Pediomaternal Nursing Journal

Original Article

Developing nursing care protocols for hypertensive pregnancies using the delphi method and a cultural belief framework

Kusila Devia Rahayu*[1], Liwayway T Vallesteros[2]

ABSTRACT

Introduction: The failure of hypertension therapy during pregnancy and the absence of standardized nursing interventions that incorporate cultural beliefs highlight the need for expert consensus. Objective: This study aims to develop a nursing care framework for hypertensive pregnancy based on a cultural belief approach using the Delphi Method.
Methods: The Delphi Method was employed to gather expert opinions on hypertensive pregnancy care. Ten senior maternity nurse managers from Maternity and Children's Hospitals in Bandung, Indonesia, participated in two rounds of interviews. Data were analyzed for validity and reliability.
Results: A nursing intervention instrument was developed based on the NANDA-NOC-NIC Standard. The first round identified seven nursing diagnoses: (1) Readiness for enhanced self-management, (2) Imbalanced nutrition influenced by cultural beliefs, (3) Fatigue, (4) Readiness for enhanced hope, (5) Ineffective role performance due to inadequate resources and psychosocial support, (6) Ineffective coping resulting from poor adaptation and limited social support, and (7) Impaired comfort due to restricted environmental control and adaptation challenges. The second round refined the instrument, leading to the development of a nursing intervention checklist.
Conclusion: Standardizing hypertension care in pregnancy through a cultural belief approach may improve adaptation and coping. Nurses should integrate cultural beliefs into discharge planning, empowering pregnant women to independently implement nursing interventions as part of their daily care.
Keywords: cultural belief; hypertensive pregnancy care; nursing intervention

INTRODUCTION

Cultural beliefs in Indonesia continue to play a significant role in maternity care, shaping diverse pregnancy practices. Sociocultural factors often influence behaviors during pregnancy, labor, and the postpartum period (Ansong et al., 2022). Pregnant women with hypertension frequently discontinue antihypertensive medications due to concerns about potential harm to the fetus. However, the misconception that these medications are dangerous during pregnancy is unfounded. Non-adherence to antihypertensive treatment increases health risks, particularly in the third trimester. Hypertensive pregnant women often consume herbal remedies with no scientifically defined purpose. Relying solely on traditional herbal treatments may negatively impact maternal health and fetal development. Additionally, many hypertensive pregnant women seek care from birth attendants rather than medical professionals, limiting access to evidence-based hypertension management. This reliance on traditional care can result in treatments that contradict medical guidelines, posing significant risks to both mother and baby. Understanding and respecting traditional practices within a culture is essential for helping women navigate modern healthcare and prevent complications (Agus et al., 2012). Certain cultural practices, such as belly rubbing and full-moon bathing, contradict scientific evidence. Belly massages may cause harm to the fetus, while full-moon bathing increases the risk of hypothermia. Even seemingly harmless practices like belly rubbing can lead to hemorrhage and maternal death (Das et al., 2022). Additionally, dietary taboos restricting the consumption of meat, fish, eggs, and adequate sleep further illustrate the strong influence of cultural beliefs in pregnancy care (Kovell et al., 2022). Poor nutrition during hypertensive pregnancies may compromise both maternal health and fetal development (Rahayu & Vallesteros, 2024). To improve pregnancy care, healthcare professionals should integrate cultural awareness into their practice, fostering trust and enhancing the effectiveness of maternal health interventions (Rahayu et al., 2023).

Ansong et al. (2022) explain that pregnancy care focuses on improving the health of pregnant women and fetuses through awareness and prevention. In developing countries like Indonesia, unscientific cultural health practices can increase maternal mortality and pose serious risks to both mothers and babies. The maternal mortality rate (MMR) is a crucial indicator of a country's public health status. The World Health Organization (2020) reported that in 2017, approximately 810 women died each day from preventable pregnancy-related

***Correspondence**: Kusila Devia Rahayu (kusiladevi@stikesdhb.ac.id)
[1]Program Study of Bachelor Nursing, Sekolah Tinggi Ilmu Kesehatan Dharma Husada, Bandung, Indonesia
[2] School of Nursing, Philippine Women University, Manila, Philippines

Volume 11 (1): 40-49
http://dx.doi.org/10.20473/pmnj.v11i1.66031

e-ISSN: 2355-1577 | p-ISSN: 2656-4629

Article History
Received: November 27, 2024 | Revised: February 28, 2025 | Accepted: March 10, 2025| Published : March 24, 2025

causes. Untreated hypertension or inadequate prenatal care is a significant contributor to maternal mortality. Rahayu et al. (2023) indicates that hypertensive pregnancy care based solely on cultural beliefs, without medical supervision, significantly worsens conditions in the third trimester. West Java is one of Indonesia's provinces, with the largest population and the fourth-highest maternal mortality rate. The West Java Provincial Health Profile in 2020 reported an MMR of 416 cases per 100,000 live births, with hypertension accounting for 29% of cases. Bandung City, the largest city in West Java, is particularly affected by this issue.

The Bandung City Health Service in 2022 reported that bleeding, pregnancy-induced hypertension, and COVID-19 were the leading causes of maternal death in Bandung, Indonesia, from 2019 to 2022. Among 1,150 projected pregnancies, 38 involved hypertension. Between 2018 and 2022, primary health services achieved a 96.9% pregnancy examination coverage rate, ensuring standard care for hypertensive pregnancies. Pratami (2022) noted that Indonesia's maternal mortality rate remains above the 2030 Sustainable Development Goal (SDG) target. As a culturally diverse country, Indonesia's prenatal care behaviors are significantly influenced by local traditions, shaping pregnancy health outcomes.

Preliminary findings from several referral hospitals in Bandung City, Indonesia, reveal a high number of hypertensive pregnant women referred from primary health services, with a concerning rise in cesarean sections between 2007 and 2017. Hospital physicians and senior maternity nurses in Bandung City identify treatment failure in hypertensive pregnancies as a critical issue requiring further investigation. Self-initiated, culturally based therapies may contribute to ineffective hypertension management (Aryastami & Mubasyiroh, 2021). Many hypertensive pregnant women prefer traditional remedies over medical treatment, influenced by ancestral beliefs. The preference for birth attendants over healthcare professionals is driven by parental advice, home service accessibility, and lower costs compared to maternity hospital care. In Indonesia, self-care is commonly practiced after symptoms appear, with individuals seeking assistance from either formal health services or alternative medicine. A preliminary study indicates that maternity nurses in community health centers and referral hospitals manage hypertensive pregnancies using cultural belief approaches without standardized guidelines. This challenge underscores the need for culturally sensitive healthcare. Integrating transcultural nursing practices can enhance maternal health services by incorporating cultural understanding into patient care (Rahayu et al., 2024).

Irwan et al. (2022) stated that hypertension self-care in Southeast Asia differs from other regions due to the widespread use of traditional remedies. The study recommends a multi-focused nursing strategy that incorporates patient preferences, cultural beliefs, environmental factors, and available resources. It highlights the need for a culturally integrated nursing care model for hypertensive pregnant women. Given the lack of documented care using this approach, the study acknowledges the complexities of research in this area and advocates for a mixed-methods investigation. This study aims to develop a nursing care planning instrument for hypertensive pregnancies by integrating a cultural belief approach with the NANDA-NOC-NIC frameworks to enhance the quality of maternal health services.

METHODS

Study Design

A structured search regarding the factors, impacts and Delphi study was conducted to develop a nursing intervention for hypertensive pregnancy care based on a cultural beliefs approach. The Delphi method was chosen because existing instruments were either insufficient or unavailable. This research method is commonly used to establish consensus among experts within a specific field (Foster et al., 2022). It provides a structured approach to gathering expert opinions through iterative surveys on a particular topic. Eljiz et al. (2023) describe the Delphi method as a structured technique for expert discussions, facilitating improvements in healthcare systems. In this study, the Delphi method was employed to achieve expert consensus on cultural belief trends in prenatal care for hypertensive pregnancies in West Java, Indonesia, through a systematic data collection process. Additionally, the method was used to develop a nursing intervention instrument as part of a culturally integrated pregnancy care model.

The pregnancy care intervention instrument developed in this study is based on Leininger's Cultural Care Theory (1995) and Orem's Self-Care Theory (1985) (McEwen & Wills, 2015). The Culture Care Model enables nurses to provide culturally sensitive care for hypertensive pregnant women by aligning nursing actions with patients' values, beliefs, and lifestyles while minimizing conflicts. Leininger's theory emphasizes culturally appropriate, supportive, and empowering nursing care, whereas Orem's Self-Care Deficit Theory highlights individuals' ability to engage in self-care to maintain health and well-being. According to Orem, nursing involves assisting individuals in managing self-care to sustain or improve functional health at home (Polit & Beck, 2020). The hypertensive pregnancy care instrument developed in this study integrates a cultural belief approach, promoting respect, cultural autonomy, and the preservation of traditions. It enhances communication and cross-cultural learning while supporting healthcare professionals in providing culturally competent care. Additionally, it acknowledges the influence of cultural norms on diagnosis, interventions, and prognoses, ensuring a more holistic approach to pregnancy care.

Participants and Setting

Participants were individuals who met the research requirements and expressed their willingness to participate in the study. Expert consultations involved ten registered senior maternity nurses with over five years of experience at a maternal and child hospital in Bandung City, Indonesia. Participants were selected based on their expertise in maternal care, holding certifications in Essential Maternal and Neonatal Services Training and Obstetric and Neonatal Emergency Training. They were chosen by the hospital for their experience in caring for pregnant women from diverse cultural backgrounds. The expert panel participants were from Bandung's referral maternity and child hospital. The expert panel session lasted 90 minutes, according to a mutually agreed-upon schedule, and all expert members fully participated.

Data Collection

Before data collection, the researcher completed administrative and technical procedures, including submitting the research permit and ethical approval letter from the Indonesian Health Ethics Committee to the Bandung City Government's National

Unity and Community Empowerment Agency. Additionally, a research permit was submitted to the mother and child hospital and the Bandung City Health Office in Bandung City, Indonesia. The researcher conducted data collection independently, without assistants, to ensure consistency in perception between the researcher and participants, minimize bias, and optimize the effectiveness and efficiency of data collection.

The Delphi study identified expert obstetrics and maternity practitioners who provide healthcare for hypertensive pregnant women in mother and child hospitals in Bandung City, Indonesia. Researchers addressed differences of opinion among experts through brainstorming sessions, ensuring alignment of perceptions and facilitating consensus in the expert panel discussions. The consensus of the expert panel activities in this study successfully developed a hypertensive pregnancy care intervention using a cultural belief approach by applying seven nursing domains. This study collected data and provided feedback in two rounds. In the first round, experts reached a consensus that nurses should develop a nursing intervention model for hypertensive pregnancy using a cultural belief approach, aligned with national and international nursing diagnosis standards (NANDA International, 2023). In response, researchers developed a list of hypertensive pregnancy care interventions incorporating a cultural belief approach, structured according to the domain and class standards in NANDA, NOC, and NIC. In the second round, experts reached a consensus that hypertensive pregnant women should receive independent nursing interventions incorporating cultural and belief approaches as part of their prenatal self-care. Based on this, researchers proposed integrating the hypertensive pregnancy care intervention into discharge planning for both inpatients and outpatients in maternity wards. Nurses will provide a checklist of culturally adapted hypertension care interventions for pregnant women and their families to implement at home. Blood pressure measurement will serve as an indicator of the intervention's effectiveness, which will be evaluated after two weeks of independent nursing care at home. The validity and reliability of the expert panel results were assessed using expert authority coefficient tests and positivity coefficient tests. The authority coefficient indicated high expertise, with most results exceeding 0.7. The positivity coefficient test demonstrated strong agreement among experts on the nursing intervention checklist for hypertensive pregnancy.

The head of the maternity hospital nursing department recommended ten suitable participants for the expert interview activities. To achieve a consensus with high validity and reliability scores, at least ten participants were required for the expert panel activities (Polit & Beck, 2020). The researcher met the expert participants in their duty rooms, accompanied by the nursing manager. The study's purpose, benefits, and risks were explained, and participants who agreed to participate signed an informed consent form. A schedule for the first round of expert panel activities was then arranged based on the availability of all expert participants. The expert panel activity was conducted using an interview script, field notes, and audio recordings to ensure participant privacy. Data was securely stored in compliance with the Data Privacy Act of 2012 and was to be deleted and destroyed upon research completion.

Instrument of Delphy Study

The Delphi method was employed to develop a nursing care intervention checklist for hypertensive pregnant women using a cultural belief approach. Two rounds of testing were conducted, and the results were analyzed for validity and reliability. Qualitative research tools included interview guides, field notes, and audio recordings.

Basis of checklist development: Nursing domains and Class

Domain 1: Health promotion. Class 2: Health management. This study aimed to enhance self-management in hypertensive pregnant women through a culturally informed approach, incorporating guidelines for antihypertensive medication adherence, anemia prevention, and sodium intake moderation while aligning with health science principles. This domain integrated a cultural belief approach, fostering cultural autonomy, heritage preservation, and self-care in hypertensive pregnancy. It bridged traditional practices with scientific prenatal care by promoting adherence to antihypertensive medication, anemia prevention, and salt restriction as culturally acceptable interventions.

Domain 2: Nutrition. Class 1: Ingestion. The aim was to overcome nutritional disorders. Nursing interventions suggested consuming a variety of foods, including rice, animal protein, vegetable protein, fruits, fatty oils, sugar, and a balanced dietary pattern, with one additional portion compared to pre-pregnancy. This domain applied a cultural belief approach through supportive, cognitive-based actions that empowered individuals while minimizing conflicts with cultural values. The nursing intervention contrasted with traditional prenatal practices, advocating for a balanced diet that included rice, animal and vegetable protein, fruits, fats, and controlled sugars, with increased portions during pregnancy. This approach facilitated cross-cultural learning and adaptation in hypertensive pregnancy care.

Domain 4: Activity/exercise. Class 3: Physiological Fatigue. The aim was to alleviate fatigue caused by activity or exercise that did not align with the physiological changes of pregnancy. Nursing interventions recommended sleeping 8 hours a night and lying on the left side for 20-30 minutes to increase utero-placental blood flow. The activity/exercise interventions in this domain contrasted with traditional cultural beliefs held by pregnant women. This domain integrated a cultural belief approach to enhance the cognitive capacity of hypertensive pregnant women and their families, promoting culturally aligned, safe, and effective nursing interventions.

Domain 6: Self-perception. Class 1: Readiness to Enhance Hope. The aim was to reduce mystical beliefs that conflicted with faith, knowledge, and empirical health sciences. This domain promoted effective communication and open discussion, as well as improved learning across cultures.

Domain 7: Role Relationship. Class 3: Role Performance. The aim was to enhance role performance through nursing interventions, including addressing medication shortages, fetal stimulation, professional pregnancy consultations, workload adjustments, and 30-minute light to moderate physical activity. This domain integrated a cultural belief approach, ensuring culturally appropriate care that supported and empowered hypertensive pregnant women and their families. It fostered cognitive-based hypertension management while facilitating adjustments to align care practices with cultural values, beliefs, and lifestyles.

Domain 12: Comfort. Class 2: Environmental Comfort. The aim was to enhance comfort in hypertensive pregnant women by addressing environmental control, health resources, situational factors, and adaptation challenges. Nursing interventions included promoting participation in pregnancy

yoga, avoiding the supine position, and encouraging mindfulness and meditation. This domain reflected a cultural beliefs approach, promoted cultural respect and autonomy, preserved heritage and traditions, encouraged effective communication and open discussion, and promoted better learning across different cultures.

Data Analysis

The Delphi method for generating nursing intervention instruments for pregnant hypertension utilizing a cultural belief approach was developed from qualitative data collected from maternity experts in the field. The data from both rounds of expert panel activities in this Delphi study were analyzed using content analysis. Seven nursing domains were effectively retrieved through data analysis. The seven nursing domains were also tested for validity and reliability through inter-rater reliability testing.

Trustworthiness

The level of expert agreement on questions in the expert interview guide was measured using the expert authority coefficient and the expert positive coefficient. These coefficients were critical indicators for assessing the validity and reliability of the expert interview results. The expert authority coefficient was typically expressed by the questionnaire response rate, reflecting the experts' concern for the study project. A response rate exceeding 70% reflected a higher authority coefficient. The expert positive coefficient was the ratio of the number of questions answered throughout the expert interview to the total number of questions asked (Zhai et al., 2020). Furthermore, the expert opinions generated during the expert interview process were documented as expert consensus and modified to serve as the basis for developing a nursing care intervention instrument for hypertensive pregnant women using a cultural belief approach.

Ethical Consideration

This research was part of a study project approved by the Indonesian Health Research Ethics Committee (No. 02/KEPK/SDHB/B/II/2024) and the Philippine Women's University Ethics Review Board (No. ERB2024_0026). It adhered to ethical guidelines, ensuring respect for human dignity, privacy, confidentiality, justice, inclusiveness, and the balance of potential harm and benefit. Informed consent was obtained, allowing voluntary participation without penalty. The study prioritized risk minimization, participant safety, and the prevention of emotional distress and social stigma. Privacy and confidentiality were maintained through secure data handling, restricted researcher access, and data destruction upon study completion. The principle of justice was upheld by ensuring fair treatment, recruitment based on inclusion criteria, and the right to withdraw without prejudice. Participants were also given opportunities to communicate with researchers for clarification. By balancing potential benefits and harms, this study aimed to enhance maternal health services in West Java through a culturally integrated approach to hypertensive pregnancy care while maintaining participant anonymity and voluntary involvement.

RESULTS

Participants' General Characteristics

Table 1 displays the general information about the expert participants. All experts were over 34 years old and cared for patients more than twice a week. Some of the experts were senior deputies responsible for providing nursing care to pregnant women who were natives of West Java. All of the experts were nurses with 5–15 years of experience working in maternity wards.

The Expert Authority Coefficient

The expert authority coefficient is a key factor used to assess the validity of consultation results. The topics discussed during the expert panel activities were based on data from preliminary studies and evidence drawn from researchers' practice in healthcare. A value of 0.7 or higher indicates higher authority and more credible opinions. The authority coefficient (Cr) is determined as the average of an expert's level of familiarity with the field (Cs) and a familiarity criterion (Ca), calculated using the formula: $Cr = (Cs + Ca)/2$. Familiarity was divided into five levels, ranging from 0.2 to 1.0, indicating the lowest and highest familiarity with the field. Based on the data in Table 2, it can be observed that almost all expert authority results exceeded 0.7, indicating that the experts held a high degree of authority.

The Expert Positive Coefficient

In the first round of expert consultation activities, the researchers presented three questions. All expert participants provided clear responses to the queries. Of the 10 experts asked to answer these three questions, 8 experts responded to all the questions, while the remaining 2 answered only 2 questions. Thus, the first-round effective return ratio was 86.7%. In the second round, 10 experts were again asked 3 questions. This time, 7 experts answered all the questions, and the remaining 3 answered only 2 questions. Consequently, the second-round effective return ratio was 80.0%. These results indicate a high level of expert agreement on the validity and reliability of the constructed nursing intervention checklist for hypertensive pregnancies, using the seven nursing domains. In both rounds, all experts provided valuable suggestions (Table 3).

Expert Opinions and Modifications

In both rounds of the expert panel, all experts provided suggestions, which were subsequently addressed by the researcher. At the conclusion of the panel activities, an instrument for addressing hypertension in pregnancy, using a cultural belief approach, was developed. Table 4 presents the expert opinions and the modifications made by the researchers.

Development Of Nursing Care Checklist for Hypertensive Pregnant Women Using Culture Care Belief - Based Approach

The advice provided in the nursing care checklist for pregnant women with hypertension, using the cultural care belief approach, is based on evidence from studies. The checklist for daily self-care activities during pregnancy was formulated based on the seven nursing domains and classes. The nursing care checklist for hypertension in pregnancy was developed through expert panel activities and validated through reliability tests. A two-week preliminary test of the checklist was conducted in both the outpatient and inpatient wards of a maternity hospital in Bandung City, with a focus on self-care and cultural beliefs (Table 5).

Table 1. The General Information of Experts on Delphi studies (n=10)

No	Educational attainment	Age (years)	Title	Years of professional experience	Frequency of caring (times per week)	Type of pregnant patient
1	MSN	38	Deputy senior staff	5-15 years	≥1-2	Native of West Java
2	BSN	46	Senior staff	>15 years	≥1-2	Native of West Java
3	BSN	37	Deputy senior staff	5-15 years	≥1-2	Native of West Java
4	MSN	47	Deputy senior staff	5-15 years	≥1-2	Native of West Java
5	BSN	43	Deputy senior staff	5-15 years	≥1-2	Native of West Java
6	BSN	44	Senior staff	5-15 years	≥1-2	Native of West Java
7	BSN	40	Deputy senior staff	5-15 years	≥1-2	Transmigrant
8	BSN	52	Senior staff	>15 years	≥1-2	Transmigrant
9	BSN	34	Intermediate	5-15 years	≥1-2	Miscellaneous
10	BSN	49	Intermediate	5-15 years	≥1-2	Miscellaneous

Note: BSN: Bachelor of Science in Nursing; MSN: Master of Science in Nursing

Table 2. The Expert Authority Coefficient

No	Familiarity Criteria				Ca	Cs1	Cs2	Authority Coefficient (Cr)
	Theoritical Analysis	Work Experience	Literature to domestic and abroad	Subjective Judgement				
1	0.3	0.3	0.2	0.1	0.9	0.8	0.8	0.85
2	0.2	0.5	0.1	0.1	0.9	0.6	0.7	0,77
3	0.1	0.4	0.2	0.1	0.8	0.6	0.7	0.72
4	0.3	0.3	0.2	0.1	0.9	0.8	0.8	0.85
5	0.2	0.3	0.2	0.1	0.8	0.5	0.6	0.67
6	0.2	0.3	0.2	0.1	0.8	0.7	0.7	0.75
7	0.3	0.4	0.2	0.1	1.0	0.7	0.8	0.87
8	0.1	0.3	0.1	0.1	0.6	0.7	0.6	0.62
9	0.3	0.3	0.3	0.1	1.0	0.6	0.7	0.82
10	0.2	0.2	0.3	0.1	0.8	0.7	0.8	0.77

Note: Ca: familiarity Criteria; CS: Familiarity in the field; Cr: Authority Coefficient

Table 3. Expert Positive Coefficient in both rounds of expert panel activities

Round	Questions issued	Questions answered	Return Ratio (%)	Number of effective questions	Effective return ratio (%)
First	30	26	86.7	24	86.7
Second	30	24	80.0	21	80.0

Table 4. Expert Positive Coefficient in both rounds of expert panel activities

Expert Opinion	Modification
- Nurses need to develop a nursing intervention model in hypertensive pregnancies using a cultural and belief approach that is in accordance with national or international nursing diagnosis domain standards (NANDA International, 2023)	- Nursing interventions in hypertensive pregnancies using a cultural and belief approach will be made in the form of nursing intervention check list to socialize care for hypertension pregnancies using a cultural belief approach referring to the domain standards in NANDA NOC NIC
- Hypertensive pregnant women must receive independent nursing intervention using a cultural and belief approach as part of self-care during pregnancy.	- The nursing intervention check list for hypertension during pregnancy, based on cultural beliefs, is utilized for discharge planning in both inpatient and outpatient maternity units.
	- Blood pressure measurement is an indicator of the effectiveness of delivering the nursing intervention check list
	- The effectiveness of the nursing intervention checklist instrument using a cultural and belief approach will be evaluated after pregnant women with hypertension carry out independent nursing care for two weeks at home.

Note: NANDA: North America Nursing Diagnosis Association; NOC: Nursing Outcomes Classifications; NIC: Nursing Intervention Classifications

Table 5. Nursing intervention in pregnancy with hypertensions Checklist

No	Interventions for daily pregnancy care	1st week of intervention							2nd week of intervention						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7
Nursing Diagnosis 1: Readiness for enhanced health self-management															
1	Take antihypertensive medication regularly as recommended by a healthcare professional														
2	Take anemia prevention tablets after each meal, as prescribed by physicians														
3	Consuming salt in moderation and not exceeding daily requirements.														
Nursing Diagnosis 2: Imbalanced nutrition: less than body requirement related with practice cultural beliefs that are contrary to health research, such as taboo practices and dietary restrictions.															
4	Consume a variety of foods in proportion														
5	Consume rice or main dish. 1st trimester: 5 servings 2nd and 3 nd: 6 servings														
6	Consume animal protein: Meat, Fish, and Eggs 1st trimester: 4 servings 2nd and 3 nd: 4 servings														
7	Consume vegetable protein: tofu or tempe 1st trimester: 4 servings 2nd and 3 nd: 4 servings														
8	Consume vegetable 1st trimester: 4 servings 2nd and 3 nd: 4 servings														
9	Consume fruits 1st trimester: 4 servings 2nd and 3 nd: 4 servings														
10	Consume fatty oil 1st trimester: 5 servings 2nd and 3 nd: 5 servings														
11	Consume sugar 1st trimester: 2 servings 2nd and 3 nd: 2 servings														
12	Consume a food with a balanced dietary pattern and one more portion than when you were not pregnant.														
Nursing Diagnosis 3: Fatigue															
13	Sleep at least 8 hours a night														
14	Lie on the left side for 20-30 minutes to increase utero placental blood flow especially when feels tired.														
Nursing Diagnosis 4: Readiness for enhanced hope															
15	Reducing mystical attitudes and behavior that conflict with faith, knowledge and empirical health science.														
Nursing Diagnosis 5: Ineffective role performance related with inadequate health resources, inadequate psychosocial support system, inadequate role models, low self- esteem, role conflict, role confusion, stressors.															
16	If the medication runs out, hypertensive pregnant women may visit the healthcare professional again to get the next antihypertensive prescription.														
17	Do fetal stimulation alongside your husband.														
18	Carry out pregnancy consultations with professional health workers and not with non-professional health workers														
19	Do not doing heavy work														
20	Physical activity is carried out for 30 minutes at a light to moderate intensity and avoiding unsafe behaviors														

No	Interventions for daily pregnancy care	1st week of intervention							2nd week of intervention						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7
Nursing Diagnosis 6: Ineffective coping related with inability to conserve adaptive energies, inaccurate threat appraisal, inadequate confidence in ability to deal with situation, inadequate social support, ineffective tension release strategies															
21	Do not smoking or being exposed to cigarette smoke														
22	do not use medicine without a medical prescription.														
23	Avoid extreme stress														
24	Do not take antihypertensive with traditional herbs or ingredients that are not recommended by healthcare professionals														
Nursing Diagnosis 7: Impaired comfort related with inadequate control over environment, inadequate health resources, inadequate situational control, inadequate pregnant adaptation															
25	Joint pregnancy class/Yoga class														
26	Do not lying on the back for over ten minutes in the last trimester of pregnancy														
27	Pray more to God.														

DISCUSSION

Pregnancy entails physical and psychological changes that require adaptation. Prenatal care interventions support this process, which continues throughout pregnancy. Adaptation is shaped by internal factors, such as physiological and psychological aspects, and external factors, including cultural influences and external stimuli. Maladaptation occurs when individuals fail to respond effectively to these factors. Hypertension in pregnancy is an indication of the body's physiological maladaptation during pregnancy (Littleton et al., 2002). Pregnancy with hypertension is considered a high-risk pregnancy, which includes the existence of comorbidities and risk factors that can lead to complications and neonatal mortality (Sungkar & Surya, 2020).

According to the Indonesian Ministry of Health in 2015, hypertension in pregnancy is defined as a blood pressure of ≥140/90 mmHg on two separate measurements 4–6 hours apart in previously normotensive women. If hypertension is detected, urine protein levels should be assessed using a dip test or 24-hour urine protein analysis to confirm the diagnosis. Risk factors for severe hypertension in pregnancy include twin pregnancy, trophoblastic disease, hydramnios, diabetes mellitus, placental vascular disorders, hereditary factors, prior preeclampsia, and pre-pregnancy obesity. Untreated hypertension can lead to permanent physiological complications for both mother and fetus, impacting long-term health outcomes (Slade et al., 2023). Cases of high-risk pregnancy can be detected through physical examination and diagnostic testing: checking blood pressure regularly, testing urine protein, measuring fundal height, and carefully determining the estimated date of delivery (Fellows & Chance, 1982).

Proper management of hypertension in pregnancy is crucial to prevent progression to preeclampsia or eclampsia. Severe hypertension often necessitates cesarean delivery, which should be carefully regulated, especially in developing countries where it is associated with high medical costs. The increasing number of cesarean sections places a financial burden on healthcare systems, requiring attention from health professionals to optimize maternal care while managing healthcare expenditures effectively. According to Islam (2022), the proportion of mothers in Indonesia who had cesarean sections climbed at an alarming rate between 2007 and 2017.

The high rate of cesarean births is partly attributed to the failure of hypertension treatment during pregnancy. Cultural beliefs and traditional practices that conflict with medical guidelines may contribute to treatment failure, highlighting the need for culturally sensitive interventions that align with medical standards to improve hypertension management in pregnant women.

Das et al (2022) explain that one way to raise the standard of care for pregnant women with hypertensive disorders is to make sure that more clinical protocols are followed. This is one way to improve the quality of healthcare in low-income country. Adequate prenatal care is crucial for hypertensive pregnancies to optimize maternal and fetal health while preventing risk progression. The primary goal is to support spontaneous vaginal delivery at an appropriate gestational age. The Indonesian Ministry of Health in 2015 sets service standards for pregnant women with hypertension in primary care. These standards include weekly monitoring of blood pressure, urine, and fetal condition. Elevated blood pressure is treated as mild preeclampsia, and if fetal condition worsens or growth is restricted, hospitalization is recommended. Pregnant women with severe hypertension require antihypertensive therapy, and the specific kind of antihypertensive used is determined by medical treatment and drug availability. Primary healthcare facilities refer worsening hypertensive pregnancy cases to general or maternity hospitals based on patient preference or proximity. Most hypertensive pregnancies in maternity hospitals originate from primary care referrals. Pregnant women with uncontrolled hypertension receive inpatient treatment until stabilization, after which they are discharged for self-managed hypertension care at home.

Ansong et al. (2022) explain that culture has a substantial impact on pregnant women's behavior towards health services, underlining the significance of culturally responsive care for better maternal and infant outcomes. The socio-cultural structure of a community significantly influences healthcare utilization. In Indonesia, traditional beliefs shape maternal health practices, with birth attendants often preferred over midwives, nurses, and physicians due to economic factors and cultural trust. Cultural influences affect pregnant women's healthcare-seeking behaviors, highlighting the need for culturally sensitive prenatal care to enhance maternal and neonatal outcomes. This aligns with research by Salsabila et al. (2022), which found that the social and cultural system of society is an important

consideration in health services, enabling them to be utilized more effectively.

Paudel et al. (2018) highlight the impact of socio-cultural factors on perinatal mortality among indigenous communities. In Indonesia, maternal death is often perceived as a natural event influenced by religious and cultural beliefs. However, this perspective contrasts with health science, as maternal mortality can be prevented through culturally sensitive pregnancy care and collaboration with local religious and community leaders. Jones et al. (2017) emphasize the importance of culturally appropriate maternity care, aligning with the needs in West Java Province, Indonesia, where indigenous communities often prefer birth attendants over professional healthcare providers. In Indonesia, limited cultural competence among healthcare workers affects maternal care delivery and influences decision-making for pregnant women and their families.

Socio-cultural beliefs and practices are widespread, encompassing antenatal care, childbirth, and the postnatal period. Both harmful and harmless practices have been identified. Ansong et al. (2022) explained that cultural practices in pregnancy care carried out by society are diverse; some align with health science, while others contradict it. Rahayu et al. (2023), in her ethnographic research on pregnancy care culture in West Java, Indonesia, discovered a gap between indigenous cultural beliefs and scientific evidence. These gaps span various areas, including eating habits, hygiene practices, sleep patterns, and indigenous efforts to monitor fetal well-being.

Rahayu et al. (2023) explain that the gap in pregnant women's eating habits is evident in taboos against consuming high-protein foods, such as meat, fish, and eggs, as well as the belief that pregnant women should eat in small portions. Cultural beliefs surrounding pregnancy in some indigenous communities often contradict scientific health practices, posing potential health risks. For example, prohibiting afternoon and evening baths while mandating midnight bathing under a full moon with cold water in an open environment lacks scientific justification and may lead to hypothermia or injury. Similarly, restricting daytime rest for pregnant women can result in fatigue, circulation issues, back injuries, and fetal harm. Moreover, low awareness and motivation to monitor fetal well-being, such as tracking fetal movements or measuring uterine fundal height, underscore gaps in maternal health knowledge. Bridging these cultural-healthcare disparities is crucial in multiethnic societies.

Pregnancy care for women with hypertension requires attention from all sectors: health workers, communities, families, and health service providers. Louis et al. (2022) emphasizes that controlling hypertension during pregnancy requires a collaborative approach involving three key pillars: the community, healthcare practice, and research. The community includes family members, spouses, and the broader society, while healthcare practitioners encompass primary care providers, clinicians, and hospital-based medical and nursing professionals. Furthermore, Jones et al. (2017) highlight the importance of culturally appropriate maternity care services, which align with the maternal healthcare needs in West Java Province, Indonesia. Indigenous communities often prefer traditional birth attendants over professional healthcare providers. A lack of cultural competence among healthcare professionals impacts maternal care choices, influencing decision-making for women and families during pregnancy.

Nursing interventions in the form of a checklist for managing hypertension during pregnancy are crucial for community development, as they foster awareness, participation, and sustainable change. This instrument empowers individuals, enhances the social capacity of pregnant women and their families, and strengthens holistic care, ultimately leading to improved quality of life and greater independence (Thorseth, 2020). The nursing intervention checklist for pregnancy with hypertension is essential in addressing global challenges and building resilient, thriving communities. It plays a vital role in raising awareness about critical issues such as health, nutrition, and activity/exercise, providing accurate information that empowers individuals to make informed decisions.

Hypertension in pregnancy requires appropriate care and support to help individuals develop constructive coping skills and adapt to their condition. Culture and beliefs can influence the management of hypertension during pregnancy, as not all cultural practices and beliefs align with health science. Therefore, pregnancy care based on cultural and belief approaches requires careful monitoring to prevent health complications. The nursing intervention checklist for hypertension in pregnancy serves as a strategy to improve the quality of maternity nursing care for women with hypertensive pregnancies. The campaign materials in this study were developed based on the Nursing Care Plan NANDA NOC NIC standards (2023), Indonesian nursing diagnosis standards (2023), and Indonesian Nursing Intervention Standards (2023).

Indonesians often consider themselves healthy if they can carry out their daily activities without disruption, maintain a strong sense of balance and harmony, and view health as a physical state that cannot be achieved without spiritual well-being (Widayanti et al., 2020). Ekawati et al. (2020) explain that nearly all global maternal deaths caused by hypertension in pregnancy occur in low- to middle-income countries. Efforts to address this issue have been varied among healthcare providers, largely due to the lack of available guidelines for local primary care practitioners, who are typically the primary healthcare providers. This article presents a nursing intervention checklist for hypertension in pregnancy that incorporates a cultural belief approach to promote self-care skills among women with hypertensive pregnancies. The checklist is designed to meet the need for culturally sensitive prenatal care references, ultimately improving both maternal and newborn well-being.

CONCLUSION

A nursing intervention checklist for hypertensive pregnancy was developed through expert interviews and evaluations, integrating nursing diagnoses and interventions to support adaptation and coping in pregnant women with hypertension. Nurses provide culturally tailored care information, helping women incorporate it into their daily self-care routines. However, this study is limited to Bandung, West Java Province, Indonesia, and may not fully represent the cultural diversity and behavioral differences found in other regions or countries. This checklist offers a practical framework for nurses to deliver culturally sensitive care to pregnant women with hypertension. By integrating cultural beliefs into nursing interventions, nurses can improve patient compliance and outcomes. Additionally, this tool can be used to guide education and empowerment, promoting self-care behaviors and fostering a more personalized approach to managing hypertension in pregnancy. Nurses are encouraged to consider the cultural context of each patient to ensure interventions are not only clinically effective but also culturally acceptable, ultimately enhancing maternal and fetal health.

Declaration of Interest

No potential conflict of interest was reported by the authors.

Acknowledgment

The authors thank the School of Nursing at Philippine Women's University and the Indonesian health research ethics committee for their advisory and research ethics approval, as well as Limijati Mother and Child Hospital in Bandung City for allowing senior maternal health experts to participate in interviews expert and reach consensus.

Funding

None.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

REFERENCES

Agus, Y., Horiuchi, S., & Porter, S. E. (2012). Rural Indonesia women's traditional beliefs about antenatal care. *BMC Research Notes, 5*(1), 589. https://doi.org/10.1186/1756-0500-5-589

Ansong, J., Asampong, E., & Baba Adongo, P. (2022). Socio-cultural beliefs and practices during pregnancy, childbirth, and postnatal period: A qualitative study in Southern Ghana. *Cogent Public Health, 9*, 2046908. https://doi.org/10.1080/27707571.2022.2046908

Aryastami, N. K., & Mubasyiroh, R. (2021). Traditional practices influencing the use of maternal health care services in Indonesia. *PLOS ONE, 16*(9), e0257032. https://doi.org/10.1371/journal.pone.0257032

Das, S., Abdulwahid, E., Moisan, A., & De Jesus, A. K. (2022). Use of quality improvement methodology to improve care of women with hypertensive disease in pregnancy and haemorrhage in Yemen (low-income, high-insecurity setting). *BMJ Open Quality, 11*(4), e002013. https://doi.org/10.1136/bmjoq-2022-002013

Ekawati, F. M., Emilia, O., Brennecke, S., Gunn, J., Licqurish, S., & Lau, P. (2020). Opportunities for improving hypertensive disorders of pregnancy (HDP) management in primary care settings: A review of international published guidelines in the context of pregnancy care in Indonesia. *Pregnancy Hypertension, 19*, 195–204. https://doi.org/10.1016/j.preghy.2020.01.012

Zert, E., & Tsigas, B. (2022). The Preeclampsia Foundation: The voice and views of the patient and her family. *American Journal of Obstetrics and Gynecology, 226*(2), S1254–S1264.e1. https://doi.org/10.1016/j.ajog.2020.10.053

Eljiz, K., Greenfield, D., Hogden, A., Agaliotis, M., Taylor, R., & Siddiqui, N. (2023). Implementing health system improvement: Resources and strategies for interprofessional teams. *BMJ Open Quality, 12*(1), e001896. https://doi.org/10.1136/bmjoq-2022-001896

Fellows, G. F., & Chance, G. W. (1982). High-risk pregnancy: Detection and management. *Canadian Family Physician, 28*, 1553–1557. http://www.ncbi.nlm.nih.gov/pubmed/21286514

Foster, W., McKellar, L., Fleet, J., & Sweet, L. (2022). Moral distress in midwifery practice: A concept analysis. *Nursing Ethics, 29*(2), 364–383. https://doi.org/10.1177/09697330211023983

Irwan, A. M., Potempa, K., Abikusno, N., & Syahrul, S. (2022). Self-care management for hypertension in Southeast Asia: A scoping review. *Journal of Multidisciplinary Healthcare, 15*(September), 2015–2032. https://doi.org/10.2147/JMDH.S367638

Islam, M. A., Shanto, H. H., Jabbar, A., & Howlader, M. H. (2022). Caesarean section in Indonesia: Analysis of trends and socio-demographic correlates in three demographic and health surveys (2007–2017). *Dr. Sulaiman Al Habib Medical Journal, 4*(3), 136–144. https://doi.org/10.1007/s44229-022-00011-0

Jones, E., Lattof, S. R., & Coast, E. (2017). Interventions to provide culturally-appropriate maternity care services: Factors affecting implementation. *BMC Pregnancy and Childbirth, 17*(1), 267. https://doi.org/10.1186/s12884-017-1449-7

Kovell, L. C., Sibai, D., Wilkie, G. L., Shankara, S., Moinul, S., Kaminsky, L., Lemon, S. C., & McManus, D. D. (2022). Identifying barriers, facilitators, and interventions to support healthy eating in pregnant women with or at risk for hypertensive disorders of pregnancy. *Cardiovascular Digital Health Journal, 3*(6), S1–S8. https://doi.org/10.1016/j.cvdhj.2022.10.001

Littleton, L. Y., Engebretson, J. C., & Learning, D. T. (2002). *Women's health nursing* (C. L. Esperti, Ed.; 1st ed.). DELMAR, Thomson Learning.

Louis, J. M., Parchem, J., Vaught, A., Tesfalul, M., Kendle, A., & Tsigas, E. (2022). Preeclampsia: A report and recommendations of the workshop of the Society for Maternal-Fetal Medicine and the Preeclampsia Foundation. *American Journal of Obstetrics and Gynecology, 227*(5). https://doi.org/10.1016/j.ajog.2022.06.038

McEwen, M., & Wills, E. M. (2015). *Theoretical basis for nursing* (5th ed.). Wolters Kluwer Health.

NANDA International. (2023). *Nursing diagnoses definitions and classification 2019-2023* (11th ed.). Thieme Publishers.

Paudel, M., Javanparast, S., Dasvarma, G., & Newman, L. (2018). Religio-cultural factors contributing to perinatal mortality and morbidity in mountain villages of Nepal: Implications for future healthcare provision. *PLOS ONE, 13*(3), e0194328. https://doi.org/10.1371/journal.pone.0194328

Polit, D. F., & Beck, C. T. (2020). *Essentials of nursing research: Appraising evidence for nursing practice* (9th ed.). Wolters Kluwer Lippincott Williams & Wilkins

Pratami, E., Sukesi, S., & Suparji, S. (2022). Model of maternal behavior in pregnancy-based care transcultural care theory (Sunrise Model) and PRECEDE-based. Open *Access Macedonian Journal of Medical Sciences, 10*(G), 619–624. https://doi.org/10.3889/oamjms.2022.8871

Rahayu, K. D., & Vallesteros, L. (2024). *Experiences of hypertensive pregnant women implementing pregnancy care using a cultural belief approach: A phenomenological study*. 9th PINC 2024 Abstract Book: Reshaping Nursing Education and Practice Towards Global Disaster Nursing and Sustainable Development, 2. https://pinc.fkep.unpad.ac.id/absbook/9th_PINC_ABSTRACT_BOOKS_2024.pdf

Rahayu, K. D., Hartiningsih, S. S., Herawati, Y., Hernawati, Y., Kartika, I., Rahmawati, N., Sari, D. P., Suryani, I., Risyanti, B., Syafrullah, H., Lestari, W., Danismaya, I., Ermiati, E., & Arifin, H. (2023). Pregnancy care for maternal and fetal wellbeing: An ethnographic study. *British Journal of Midwifery, 31*(12), 676–684. https://doi.org/10.12968/bjom.2023.31.12.676

Rahayu, K. D., Rosa, R. D. D., & Vallesteros, L. T. (2024). A concept analysis of transcultural nursing practices. *The Journal of Palembang Nursing Studies, 3*(2), 96–108. https://doi.org/10.55048/jpns132

Salsabila, S., Faizah, Z., & Prasetyo, B. (2022). *Faktor sosial budaya yang memengaruhi kesehatan ibu dan anak (studi etnografi)* [Cultural factors influencing maternal and child health (an ethnographic study)]. *Oksitosin: Jurnal Ilmiah Kebidanan, 9*(1), 67–79. https://doi.org/10.35316/oksitosin.v9i1.1651

Slade, L. J., Mistry, H. D., & Bone, J. N. (2023). American College of Cardiology and American Heart Association blood pressure categories — A systematic review of the relationship with adverse pregnancy outcomes in the first half of pregnancy. *The American Journal of Obstetrics & Gynecology, 228*(4), 418-429.e34. https://doi.org/10.1016/j.ajog.2022.10.004

Sungkar, A., & Surya, R. (2020). Antenatal care for high-risk pregnancy. *Cermin Dunia Kedokteran, 47*(10), 731. https://doi.org/10.55175/cdk.v47i10.109

Thorseth, A. H. (2021). What are information, education and communication materials? *COVID-19 Hygiene Hub Resources*. https://resources.hygienehub.info/en/articles/4228335-what-are-information-education-and-communication-materials

Widayanti, A. W., Green, J. A., Heydon, S., & Norris, P. (2020). Health-seeking behavior of people in Indonesia: A narrative review. *Journal of Epidemiology and Global Health, 10*(1), 6–15. https://doi.org/10.2991/jegh.k.200102.00

World Health Organization. (2020). *Maternal mortality evidence brief*. https://www.who.int/publications/i/item/maternal-mortality-evidence-brief

Zhai, X. D., Wang, C. X., Ma, Y. J., Yu, J. X., Xiang, S. S., Jiao, H. Y., Shao, P., Guan, X., Wang, J., & Zhang, H. Q. (2020). Using the modified Delphi method to research the influencing factors of long-term health-related quality of life in patients with unruptured intracranial aneurysms after endovascular treatment. *Chinese Neurosurgical Journal, 6*(1), 1–6. https://doi.org/10.1186/s41016-020-00186-1