%
Knowledge of gestational hypertension		
Good	15	29.4
Moderate	17	33.3
Poor	19	37.3
Incidence of Hypertension		
No Hypertension	22	43.1
Hypertension	29	56.9

Table 2 shows the current status of knowledge about pregnancy-related hypertension and the distribution of hypertension incidence among pregnant women (n=51). Respondents' knowledge was

mostly classified as "poor" (37.3%), followed by "moderate" (33.3%) and "good" (29.4%). Regarding the prevalence of hypertension, it was found that more than half of the respondents had hypertension (56.9%), and the rest did not experience hypertension (43.1%).

Table 3. Chi-Square test results: The relationship between knowledge about gestational hypertension and the incidence of hypertension in pregnant women in the working area of the Talise Health Center

Knowledge on Hypertensive Disorders in Pregnancy	Incidence of Gestational Hypertension				<i>p-value</i>
	No Hypertension		Hypertension		
	n	%	n	%	
Good	10	66.7	5	33.3	0.007
Moderate	9	52.9	8	47.1	
Poor	3	15.8	16	84.2	
Total	22	43.1	29	56.9	

The chi-square test results indicated a significant association between maternal knowledge of hypertensive disorders in pregnancy and hypertension incidence ($p = 0.007$). The prevalence of hypertension increased as knowledge decreased, with the highest prevalence observed among respondents with poor knowledge. In contrast, respondents with good knowledge were more likely to be in the non-hypertensive group. These findings suggest that lower maternal knowledge is associated with a higher prevalence of hypertension. However, due to the cross-sectional design, causality cannot be established.

DISCUSSION

The study found that most pregnant women had a lack of knowledge about gestational hypertension (37.3%), and more than half of the respondents had hypertension (56.9%). The results of the Chi-Square test showed a significant relationship between knowledge level and hypertension incidence. Respondents with good knowledge were less likely to experience hypertension compared to those with moderate or poor knowledge. In contrast, low levels of knowledge are associated with a higher incidence of hypertension. These findings emphasize the importance of education related to gestational hypertension to reduce the prevalence of hypertension in pregnant women.

The results of this study are important because they show that the level of knowledge of pregnant women plays an important role in reducing the risk of gestational hypertension. Hypertensive disorders affect 10-15% of pregnancies globally, causing severe complications for both mother and baby (1). In Gambia, 19% of pregnant women experience hypertension due to pregnancy, correlated with adverse labor outcomes such as low birth weight and postpartum bleeding (18)(18). Good knowledge can help pregnant women recognize the danger signs of pregnancy, including early signs of hypertension, and take preventive measures faster (19). Lack of knowledge can worsen maternal and fetal health conditions, especially in areas with limited access to health services (20). Therefore, health education interventions must be a priority in efforts to prevent gestational hypertension.

The relationship between maternal knowledge and the incidence of gestational hypertension can be explained through health behavior theory, which states that knowledge is a fundamental determinant of individual behavior. Adequate knowledge enables pregnant women to understand risk factors, recognize early warning signs, and adopt preventive measures such as maintaining a healthy diet, attending regular antenatal care, and adhering to medical advice (21,22). Conversely, limited knowledge may result in delayed health-seeking behavior, poor compliance with antenatal services, and unhealthy lifestyle practices, which can increase the risk of hypertension during pregnancy (23,24). Therefore, knowledge acts as an indirect but critical factor influencing the occurrence of hypertension through behavioral pathways.

In addition to knowledge, several other factors can directly influence the occurrence of hypertension in pregnant women. Biological factors such as maternal age, parity, and genetic

predisposition play a significant role (25,26). Nutritional status, particularly excessive sodium intake and obesity, is also strongly associated with increased blood pressure. Furthermore, psychosocial factors such as stress and lack of family support can contribute to elevated blood pressure during pregnancy. Environmental and healthcare access factors, including availability of antenatal services and exposure to health information, also determine the early detection and management of hypertension (27). These factors interact with maternal knowledge, making gestational hypertension a multifactorial condition that requires comprehensive intervention.

A lack of understanding of the risks and management of gestational hypertension can explain the high prevalence of hypertension in pregnant women with low knowledge. A study found that well-informed respondents were better able to recognize early signs and comply with medical recommendations, thereby minimizing the risk of hypertension (28–30). Conversely, a lack of knowledge hinders prevention efforts, such as a healthy diet and regular consultations. Another study revealed that 75.8% of pregnant women had low knowledge about preventing hypertension (31,32). In addition, environmental factors, including air pollution, dietary habits, access to information, and educational level, also affect respondents' knowledge levels (33–36). These findings emphasize the importance of structured, locally tailored needs-based health education.

These findings are in line with previous research showing a positive association between pregnant women's health knowledge and a reduced risk of pregnancy complications. Pregnant women with a higher level of health knowledge are better equipped to recognize early signs of potential complications, such as gestational hypertension and preeclampsia. This awareness allows for timely medical intervention, which can significantly reduce risks for both mother and baby (37). Women who are better informed are more likely to engage in preventive health behaviors, such as maintaining a healthy diet, attending regular prenatal visits, and adhering to medical advice. This action is directly correlated with a lower incidence rate of complications during pregnancy (38). The study emphasizes the importance of educational and counseling programs during antenatal care. Women who received comprehensive information about pregnancy risks and management strategies demonstrated greater understanding and adherence to health care recommendations, resulting in better outcomes. In summary, there is a strong positive association between pregnant women's health knowledge and reduced pregnancy complications.

The differences in the findings of this study compared to previous studies may be due to the socioeconomic characteristics of the respondents. The majority of respondents in this study are homemakers with secondary education, who tend to have limited access to health information. In addition, disparities in primary health care between rural and urban areas can affect pregnant women's knowledge levels (39,40). Previous research in urban areas has shown a higher level of knowledge due to better access to information (41). These findings suggest that geographic disparities play an important role in pregnant women's health outcomes.

In addition to the level of knowledge, other factors such as nutritional status, family support, and access to health facilities can also affect the prevalence of hypertension. An unbalanced diet, such as high-sodium intake, may contribute to high blood pressure (42,43). Minimal family support can affect the mother's mental and physical health, thereby increasing the risk of hypertension (44). Additionally, financial constraints may limit the mother's ability to obtain adequate medical care (45). These factors need to be explored further to provide a more comprehensive picture.

The strength of this research lies in the method used to analyze the relationship between knowledge and hypertension incidence quantitatively. However, this study has a weakness in its relatively small sample size, so the generalizability of the results is limited. Another limitation is that the data are collected only in one working area of the Health Center, so they do not reflect the diversity of the pregnant women's population in other regions. In addition, the study did not explore other factors such as nutritional status or psychological stress. Further studies with larger samples and a wider range of variables are needed.

The findings of this study have important implications in planning health education programs for pregnant women, especially in rural areas. Community-based interventions, such as health counseling and cadre training, can be effective measures to increase knowledge about gestational hypertension. Future

research needs to explore the relationship between other factors, such as diet and stress, and the incidence of hypertension in pregnant women. In addition, longitudinal studies can help understand the long-term impact of health education programs on maternal and infant health. With the right strategy, the risk of gestational hypertension can be minimized, improving maternal and child safety.

In preventing hypertension among pregnant women, targeted efforts are needed to improve maternal knowledge through community-based education. Local needs-based programs, such as those implemented in the Talise Health Center work area, can be an effective strategy to reduce hypertension prevalence. Strengthening collaboration between health workers and the community is essential to provide accessible information on the causes, symptoms, and prevention of hypertensive disorders in pregnancy. Such approaches may encourage healthier behaviors and reduce the risk of complications.

CONCLUSION

This study shows that the level of knowledge of pregnant women about gestational hypertension has a significant relationship with the incidence of hypertension. Pregnant women with lower levels of knowledge are at greater risk of developing hypertension than those with good knowledge. The high prevalence of hypertension in pregnant women in the work area of the Talise Health Center emphasizes the importance of health education as a preventive measure. It is recommended that the Health Center improve health counseling programs on gestational hypertension through a community-based approach and the training of health cadres. In addition, collaboration with medical personnel is needed to ensure that pregnant women get adequate information and better access to care. Further research with a wider coverage of regions and variables is also needed to understand other factors that affect gestational hypertension. However, further longitudinal studies are needed to better understand the causal relationship between maternal knowledge and gestational hypertension.

DECLARATION OF THE USE OF AI

The authors declare that no artificial intelligence (AI), AI-assisted technologies, or large language models (LLMs) were used in the conception of the study, data analysis, or the drafting, writing, and editing of this manuscript. The only exception is the graphical abstract, which was created using the design platform Illustrae (<https://illustrae.co/>). The authors take full responsibility for the content and accuracy of the graphical abstract and the entire manuscript.

FUNDING

This research received no external funding.

ACKNOWLEDGMENTS

The author would like to express his deepest gratitude to the Director, Head of the Department of Midwifery, Head of the Applied Bachelor of Midwifery Study Program Poltekkes Kemenkes Palu, and the Talise Health Center, Palu City, Central Sulawesi, for giving permission and supporting the implementation of this research. Thank you also to all respondents who have taken the time to participate in this research.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Santana P, Salibi G, Tzenios N. Peculiarities of arterial hypertension in pregnancy from the point of view of evidence-based medicine. *Special journal of the Medical Academy and other Life Sciences*. 2024 Aug 31;2(7). doi:10.58676/sjmas.v2i7.82
2. Diwate P, Salve H. Prevalence of Hypertension in Pregnancy and Its Associated Factors Among Antenatal Mothers at Selected Hospitals: a Cross Sectional Study. *GLOBAL JOURNAL FOR RESEARCH ANALYSIS*. 2024 Sep 15;176–9. doi:10.36106/gjra/2509593

3. Alhuneafat L, Ghanem F, Khan S, Puttur A, Nandy S, Alrifai N, et al. Abstract 4145375: Examining Maternal and Fetal Outcomes Across Various Subtypes of Hypertension During Pregnancy. *Circulation*. 2024 Nov 12;150(Suppl_1). doi:10.1161/circ.150.suppl_1.4145375
4. Sari NK, Rahayujati TB, Hakimi M. Kasus Hipertensi pada Kehamilan di Indonesia. *Berita Kedokteran Masyarakat*. 2018 Mar 30;32(9):295. doi:10.22146/bkm.12414
5. Dinas Kesehatan Provinsi Sulawesi Tengah. Profil Kesehatan Propinsi Sulawesi Tengah. Palu: Dinas Kesehatan Provinsi Sulawesi Tengah; 2023.
6. Rincón Uribe FA, Godinho RC de S, Machado MAS, Oliveira KR da SG, Neira Espejo CA, de Sousa NCV, et al. Health knowledge, health behaviors and attitudes during pandemic emergencies: A systematic review. Naing C, editor. *PLOS ONE*. 2021 Sep 7;16(9):e0256731. doi:10.1371/journal.pone.0256731
7. Panahi R, Aghaeian N, Pishvaei M, Niknami S. The need to pay attention to differences in health literacy and knowledge in health education interventions. *Journal of Research and Health*. 2019 Feb 1;9(2):95–6. doi:10.29252/jrh.9.2.95
8. Octafiana DF, Novryanthi D, Andriani R. The Relationship Between Maternal Knowledge and the Incidence of Hypertension in Pregnancy at Bhakti Medicare Hospital, Sukabumi. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)*. 2025 Oct 13;11(4):527–34. doi:10.22487/htj.v11i4.1753
9. Ali KW, Wilson NR, Junejo Z, Bhatti A, Shafi S. Assessment of Knowledge and Practices Regarding Gestational Hypertension among Pregnant Women in Kirar Khan Village, Hyderabad. *Mader-e-Milat International Journal of Nursing and Allied Sciences*. 2024;2(3):1–10.
10. Yuviska IA, Yuliasari D. Overview Of Pregnant Women's Knowledge About Hypertension In Pregnancy At Way Kandis Health Center Bandar Lampung. *JKM (Jurnal Kebidanan Malahayati)*. 2024 Oct 30;10(10):1016–20. doi:10.33024/jkm.v10i10.17124
11. Gholami K, Norouzkhani N, Kargar M, Ghasemirad H, Ashtiani AJ, Kiani S, et al. Impact of Educational Interventions on Knowledge About Hypertensive Disorders of Pregnancy Among Pregnant Women: A Systematic Review. *Frontiers in Cardiovascular Medicine*. 2022 Jun 20;9. doi:10.3389/fcvm.2022.886679
12. Liliek Pratiwi, Ito Wardin. Sosialisasi Pencegahan Hipertensi dan Anemia Ibu Hamil. *KREATIF: Jurnal Pengabdian Masyarakat Nusantara*. 2024 Feb 3;4(1):72–6. doi:10.55606/kreatif.v4i1.2843
13. Santos GG dos. Health education for the prevention of hypertensive disorders of pregnancy. *Einstein (São Paulo)*. 2020 Nov 12;18. doi:10.31744/einstein_journal/2020CE6076
14. Putri DA, Kang HI, Amalia AW, Kusnawirawan I, Hernayati H, Subu MA. Relationship Between Ante Natal Care As A Health Education Approach And Incidence Of Hypertension (Gestational Hypertension) Among Pregnant Women. *Jurnal Health Sains*. 2023 Sep 25;4(9):1–9. doi:10.46799/jhs.v4i9.1072
15. Elya Rohimi U, Syafi'i A, Rofifah J. The Impact of Community-Based Health Education on Maternal Health Outcomes in Rural Southeast Asia. *Asian Journal of Healthy and Science*. 2024 Nov 23;3(11):327–33. doi:10.58631/ajhs.v3i11.166
16. Tyas DA, Yulia Vivra Rahayu Putri. Empowering Pregnant Women: A Community-Based Health Education Intervention to Promote Healthy Behaviors. *Archives of The Medicine and Case Reports*. 2024 Jul 23;5(4):893–906. doi:10.37275/amcr.v5i4.609
17. WHO. Guideline for the pharmacological treatment of hypertension in adults. WHO; 2021. 7 p.
18. Bah HT, Ceesay S, Bass P, Ceesay L. Pregnancy-induced hypertension among pregnant women attending SOS mother and child health clinic in Bakoteh, the Gambia. *Obstetrics & Gynecology International Journal*. 2024 Sep 10;15(5):186–92. doi:10.15406/ogij.2024.15.00758
19. Margaretha Manungkalit E, Kartiko Kusumo Wardani DW, Suhaid DN, Ida Pratiwi A, Panselina Widowati L, Suci Dwi Aningsih B, et al. Increasing Knowledge of Pregnant Women about Danger Signs during Pregnancy. *Abdi Dosen: Jurnal Pengabdian Pada Masyarakat*. 2023 Jun 8;7(2):673. doi:10.32832/abdidos.v7i2.1803
20. Nhampossa T, Munguambe K, Chauque C, Chivangue M, Mazuze M, Mendes A, et al. Knowledge of Pregnant Women in Rural Mozambique on Routine Practices to Prevent and Treat Common

- Conditions at the Antenatal Care Clinic. *Obstetrics and Gynecology Research*. 2023;06(01). doi:10.26502/ogr0117
21. Octafiana DF, Novryanthi D, Andriani R. The Relationship Between Maternal Knowledge and the Incidence of Hypertension in Pregnancy at Bhakti Medicare Hospital, Sukabumi. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)*. 2025 Oct 13;11(4):527–34. doi:10.22487/htj.v11i4.1753
22. Nur SRF, Halu SAN, Nahak MPM, Akbar PS. Analisis Pengetahuan dan Pola Makan terhadap Kejadian Hipertensi pada Ibu Hamil. *ASSYIFA: Jurnal Ilmu Kesehatan*. 2023 Nov 18;1(1):37–42. doi:10.62085/ajk.v1i1.5
23. Octafiana DF, Novryanthi D, Andriani R. The Relationship Between Maternal Knowledge and the Incidence of Hypertension in Pregnancy at Bhakti Medicare Hospital, Sukabumi. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako)*. 2025 Oct 13;11(4):527–34. doi:10.22487/htj.v11i4.1753
24. Mustari R, Yurniati Y, Elis A, Maryam A, Marlina M, Badawi B. Edukasi Kesehatan pada Ibu Hamil tentang Resiko Kejadian Hipertensi dan Cara Pencegahannya. *JMM (Jurnal Masyarakat Mandiri)*. 2022 Aug 24;6(4):2587. doi:10.31764/jmm.v6i4.8843
25. Selvia Lasvana, Putu Lusita Nati Indriani, Sri Handayani. Faktor-Faktor yang Berhubungan dengan Kejadian Hipertensi pada Ibu Hamil di Puskesmas Buay Pemaca Kabupaten Oku Selatan Tahun 2024. *Jurnal Ilmiah Kedokteran dan Kesehatan*. 2025 Oct 23;5(1):274–93. doi:10.55606/klinik.v5i1.5654
26. Muhamad Nor Mudhofar, Grace Carool Sipasulta, Jenti Sitorus. Factors Affecting the Occurrence of Hypertension in Pregnant Women. *Professional Evidence-based Research and Advances in Wellness and Treatment*. 2025 Sep 2;2(3):1–10. doi:10.69855/perawat.v2i3.201
27. Anggraeni S, Handayani A, Rahayu AT, Yuliani E. Impact of Sodium Intake, Stress and Obesity in Pregnant Mothers on Incidence of Hypertension in Pregnancy with Path Analysis. *International Journal of Social Health*. 2024 Dec 23;3(12):785–96. doi:10.58860/ijsh.v3i12.270
28. Abu HO, Aboumatar H, Carson K, Goldberg R, Cooper L. Hypertension knowledge, heart healthy lifestyle practices and medication adherence among adults with hypertension. *European Journal for Person Centered Healthcare*. 2018 Apr 30;6(1):108. doi:10.5750/ejpc.v6i1.1416
29. Lugo-Mata ÁR, Urich-Landeta AS, Andrades-Pérez AL, León-Dugarte MJ, Marcano-Acevedo LA, Jofre MH, et al. Factors associated with the level of knowledge about hypertension in primary care patients. *Medicina Universitaria*. 2017;19(77):184–8.
30. Kusuma Negara IGNM, Jiryantini NWS, Parwati NW. Hubungan Tingkat Pengetahuan Tentang Hipertensi Terhadap Kepatuhan Pasien Untuk Kontrol Tekanan Darah. *Jurnal Riset Kesehatan Nasional*. 2019;3(2):73–7. doi:10.37294/jrkn.v3i2.176
31. Havugimana DM, Habtu M, Ogendi J. Knowledge, Attitude, and Practice towards Prevention of Hypertension among Pregnant Women Attending Antenatal Care Clinic at a District Hospital in Kigali City. *Rwanda Journal of Medicine and Health Sciences*. 2024 Aug 8;7(2):178–91. doi:10.4314/rjmhs.v7i2.7
32. Dim OF, Azubuike E, ONYEOJI O, Omeye C, Ukwe C. Current Knowledge and Practice of Pregnant Women Towards Gestational Hypertension: A Cross-Sectional Study of Nsukka Women. 2024. doi:10.21203/rs.3.rs-4537371/v1
33. Pedersen M, Stayner L, Slama R, Sørensen M, Figueras F, Nieuwenhuijsen MJ, et al. Ambient Air Pollution and Pregnancy-Induced Hypertensive Disorders. *Hypertension*. 2014 Sep;64(3):494–500. doi:10.1161/HYPERTENSIONAHA.114.03545
34. Dasinger JH, Abais-Battad JM, Mattson DL. Influences of environmental factors during preeclampsia. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*. 2020 Jul 1;319(1):R26–32. doi:10.1152/ajpregu.00020.2020
35. Kobashi G. Genetic and Environmental Factors Associated with the Development of Hypertension in Pregnancy. *Journal of Epidemiology*. 2006;16(1):1–8. doi:10.2188/jea.16.1
36. Siregar S, Sibarani J, Saputra D. The Role of Maternal and Environmental Factors During Pregnancy on the Risk of Hypospadias Occurrence. *Global Pediatric Health*. 2022 Jan 11;9. doi:10.1177/2333794X221105254

37. Lahole BK, Mare KU, Shewangizaw M, Kussia W. Analyzing women's knowledge of pregnancy complications in Ethiopia through a multilevel approach. *Scientific Reports*. 2024;14(1):1–9. doi:10.1038/s41598-024-75152-3
38. Oechsle A, Wensing M, Ullrich C, Bombana M. Health Knowledge of Lifestyle-Related Risks during Pregnancy: A Cross-Sectional Study of Pregnant Women in Germany. *International Journal of Environmental Research and Public Health*. 2020 Nov 20;17(22):8626. doi:10.3390/ijerph17228626
39. Alberta JN. The Impact of Socio-Economic Factors on Maternal Health in Rural Africa. *INOSR APPLIED SCIENCES*. 2024 Sep 2;12(3):29–35. doi:10.59298/INOSRAS/2024/12.3.2935
40. Elia EF, Ayungo J. Socio-demographic influence on the pregnant women's comprehension of maternal health information in Tanzania. *Heliyon*. 2023 Dec;9(12):e22448. doi:10.1016/j.heliyon.2023.e22448
41. Addisu E, Cherie N, Birhane T, Abegaz Z, Endawkie A, Mohammed A, et al. Rural-urban disparities in full antenatal care utilization among women in Ethiopia: A further analysis of Mini-EDHS, 2019. Ortega-Altamirano DV, editor. *PLOS ONE*. 2024 Nov 18;19(11):e0310901. doi:10.1371/journal.pone.0310901
42. Handayani I, Setyaningsih A, Muhlishoh A. Hubungan Status Gizi dan Tingkat Pengetahuan Gizi Seimbang terhadap Kejadian Hipertensi Lansia Di Kecamatan Bulu Kabupaten Sukoharjo. *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan)*. 2023 Jan 23;9(1):50. doi:10.30829/jumantik.v9i1.15070
43. Nisa H, Pratiwi SH, Nasution E. Associations of Individual Characteristics and Nutritional Status with Hypertension in Adults. *Jurnal Promosi Kesehatan Indonesia*. 2022 Aug 1;18(1):8–15. doi:10.14710/jpki.18.1.8-15
44. Asiri AA, Asiri S, Asiri H. Knowledge Related to Hypertension Risk Factors, Diet, and Lifestyle Modification: A Comparative Study Between Hypertensive and Non-Hypertensive Individuals. *Cureus*. 2020 Aug 20. doi:10.7759/cureus.9890
45. Indrapal M, Nagalla B, Varanasi B, Rachakulla H, Avula L. Socio-demographic factors, overweight/obesity and nutrients associated with hypertension among rural adults (≥18 years): Findings from National Nutrition Monitoring Bureau survey. *Indian Heart Journal*. 2022 Sep;74(5):382–90. doi:10.1016/j.ihj.2022.08.006