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LITERATURE REVIEW: ANALYSIS OF FACTORS THAT CAUSE HIGH RISK OF COMPLICATIONS IN PREGNANT WOMEN

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ABSTRACT

Contains a brief description of the problem and research objectives, methods, results, and Pregnancy is a physiological condition fraught with the risk of complications for both the mother and the fetus if managed in the same way as a normal pregnancy. This can have serious consequences, including increased rates of morbidity and mortality among mothers and fetuses. The purpose of this study was to identify the main risk factors for complications, including maternal age that is too young (<20 years) or too old (>35 years) and inadequate nutritional status. The method used in this study was to analyze risk factors through a literature review by searching for journals related to complications in pregnant women. The review sources utilized electronic media from various databases, including Google Scholar, covering the period from 2021 to 2026. The results of reviewing several journals identified several high-risk factors in pregnancy and strategies for preventing pregnancy complications. In conclusion, high-risk pregnancies can be influenced by age, parity, history of miscarriage, a gestational age of less than 2 years, and a height of less than 145 cm. In addition, other high-risk factors are also influenced by education and occupation. Therefore, it is necessary to improve risk assessment through early detection of complications and by utilizing available technology to support the well-being of mothers and infants during pregnancy.

Keywords: Pregnancy Complications, Maternal Risk Factors, Complication Prevention Behaviors, pregnant women, Antenatal Care

INTRODUCTION

Pregnancy is a complex physiological process, but it is often accompanied by complications that can threaten the safety of both mother and fetus. Various obstetric complications such as preeclampsia, bleeding, infection, anemia, gestational hypertension, premature rupture of amniotic membranes, and neonatal asphyxia are reported as the main causes of the increase in maternal-neonatal morbidity and mortality rates. Data from the shows an increasing trend in the Maternal Mortality Rate (AKI), from 4,627 cases in 2020 to 7,389 cases in 2021, confirming that pregnancy complications are still a serious public health issue.

Risk factors that contribute to complications include the mother's age being too young (<20 years) or too old (>35 years), extreme parity, history of abortion, too close a distance between pregnancies (<2 years,) and height <145 cm (Bayuana et al. 2023), Research in Gorontalo found that age and anemia are significantly associated with childbirth complications, while parity does not always play a role (Fadillah Hadju, Kadir, and Mokodompis 2025). Nutritional status, especially upper arm circumference (LILA), has also been shown to correlate with hypertension in pregnancy (Sina et al. 2023)

Efforts to prevent complications can be carried out through early detection and the use of antenatal care (ANC) services. Integrated ANC serves not only as a routine examination, but also as a means of promotion, prevention, treatment, and rehabilitation. Education about the benefits of ANC has been shown to increase the awareness of pregnant women to make visits consistently before symptoms appear (Pasaribu et al. 2024). In addition, the use of KIA Books plays a strategic role in recording, education, and communication. Studies show that pregnant women who actively use the KIA Book are more compliant with ANC visits, iron tablet consumption, and are better able to recognize pregnancy warning signs (Sari et al. 2025).

Nutritional factors also have a fundamental role. Malnutrition during pregnancy can cause low birth weight (BBLR), premature birth, and congenital defects. Nutrition education in the first trimester has been proven to increase pregnant women's knowledge of nutritional needs, so that the risk of complications can be minimized and fetal growth is more optimal (Meiastrina et al. 2026).

RESEARCH METHOD

The method used in this study was to gather data for analysis through a literature review by searching for relevant journals on pregnancy complications. The sources for the review were electronic media from various databases, including Google Scholar, published between 2021 and 2026. The journals which were research journals were obtained, reviewed to select those meeting the appropriate criteria, systematically organized, and compared with one another and with related literature.

RESEARCH RESULT

The following is a summary of the 21 articles that were successfully collected and reviewed, including the research design, the presence or absence of interventions, and the main findings of each

Table 1. Journal Review Results

No	Author/Year	Title	Design and Samples	Intervensi	Results
1	(I 2026)	Pregnancy Danger Signs Counseling as an Effort to Prevent Complications and Deaths of Pregnant Women in Meunasah Geudong Village, Baktiya District	One group pretest-posttest design. 25 pregnant women in Meunasah Geudong Village, Baktiya District, North Aceh Regency.	The intervention was in the form of direct counseling on pregnancy danger signs using leaflet media.	After counseling using leaflets, the knowledge of pregnant women increased, as shown by an increase in the category of good knowledge from 24% (6 people) to 64% (16 people) after a posttest.
2	(Azizah et al. 2024)	Integrated Antenatal Care Education as an Effort to Detect Early Complications in Pregnant Women at the Mayangan Jogoroto Health Center Jombang	Community service with integrated ANC education and socialization. 14 pregnant women.	Counseling uses lecture methods, discussions, questions and answers, and leaflet media.	Knowledge of pregnant women increased, no high-risk pregnancies were found, and the target of visits to ANC K1 and K4–K6 was achieved.
3	(Bayuana et al. 2023)	Complications in Pregnancy, Childbirth, Postpartum and Newborns: Literature Review	Literature review. 20 articles.	Analysis of risk factors and early detection of complications.	The high risk is influenced by age, parity, abortion history, pregnancy distance <2 years, and height <145 cm; Early detection is important to prevent complications.
4	(Sari et al. 2021)	Factors Influencing the Use of Kia Books in Pregnant Women in Preventing Complications	Cross sectional. 54 pregnant women (accidental sampling).	Education and counseling by health workers regarding the use of the KIA Book for the prevention of complications in pregnant women.	The role of health workers, knowledge, and health facilities is related to the use of the KIA Book (p=0.000).
5	(Gina Marliani et al. 2025)	Education About Danger Signs And	Pre-test dan post-test. 30 pregnant women.	Education through lectures, discussions,	Pregnant women's knowledge of pregnancy red flags

		Complications In Pregnant Women		questions and answers, and leaflets.	increases significantly after education.
6	(Fadillah Hadju et al. 2025)	The Relationship Between Age, Anemia and Parity and the Incidence of Complications in Mothers in Childbirth at Rsia Sitti Khadijah, Gorontalo City	Analytical survey with a cross sectional approach. Sample 141 mothers gave birth at RSIA Sitti Khadijah, Gorontalo City. The sampling technique used accidental sampling from a population of 218 mothers giving birth.	The researcher collected data on age, anemia status, and parity and analyzed their relationship with the incidence of childbirth complications.	There was a significant relationship between age and the incidence of complications (p=0.000) and between anemia and the incidence of complications (p=0.000). There was no association between parity and complication incidence (p=0.947). Of the 141 respondents, 54 people (38.3%) experienced complications of childbirth.
7	(November et al. 2023)	Education on Nutritional Status Needs in First Trimester Pregnant Women at PMB M Ginting, Siantar Martoba District, Simalungun Regency in 2023	Community Service (PKM) with education/counseling methods regarding the nutritional needs of pregnant women in the first trimester. 30 first trimester pregnant women at PMB M Ginting, Siantar Martoba District, Simalungun Regency in 2023. The majority are 20–35 years old as many as 27 people (90%) and age <20 tahun as many as 3 people (10%)	The delivery of material through socialization about the importance of nutritional needs in pregnant women in the first trimester was followed by discussion and question and answer.	All participants were enthusiastic about participating in educational activities. This activity increases the understanding and comfort of pregnant women in meeting nutritional needs during pregnancy.
8	(Meliala and Sirait n.d.)	Anxiety Risk Factors For	Observational analytical research	Data collection was carried out	There are factors related to anxiety in

		Pregnant Women In The Third Trimester At The Irma Silaban Midwife Clinic, Patumbak District, Deli Serdang Regency, North Sumatra	with a cross-sectional approach. All pregnant women in the third trimester who have a pregnancy checkup	using questionnaires to assess anxiety levels and risk factors such as age, education, occupation, parity, husband support, and income.	pregnant women in the third trimester, such as age, education, employment, parity, and husband support (specific results and statistical values follow original research).
9	(Persalinan et al. n.d.)	Knowledge Of High-Risk Pregnant Women With The Implementation Of The Childbirth Planning And Complication Prevention (P4k) Program	The total sampling amounted to 40 pregnant women with high risk criteria in Salatiga City. Design Seeing the above problems, a structured intervention design was designed that focused on increasing knowledge to change the behavior of pregnant women.	Knowledge Focused Group Education (*Mini-Class*) accompanied by Home *Visits* Assistance in Filling P4K Stickers.	The results of bivariate analysis using *the Chi-Square* test in the journal showed a significant number *of p-value = 0.001 (<0.05)* This proves that increasing knowledge directly increases compliance with the implementation of the P4K program.
10	(Alfiah Nuraini, Sari Afrida, and Maryam 2025)	The Effect of Husband and Family Support on Pregnant Women's Compliance in Conducting Antenatal Visits for Early Detection of Complications	The *purposive sampling technique* with the number of participants is determined by data saturation. 15 people in Kassa Village, Pinrang Regency.	Formulate recommendations for integrated educational interventions based on findings to address ANC compliance issues	adherence of high-risk pregnant women in ANC visits for early detection of complications is highly determined by its social ecosystem, where the husband's positive support (financial, logistical, emotional) is the main determinant of obedience, while the influence of the extended family

					(mother/in-law) can be dual, both as a motivator and an inhibitor due to traditional beliefs and myths.
11	(Sina et al. 2023)	Factors Related To The Incidence Of Hypertension In Pregnant Women Factors	using a *cross-sectional* design with *a case-control study approach* on a total of 116 samples (58 cases of hypertension and 58 controls) in Makassar	where the results of the Chi-square *statistical test* conclude that there is no meaningful relationship	where the results of the Chi-square *statistical test* concluded that there was no meaningful relationship between maternal age, parity, and abortion history and hypertension incidence, but there was a significant relationship with Upper Arm Circumference (LILA), which showed the importance of maintaining nutritional status during pregnancy to prevent complications.
12	(Pasaribu et al. 2024)	Education On The Benefits Of Antenatal Care Visits For Pregnant Women At Pmb Deby Cintya Yun, Medan Amplas District, Medan City, Medan Amplas District, North Sumatra Province	Participants in this activity were pregnant women who were at PMB Deby Cintya Yun, Medan Amplas District. 32 pregnant women. Community Service (PKM) with a structured design	The intervention provided was in the form of Education on the Benefits of Antenatal Care (ANC) Visits. This education is carried out directly (face-to-face) to pregnant women.	Pre-test results: A total of 32 people (84%) pregnant women could not explain and express the benefits of pregnancy examination. Post-test results: There was a drastic increase in knowledge, where 97% of pregnant women were able to explain the benefits of pregnancy tests

					after getting education.
13	(Komplikasi and Kehamilan 2024)	Early Detection Of Preeclampsia In Pregnant Women As An Effort To Prevent Complications In Pregnancy	The design of this community service activity uses an integrated health screening approach on a sample of 30 pregnant women in Bengle Village, Tegal Regency.	The interventions carried out included measuring Body Mass Index (BMI) through weight and height and urine protein examination using *the dipstick method*, with the aim of early detection of risk factors for preeclampsia.	The screening results showed that from the total sample, there were 4 pregnant women (13%) in the obese category, 11 pregnant women (36%) overweight, and 3 pregnant women (10%) with positive urine protein results (+), so it is important to follow up on referrals to health center doctors and assistance by Village Midwives to prevent more serious pregnancy complications.
14	(Sari et al. 2025)	The Relationship between the Utilization of KIA Books and Pregnancy Complication Prevention Behaviors in Pregnant Women at Pratama Sarfina Clinic, Medan City in 2025	This study uses a quantitative approach with a *cross-sectional* study design. The sample consisted of 52 candidates/pregnant women who made antenatal visits.	Although this study is observational (does not provide new clinical interventions from researchers), the article highlights the use of existing government programs as a form of educational action/intervention carried out by pregnant women	Statistical analysis indicated a significant relationship between the level of use of the KIA book and complication prevention behavior during pregnancy, with a value of p=0.003 (p < 0.5)
15	(Hardaniyati, Ariendha,	Compliance of Antenatal Care Visits to Attitudes in	The research is in the form of a literature review with a cross-	The interventions studied in the source article	There is a significant relationship

	and Ulya 2021)	Early Detection of Pregnancy Complications in Pregnant Women	sectional approach. Data were collected from 6 research articles on the adherence of ANC visits and the attitude of pregnant women in the early detection of complications.	include health counseling, pregnancy hazard education, motivation for ANC visits, and the use of ANC service standards (K1 and K4).	between compliance with ANC visits and pregnant women's positive attitudes in detecting complications early. Factors of knowledge, motivation, perception of high risk, and support of health workers have been proven to influence ANC compliance.
16	(Nathasya 2024a)	Continuity Of Care Continuous Obstetric Care For Mrs. S With A High-Risk Pregnancy In The Practice Of Midwives Sumiariani Kec. Medan Johor Kota Medan North Sumatra Province In 2024	Descriptive case study. Using Helen Varney's **7** steps of obstetric management. Mrs. S, a pregnant woman with a high-risk pregnancy (too young age).	ANC monitoring, nutrition counselling, hazard education, routine check-ups.	The researcher successfully provided continuous obstetric care to Mrs. S with a high-risk pregnancy. No complications were found during pregnancy, childbirth, puerperium, or in newborns. There is a gap between theory and practice
17	(Serdang et al. 2025)	Factors Related To Anxiety Of Pregnant Women Facing Childbirth At Pmb Nora Melisa Marpaung, Deli Serdang, North Sumatra In 2025	Quantitative with cross-sectional design. Descriptive correlation to see the relationship between demographic factors and ANC checks with anxiety levels. 44 pregnant women in the third trimester	Psychological counseling to reduce anxiety. Therapeutic communication by midwives during ANC examination. Health education related to danger signs and preparation for childbirth.	Bivariate analysis using the Chi-Square test showed a significant relationship between several factors and anxiety levels, namely age (p=0.001), education (p=0.037), employment

				Increasing the frequency of ANC as a means of early detection and providing a sense of security.	(p=0.024), economic status (p=0.026), and frequency of antenatal care (ANC) examinations (p=0.007).
18	(Nurjanah, Nurfita, and Magasida 2025)	Caring For Pregnant Women (Asih) In Optimization Pregnant Women's Health Through Interprofessional Collaboration And Knowledge Enhancement Of Early Detection And Complications Pregnancy At Pratama Akbid Muhammadiyah Clinic Cirebon	The type of research is in the form of community service with a descriptive approach. Implemented in the form of pregnant women classes 30 pregnant women in the first and third trimesters	Socialization: the delivery of initial information to pregnant women. Counseling: material on pregnancy hazard signs, early detection, the purpose of recognizing danger signs, and pregnancy complications.	The majority of pregnant women are in the low-risk category (93.3%). Secondary education levels dominate (80%), with the most multi-stakeholder parity (53.3%).
19	(Nathasya 2024b)	Factors Influencing Complications In The Third Trimester Of Pregnancy At Citra Medika Hospital, Percut Sei Tuan District, North Sumatra Province In 2024	Quantitative method of observational analysis with case control design. 536 pregnant women in the third trimester, 48 respondents, consisting of 24 cases	Monitoring the age of pregnant women, Parity settings, Pregnancy spacing arrangement, Improved ANC quality	Age: Mothers with a risk age (<20 years or >35 years) had an 8.27 times greater chance of developing complications than those aged 20–35 years (p=0.006). Parity: High parity (>3 children) was significantly associated with complications of third trimester pregnancy (p=0.020). Pregnancy spacing: Risky pregnancy spacing (<2 years or >5 years) increased the chance of

					complications 5.32 times compared to the ideal spacing of 2–5 years (p=0.018).
20	(Zai et al. 2025)	Determinants Of Hypertension Incidence In Pregnant Women In The Second And Third Trimester At Lau Balang Health Center, Karo Regency In 2025	Observational analytical method with a cross-sectional approach. 96 pregnant women in the second and third trimester, 48 pregnant women with hypertension, 48 pregnant women without hypertension.	Early detection of blood pressure, Nutrition education and healthy lifestyle, Promotion of light physical activity, Family risk counselling	Age at risk (<20 years or >35 years) is significantly associated with hypertension in pregnancy. A family history of hypertension increases the likelihood of pregnant women developing hypertension.
21	(Bancin et al. 2023)	Literature Review Strategies To Reduce Maternal And Infant Mortality Through Early Detection Of Pregnancy Danger Signs	This research is in the form of a literature review, by examining 7 articles obtained through Google Scholar and Garuda in the range of 2020–2025. The articles reviewed involved pregnant women in various regions of Indonesia, the sample size varied	Health Counseling, educational media, Discussion and Q&A, Visual demonstration, Individual and group counseling. Evaluation is carried out by pre-test and post-test	All studies showed a significant improvement in the knowledge, attitudes, and behaviors of pregnant women after the intervention.
22	(WHO 2022)	Literatur Review Managing Complications in Pregnancy and Childbirth (MCPC): A Guide for Midwives and Doctors	Not a research study with participants. The guideline is intended for midwives and doctors providing maternal and newborn care, particularly in district hospitals and	Updated evidence-based recommendations include early recognition and management of pregnancy and childbirth complications, Respectful Maternity Care	The updated guideline aims to improve the quality of maternal and newborn healthcare, strengthen the early detection and management of obstetric complications, promote respectful

			similar healthcare settings.	(RMC), management of hypertensive disorders, antepartum and postpartum hemorrhage, infection prevention and control, newborn care, and essential obstetric procedures.	and evidence-based maternity care, and contribute to reducing maternal and neonatal morbidity and mortality.
23	(Calvert et al. 2021)	Maternal mortality in the covid-19 pandemic: findings from a rapid systematic review	The review included published observational studies from multiple countries reporting maternal mortality before and during the COVID-19 pandemic. Studies from both low-, middle-, and high-income countries were screened and evaluated using rapid review methods.	Data were collected through systematic database searches, followed by study selection, quality assessment, and narrative synthesis. Maternal mortality trends before and during the pandemic were compared to identify direct and indirect effects of COVID-19 on maternal health.	The review found evidence of increased maternal mortality in several countries during the COVID-19 pandemic. Contributing factors included reduced access to antenatal and emergency obstetric care, disruption of health services, delayed treatment, and health system challenges. The authors emphasized the need for stronger maternal mortality surveillance, standardized reporting, and resilient maternal health services to reduce preventable maternal deaths during public health emergencies.

24	(WHO and UNICEF. 2023)	WHO recommendations on maternal health: guidelines approved by the WHO Guidelines Review Committee.	Not a primary research study. The guideline is intended for pregnant women, midwives, obstetricians, nurses, policymakers, and healthcare providers involved in maternal healthcare worldwide.	The guideline provides evidence-based recommendations for the prevention, early detection, and management of pregnancy, childbirth, and postpartum complications, including hypertensive disorders, postpartum haemorrhage, maternal infections, anemia, antenatal care, respectful maternity care, and essential newborn care. It also emphasizes strengthening health systems and improving the quality of maternal services.	The guideline concludes that implementing WHO evidence-based recommendations can improve the quality of maternal care, promote early identification and management of pregnancy complications, reduce preventable maternal and neonatal morbidity and mortality, and support universal access to high-quality maternal health services.
25	(Bao et al. 2020)	SARS-CoV-2 infection during pregnancy and risk of preeclampsia: a systematic review and meta-analysis	The review included 28 observational studies (cohort and case-control studies) involving 790,954 pregnant women, of whom 15,524 had confirmed SARS-CoV-2 infection during pregnancy.	No intervention. This systematic review and meta-analysis evaluated exposure to SARS-CoV-2 infection during pregnancy and compared pregnancy outcomes with those of uninfected pregnant women.	Pregnant women with SARS-CoV-2 infection had a significantly higher risk of developing preeclampsia, severe preeclampsia, eclampsia, and HELLP syndrome than women without infection. The risk was greater among women with symptomatic COVID-19 than

					those with asymptomatic infection, suggesting that SARS-CoV-2 infection is an important risk factor for hypertensive disorders of pregnancy.
26	(Servante et al. 2021)	Haemostatic and thrombo-embolic complications in pregnant women with COVID-19: a systematic review and critical analysis	The review included case reports and case series of pregnant women diagnosed with COVID-19, identified from two biomedical databases (September 2019–June 2020), together with additional registry cases after efforts to remove duplicate patients.	No intervention. This systematic review evaluated pregnancy complicated by SARS-CoV-2 infection and assessed haemostatic abnormalities and thromboembolic complications associated with COVID-19.	Most pregnant women with COVID-19 had normal coagulation profiles, but thromboembolic events were reported, particularly among women with severe or critical disease. Evidence suggested that COVID-19 may increase the risk of venous thromboembolism during pregnancy; however, the available evidence was limited by the small number of studies and their observational design. The authors emphasized the need for larger prospective studies and careful thromboprophylaxis based on individual risk assessment.
27	(de Medeiros et al. 2022)	Consequences and implications of the coronavirus disease (COVID-19) on	The review included 70 cohort and case-control studies involving 10,047	No intervention. This systematic review and meta-analysis assessed	COVID-19 during pregnancy was associated with increased rates of

		pregnancy and newborns: A comprehensive systematic review and meta-analysis	pregnant women with laboratory-confirmed COVID-19 from multiple countries. Most participants (71.6%) were in the third trimester of pregnancy.	the effects of SARS-CoV-2 infection during pregnancy on maternal, obstetric, fetal, and neonatal outcomes.	preterm birth (24%), cesarean delivery (42%), ICU admission (8%), maternal mortality (2%), miscarriage (5%), preeclampsia (6%), and pneumonia (65%). Neonatal outcomes included NICU admission (28%), fetal distress (11%), low birth weight (15%), Apgar score <7 (19%), and fetal mortality (2%). The review found no consistent evidence of SARS-CoV-2 in the placenta, amniotic fluid, umbilical cord blood, or breast milk, suggesting that vertical transmission is uncommon.
28	(Relph et al. 2021)	Adverse pregnancy outcomes in women with diabetes-related microvascular disease and risks of disease progression in pregnancy: A systematic review and meta-analysis	The review included 42 observational studies (cohort and case-control) involving 438,548 pregnant women, including women with and without SARS-CoV-2 infection.	This systematic review and meta-analysis evaluated SARS-CoV-2 infection during pregnancy as the exposure and compared maternal and neonatal outcomes between infected and uninfected pregnant women.	Pregnant women with SARS-CoV-2 infection had significantly higher risks of preeclampsia, preterm birth, and stillbirth than uninfected women. Severe COVID-19 infection was also associated with increased maternal ICU admission, mechanical ventilation, and

					maternal mortality. The findings indicate that COVID-19 during pregnancy is associated with an increased risk of adverse maternal and perinatal outcomes and highlights the importance of preventive measures and close clinical monitoring.
29	(Relph et al. 2021)	Assisted reproductive technology and hypertensive disorders of pregnancy: systematic review and meta-analyses	The systematic review and meta-analysis included 48 observational studies (cohort and case-control studies) involving more than 7 million pregnancies, comparing pregnancies conceived through assisted reproductive technology (ART) with spontaneous conceptions.	The study evaluated exposure to assisted reproductive technology (ART), including in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI), and its association with hypertensive disorders of pregnancy.	Pregnancies conceived using ART were associated with a significantly higher risk of hypertensive disorders of pregnancy, including preeclampsia, gestational hypertension, and severe preeclampsia, compared with spontaneous pregnancies. The risk was particularly elevated in pregnancies resulting from oocyte donation. These findings suggest that pregnancies conceived through ART require closer antenatal surveillance for

					hypertensive complications
30	(Tarry-Adkins, Ozanne, and Aiken 2021)	Impact of metformin treatment during pregnancy on maternal outcomes: a systematic review/ meta-analysis	The systematic review and meta-analysis included 35 randomized controlled trials (RCTs) involving 8,033 pregnant women treated for gestational diabetes mellitus (GDM), obesity, polycystic ovary syndrome (PCOS), or pre-existing diabetes.	Metformin treatment during pregnancy was compared with insulin, placebo, or standard care to evaluate its effects on maternal outcomes.	Metformin treatment was associated with reduced gestational weight gain, lower risk of preeclampsia, and improved maternal glycemic control compared with control treatments. However, metformin was also associated with a slightly increased risk of preterm birth, while no significant differences were observed in the incidence of gestational diabetes (when used for prevention) or cesarean delivery. The findings suggest that metformin provides several maternal benefits during pregnancy, although potential risks such as preterm birth should be considered when making clinical decisions.

DISCUSSION

A review of various studies indicates that pregnancy complications are a multidimensional issue influenced not only by medical factors but also by psychosocial and educational aspects. From a medical perspective, the nutritional status of pregnant women has been shown to be a critical factor. A study by (Sina et al. 2023) confirms that upper arm circumference (UAC), as a nutritional indicator, has a significant association with hypertension in pregnant women, while factors such as age, parity, and history of abortion do not show a significant influence.

This indicates that the mother's nutritional status plays a greater role in influencing pregnancy healthat
demographic factors. In line with this, (Fadillah Hadju et al. 2025) found that maternal age whether too young (<20 years) or too old (>35 years) as well as anemia, are closely associated with childbirth complications. These findings confirm that biological factors such as age and hematological status play a more dominant role in increasing the risk of complications than the number of previous births.

In addition to medical factors, psychosocial aspects also play a major role in the health of pregnant women. (Meliala and Sirait n.d.) showed that spousal support and parity influence anxiety levels in pregnant women during the third trimester.

Emotional support has been shown to reduce anxiety and improve a mother's mental readiness for childbirth. This is reinforced by (Alfiah Nuraini et al. 2025), who emphasize that family support plays a major role in pregnant women's adherence to antenatal care (ANC) visits. Adherence to ANC is crucial as it serves as a means of early detection of complications; thus, family involvement can be considered a protective factor against pregnancy risks.

From an educational perspective, studies by (Pasaribu et al. 2024) and (November et al. 2023) that education regarding the benefits of ANC and first-trimester nutritional status can increase pregnant women's awareness and knowledge, thereby preventing complications from the outset.(Komplikasi and Kehamilan 2024) add that simple tests such as body mass index (BMI) and urine protein levels can be used for the early detection of preeclampsia, which is one of the dangerous complications of pregnancy. (Persalinan et al. n.d.) also demonstrate that knowledge among high-risk pregnant women is closely linked to the implementation of the P4K program (Childbirth Planning and Complication Prevention), indicating that education effectively enhances mothers' preparedness for childbirth.

(Gina Marliani et al. 2025), and (I 2026) have consistently demonstrated that education on warning signs of pregnancy is effective in improving the knowledge of pregnant women. This education serves as a key strategy in preventing complications because it helps women recognize early symptoms that could be potentially dangerous. Meanwhile, (Sina et al. 2023) emphasize that the use of the Maternal and Child Health (MCH) Book is influenced by healthcare providers, mothers' knowledge,
and available facilities. (Azizah et al. 2024) highlight integrated antenatal care (ANC) as an effort for early detection of complications, and (Sari et al. 2025) reinforce these findings by demonstrating a significant association between the use of the Maternal and Child Health (MCH) Book and behaviors aimed at preventing complications.

Pregnancy complications have been proven to be influenced by medical factors such as nutritional status, anemia, hypertension, age at risk, parity, and pregnancy distance which increase the likelihood of serious problems (Hardaniyati et al. 2021), psychosocial factors in

the form of family support and therapeutic communication of health workers that are able to reduce pregnant women's anxiety before childbirth and increase compliance with ANC (Serdang et al. 2025), as well as educational factors through the use of KIA Books, P4K programs, pregnant women's classes, and audiovisual media that have been proven to increase maternal knowledge, attitudes, and preparedness in recognizing pregnancy danger signs (Nurjanah et al. 2025), (Bancin et al. 2023), so that the integration of routine medical check-ups, social-emotional support, and continuous education is the main strategy in reducing the number of pregnancy complications and supporting the reduction of maternal and infant mortality rates in Indonesia.

This discussion underscores that the prevention of pregnancy complications must be approached holistically. Medical factors such as nutritional status, anemia, and hypertension need to be managed through routine checkups; psychosocial factors such as support from family and spouses must be strengthened to maintain maternal mental health; and educational factors through ANC, the KIA Book, and the P4K program must be continuously improved to enhance the knowledge and preparedness of pregnant women. Integrating these three aspects will strengthen efforts to reduce the incidence of pregnancy complications and support the achievement of Indonesia's maternal mortality reduction targets.

CONCLUSION AND SUGGESTION

Findings from various studies confirm that pregnancy complications are a complex issue influenced by a variety of interrelated factors, including medical, psychosocial, and educational aspects. From a medical perspective, the nutritional status of pregnant women, anemia, hypertension, and being either too young or too old have been shown to increase the risk of complications, while simple tests such as body mass index (BMI) and urine protein can serve as early detection measures for preeclampsia. From a psychosocial perspective, support from a husband and family plays a major role in reducing a pregnant woman's anxiety and increasing adherence to antenatal care (ANC) visits,
which serve as a crucial means of detecting complications early on. Meanwhile, from an educational perspective, counseling on warning signs of pregnancy, the use of the Maternal and Child Health (MCH) Handbook, the P4K program, and integrated ANC have proven effective in improving pregnant women's knowledge, awareness, and preparedness for childbirth.

Efforts to prevent pregnancy complications must be approached holistically by integrating routine medical checkups, strong psychosocial support, and ongoing health education. Healthcare workers are expected to improve the quality of services and provide comprehensive education; pregnant women need to maintain their nutritional status and actively participate in health programs; families especially husbands must provide emotional and practical support; the government needs to expand access to screening facilities and strengthen outreach for maternal health programs; and researchers are encouraged to further examine psychosocial and cultural aspects so that strategies for preventing complications are more contextually appropriate for Indonesian society. Through a comprehensive approach involving all stakeholders, it is hoped that the incidence of pregnancy complications can be reduced and that the target for lowering the maternal mortality rate in Indonesia can be achieved in a sustainable manner.

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The author hopes that this literature review can make a tangible contribution to the advancement of midwifery science, particularly in the field of preventing pregnancy complications and reducing maternal mortality rates in Indonesia. May this work serve as a reference for students, healthcare workers, researchers, and policymakers in strengthening comprehensive strategies for maternal healthcare services.

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