

Preeclampsia and the Associated Risk Factors Among Pregnant Women in Indonesia: a Literature Review

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DOI: [10.22178/pos.102-1](https://doi.org/10.22178/pos.102-1)

LCC Subject Category: R5-920

Received 30.11.2023

Accepted 28.01.2024

Published online 31.03.2024

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Abstract. Nationally, the maternal mortality rate in Indonesia has dropped from 305 deaths per 100,000 live births to 189 deaths for 100,000 living births. The top three causes of maternal death are preeclampsia. Preeclampsia in pregnancy is the leading cause of death of 37%. This study was conducted to determine factors associated with preeclampsia among pregnant women in Indonesia. This scoping review method has the following inclusion criteria: scientific journals published most recently from January 2023 to December 2023. The research found 15 studies to fulfil the inclusion criteria determined by the author and topic discussion. Risk factors for preeclampsia among pregnant women were identified: parity, distance between pregnancies, pregnancy age, history of abortion, education, income, knowledge, prior history of illness, contraceptive use, ANC visit, nutritional status, and Body Mass Index (BMI). This research can be used as a reference for health promotion related to preeclampsia risk factors for intervention to prevent preeclampsia in pregnant women who are at risk of developing the disease and putting the lives of the mother and the fetus she is carrying at risk.

Keywords: factors; preeclampsia; pregnant woman; Indonesia.

INTRODUCTION

The health of mothers and children is essential for governments, as set out in the Sustainable Development Goals (SDGs) in the third paragraph of ensuring healthy lives and supporting well-being for all ages [1]. A mother's health is vital in improving the child's well-being [2]. Infant deaths, especially neonatal, can be closely linked to pregnancy complications that occur at an early or too old age, births with low birth weight, and unsafe births [3, 4]. When a mother dies, her family becomes more vulnerable, and when there are babies in the household, they are more likely to die before reaching the age of two [5].

Preventing maternal death, especially during childbirth, has become a concern both globally and nationally. One of the goals of the SDGs is to

reduce the maternal mortality rate to 70 deaths per 100,000 live births by 2030 [4]. Ensuring that all women have access to contraception, providing care for childbirth, as well as access to timely emergency care for pregnant mothers when they are going to give birth is considered to be the best effort in trying to achieve my goals [6]. Family planning involves attempts to avoid risky pregnancies because they are too early, too old, too many, or too close to pregnancy [4, 7]. Mother's health and family planning programs are essential to ensure "safe motherhood" and create a healthy new life [8].

Nationally, the maternal mortality rate in Indonesia has dropped from 305 deaths per 100,000 live births to 189 deaths for 100,000 living births [9]. The results show a significant decrease, even far below the target in 2022 of 205 deaths per

100,000 live births. That achievement must be pushed to be even better, to reach the target by 2024 of 183 deaths for 100,000 living births and > 70 deaths in 2030 [10]. According to the Maternal Perinatal Death Notification data on September 21, 2021, the top three causes of maternal death are preeclampsia (37.1%), bleeding (27.3%), infection (10.4%), with the highest place or location of death being in the hospital (84%) [11].

Mother's death is a problem in many parts of the world, including Indonesia. Preeclampsia in pregnancy is the leading cause of death at 37% [10]. Preeclampsia is a risk of pain and death for mothers and fetuses in the world. Preeclampsia is a health problem that occurs after more than 20 weeks of pregnancy, characterized by the onset of hypertension and proteinuria. Individuals can consider the possibility of preeclampsia if their weight increases by more than one kilogram in a week [12]. More than 830 women and 7700 newborns still die each day from pregnancy-related complications; an additional 7300 women experience a stillbirth, with approximately 16% occurring in pregnancies complicated by hypertension [13].

Preeclampsia (PE) occurs in 1.5% of pregnant women and occurs in 1% of the total pregnancy [14]. According to data from the World Health Organization, PE causes 76,000 maternal deaths each year in developing countries, which accounts for 16% of all mother deaths. The disease is also known as the most common cause of iatrogenic prematurity in developed countries [15]. Preeclampsia, which occurs in 10% of pregnant women, causes 76,000 maternal deaths and 500,000 infant deaths per year worldwide [16]. According to the 2019 National Institute for Health and Care Excellence (NICE) guidelines, women who have a history of hypertension in previous pregnancies or other maternal diseases, such as diabetes, high blood pressure, chronic kidney disease, autoimmune disease, and obesity, are at higher risk of developing preeclampsia. Pregnant mothers who are at the middle risk of 40 years of age, have a body mass index (BMI) of 35 kg/m², have a family history of preeclampsia, recurring pregnancy, or pregnancies with intervals of more than ten years are also at higher risks of having preeclampsia [17, 18]. Because of the potential risk of severe complications in the mother and fetus and the unpredictable course of PE disease, effective prevention is crucial. Therefore, this study was conducted to determine fac-

tors associated with preeclampsia among pregnant women in Indonesia.

METHOD

This scoping review method will be conducted using the five stages, with recent advancements by [19]. The article selection process is presented (Figure 1).

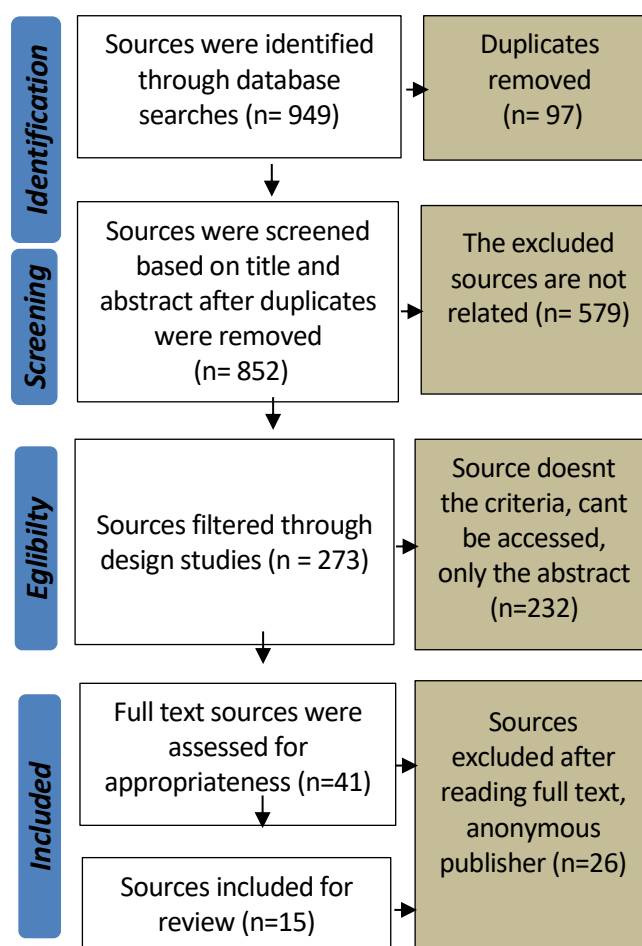


Figure 1 – Modified from PRISMA flow diagram for the article election process

Step 1: identifying the research question, to meet the study's objective, the researchers developed the following research question: "What are the factors associated with preeclampsia among pregnant women in Indonesia.?"

Step 2: Identify relevant studies; this research uses databases such as Google Scholar, Science Direct and Pubmed. Keywords and terms used in this research are English and Indonesian. In English, they are: factors, preeclampsia, pregnant woman, Indonesia and in Indonesia, they are: faktor, preeklampsia, ibu hamil, Indonesia.

Step 3: study selection; this study has the following inclusion criteria: scientific journals published most recently from January 2023 to December 2023, open access and complete text studies, the languages used are English and Indonesia, articles using cross-sectional, case-control, cohort, mix- method or longitudinal survey. Exclusion criteria: literature review journal, systematic review or univariate analysis, manuscript not available full text, PRISMA model used <http://www.prismastatement.org/>.

Step 4: Data extraction will include several variables: author, year of publication, research location, research design, research objectives, and published (Table 1).

Step 5: Collating, summarising and reporting the results. The research results are presented as a narrative of the topic studied.

RESULTS AND DISCUSSION

The well-being of mother and child is influenced by shared determinants such as health behaviour, health system, and family quality of life. Conditions of residence where a person lives, works, and is active are associated with various health risks. Furthermore, environmental and social factors such as access to health services, employment, economic opportunities, social assistance and the availability of resources to meet daily needs also affect health. The research found 15 studies to fulfil the criteria for inclusion determined by the author and by topic discussion about factors associated with preeclampsia among pregnant women in Indonesia. The results of the sampling technique can be seen in Table 1.

Table 1 – Characteristics of the studies

Author	Study Design	Sample, Results
[20]	Cross-sectional	In fifty-five respondents, there is a relationship between the history of hypertension ($p=0.00$), parity ($p=0.00$), and pregnancy distance ($p=0.00$) with the preeclampsia pregnant mothers in Puskesmas Kemu district of South Oku in 2023.
[21]	Case-control	One hundred ten respondents, pregnancy age ($p=0.00$), a history of abortion ($p=0.04$) and parity ($p=0.03$) were associated with preeclampsia in pregnant mothers.
[22]	Cross-sectional	One hundred thirty-two respondents, there was a correlation between age ($p=0.00$), a history of hypertension ($p=0.00$) and preeclampsia in pregnant mothers.
[23]	Cross-sectional	94 respondents, the results show a variable history of hypertension obtained ($p=0.00$), obesity ($p=0.00$), and mother's age ($p=0.00$), there is a relationship of preeclampsia among pregnant women at home at Palembang Muhammadiyah Hospital in 2022.
[24]	Cross-sectional	Of the 53 respondents, there was a relationship between education ($p=0.00$), average income ($p=0.01$), and knowledge ($p=0.00$) with preeclampsia in pregnant mothers.
[25]	Case-control	One hundred twelve respondents, there's a relationship between pregnancy age, mother's age, parity, and pregnancy complications history ($p<0.00$) with preeclampsia in pregnant mothers.
[26]	Cross-sectional	In eighty-one respondents, there is a relationship between age ($p=0.02$), parity ($p=0.00$), hypertension ($p=0.00$), and obesity ($p=0.01$) with preeclampsia incidence in pregnant mothers at the Mukomuko Hospital Pregnancy Police in 2022.
[27]	Case-control	In 105 respondents, there was a correlation between Body Mass Index (BMI) ($p\text{-value}=0.04$) and the incidence of preeclampsia in pregnant mothers.
[28]	Cross-sectional	Ninety-three respondents, there is a relationship between age ($p=0.00$), BMI ($p=0.00$), and parity ($p=0.003$) with the incidence of preeclampsia in pregnant mothers in RSUD Pakuhaji district of Tangerang.

Author	Study Design	Sample, Results
[29]	Case-control	For one hundred fifty-two respondents, risk factors of preeclampsia are age ($p=0.01$), contraceptives ($p=0.00$), parity ($p=0.00$), and hypertension ($p=0.00$).
[30]	Cross-sectional	Of the seventy-seven respondents, there is a significant correlation between the parity of pregnant mothers ($p=0.00$) and preeclampsia in the Bagan Sinembah district of Rokan Hilir.
[31]	Cohort	1.357 respondents, there was a relationship between ANC service visits (p -value= 0.00) and hypertension (p -value = 0.00) with incidence of preeclampsia.
[32]	Case-control	One hundred respondents found a correlation between the age of the mother ($p=0.00$) and contraceptives ($p=0.01$) with the incidence of preeclampsia.
[33]	Case-control	One hundred five respondents, there was a correlation of ANC visits ($p=0.00$), a history ($p=0.02$), nutritional status ($p=0.00$), obesity ($p=0.02$) of preeclampsia in pregnant mothers.
[34]	Case-control	For sixty respondents, the results showed that parity was at risk 6.5 times ($OR=6.57$, $p=0.00$), ANC visits were at risk 5.5 times ($OR=5.5$; $p=0.00$), and the mother's work was at risk four times ($OR=4.03$, $p=0.01$) to events preeclampsia.

Parity. The parity is the number of living children or the amount of pregnancies that produce a fetus capable of living out of the womb. The best parity is ≤ 3 times and the worst is ≥ 3 times [35]. A mother who gives birth too often doesn't get a chance to fix her own body because she needs enough energy to recover from the condition after giving birth to her child. The first parity is associated with the mother's lack of knowledge and experience in pregnancy care [36]. The safest parity is from 2 to 3, while the most risk is from 1 to 3. Mothers with a high parity (more than 4) have already experienced a decrease in reproductive function. Women with high parity are risk factors for pregnancy anaemia, diabetes mellitus (DM), hypertension, placenta previa, uterine rupture, low birth weight (BBLR), preeclampsia, premature infants can even cause child death; multiparity was significantly associated with a low risk of preeclampsia (adjusted odds ratio: 0.08; 95% confidence interval: 0.01–0.95) [37]. Preeclampsia occurs not only in primigravida in grand multipara but also has a risk of developing eclampsia — pregnancy and giving birth more than three times. Excessive uterine stretching causes excessive ischemia that can lead to preeclampsia. Parity of the mother < 2 or $\geq$ four times the risk of preeclampsia and parity between 2-3 times the non-risk of preeclampsia, mothers with a high parity (more than 4) have already experienced a decrease in reproductive function [38].

Distance between pregnancies. The determinant of preeclampsia incidence is birth spacing. The analysis revealed a strong link (p -value of 0.00)

between birth spacing and preeclampsia. This finding is consistent with prior studies indicating that if a mother has a birth spacing of less than two years after becoming pregnant, her pregnancies have not returned to normal [39]. Mothers with pregnancies between 3 and >5 years are at higher risk of preeclampsia compared to 3 to 5 years. Preeclampsia may occur as a result of birth spacing. This type of birth spacing is most suitable for pregnant parents, i.e., those between the ages of 2 and 5. It is a very safe way to end a woman's pregnancy. As a result, there are more responses in the appropriate range of 2 to 5 years compared to the less ideal range of <2 and >5 years, which has a higher risk [40]. At the interval of pregnancy < 2 years, it can cause problems because the physical condition is still not ready for pregnancy and childbirth, so it can cause damage to the uterus or the reproductive organs of the mother that has not returned to its normal state and the mother's health has. While pregnancy period >5 years has a high risk of occurrence of preeclampsia, degenerative processes or weakening of the strength of the functions of the uterine muscles to the process of delivery when pregnant again not appropriately recovered [41, 42].

Age. According to the existing theories, preeclampsia is more commonly acquired in early and late reproductive age, i.e. adolescence or over 35 years of age. Pregnant women under 20 are more likely to have high blood pressure and have seizures faster [39]. Anaemia can occur in pregnancies of women under the age of 20 or over 35. This is because women under twenty

are biologically unprepared, their emotions tend to be unstable, and their mental maturity, so they are prone to failure, resulting in a lack of attention to the fulfilment of the necessary nutritional needs during pregnancy [43, 44]. However, in people over 35, it is associated with a decrease in body endurance and various chronic diseases that cause anaemia. In addition, people over the age of 35 are also at risk of developing preeclampsia, as ageing makes them more susceptible to an increased incidence of chronic hypertension and a greater risk of suffering from pregnancy [45]. Maternal subjects in this study range in age from 20 to 35. The results of this study indicated that preeclampsia incidence is significantly correlated with age ($p < 0.00$); 20 to 35 years old is a long time to be vulnerable and of reproductive health. The majority of mothers who develop preeclampsia are over 30 years old (76.2%) [39]. By the time the mother of the 30-year-old started to raise the risk of preeclampsia. The risk of causing the death of more than 2-4 times as many healthy reproduction occurs if pregnancy happens below or above the healthy reproduction age of 20–30 years [46]. A mother bearing a fetus with trisomy 13 and a family history of preeclampsia are uncommon risk factors [47, 48].

History of abortion. Services for abortions have improved in the last few years. Specifically, women may be able to get an early abortion thanks to the advancement of medical abortion. However, complications from abortions continue to be a significant global cause of maternal death [49]. According to a study conducted in the US, there is a direct correlation between the likelihood of having a second abortion in a later pregnancy and the first abortion; pregnant women who had previously had an abortion were more likely than those who had never had one to experience preeclampsia, an early birth, and low birth weight in a subsequent pregnancy [50]. Pregnant women with only SAB (spontaneous abortion) history had a statistically significant higher risk of preeclampsia. In contrast, pregnant women with only IA (induced abortion) history had a statistically significant lower risk. These differences persisted and showed statistical differences following applying logistic regression analysis [51, 52].

Education, knowledge and income parents. The higher the level of education, the better the understanding and behaviour. The higher the education, the more information and knowledge are

acquired. The higher a person's level of expertise, the more persistent their behaviour will be [53]. In other words, a mother who knows and understands the ideal number of children will behave according to what she knows. Thus, the lower the level of education a person has, the less rational it is to think that the ideal number of children is two [54].

Meanwhile, a job is a set of tasks or activities that someone must perform according to their respective office or profession [55]. Many assume that a person's high employment status can have many children capable of meeting the needs of everyday life. The high economic conditions of the family encourage mothers to have more children because the family feels capable of meeting the needs of life [56]. According to a [57] study, knowledge is an essential factor influencing behaviour. There are quite a few pregnant women who know about this condition, that is 68 people or 70 % of the total pregnant. Since preeclampsia and eclampsia cause almost 50% of maternal and fetal deaths, knowledge of this condition is essential for pregnant mothers. Formal education does not continually improve knowledge; however, non-formal education can also increase knowledge. Higher-educated pregnant mothers have a better understanding of preeclampsia than less-educated pregnancies.

Prior history of illness. An earlier history of illness is a record of the disease and treatment experienced by the patient in the past. It is information that can add to the description of the disease now and or that influences the management of the patient. Many factors cause an increased incidence of preeclampsia in pregnant women, including a history of chronic hypertension, diabetes mellitus or kidney disease [58]. Pregnancy-induced hypertension, like preeclampsia, is one of the primary causes of death. History of diabetes mellitus was also another independent predictor variable for preeclampsia. When compared to people without hypertension, these outcomes were somewhat more significant in those with chronic or gestational hypertension; nevertheless, the majority were not statistically significant [59]. More severe hypertension diseases were associated with a higher risk of using a newborn intensive care unit (OR:2.41 for preeclampsia, OR:4.87 for superimposed preeclampsia). The two factors most likely to predict the progression from gestational or chronic hypertension to preeclampsia or superimposed preeclampsia were obesity or overweight and a history of

preeclampsia during a previous pregnancy [58]. Obesity increases the risk of preeclampsia. Thus, the risks of severe and mild preeclampsia, as well as preeclampsia, occur in the early and late stages of pregnancy [60]. The incidence of preeclampsia increases in women with diabetes; preeclampsia is more likely to happen in women with three to four times the rate of diabetes [61, 62].

Contraceptive use. The study found that the use of IUDs reduces the risk of preeclampsia, particularly if the devices are removed within a year of conception. On the other hand, there was a correlation found between a higher risk of preeclampsia and recent usage of hormonal contraceptives. However, this was limited to female users of these contraceptives for over eight years. In a similar, women who took oral contraceptives as opposed to alternative hormonal contraceptives before getting pregnant were more likely to develop preeclampsia [63]. This study [64] showed that χ^2 trials with a rate of acupuncture of 5% ($\alpha=0,05$) obtained $p=0,014$ ($p<0,05$) until there was a correlation between patients who had previously used hormonal contraceptives and preeclampsia. The Odd Ratio (OR) value was 2,783, which means that patients who were pre-pregnancy using hormonal anticonceptives were 2.7 times more likely to have preeclampsia compared to patients without a history of hormone contraceptive use. Most of the hormonal contraceptives are hormone estrogens and progesterone, which are counted to almost the same level as the hormone content in the body. When used for long periods, it can cause detrimental health symptoms [32]. The hormones estrogen and progesterone can facilitate sodium retention in the secretion, which increases the activity of the plasma in the excretion of angiotensin, which can improve the natural pressure [65]. Hormonal contraceptives are not caused by endometrial dysfunction, but they cause increased homocysteine levels in the blood, abnormal fatty blood glands and excess weight gain. Some of these things contributed to an increase in the incidence of preeclampsia [66].

ANC visit. Antenatal care, or ANC, is a prenatal assessment that strives to maximize a mother's physical and mental well-being to give birth to a healthy baby and mother while receiving the best possible care [67]. Frequent antenatal care visits can help identify preeclampsia early in pregnancy, stop preeclampsia problems from developing, and expedite referrals, all of which can lower

pregnancy-related morbidity and mortality. ANC service provided to the expectant mother is still below the maximum. It has an impact on the incidence of preeclampsia. The use of ultrasound is one of the significant ANC exams. Because it is effective in pregnancy screening [68], it is essential to promote health and raise awareness of the significance of conducting antenatal visits regularly – that is, at least one visit in trimester I, one visit in trimester II, and two trips in trimester III – to enhance public compliance with carrying out antenatal care appointments. To lower the mother's chance of experiencing difficulties during her pregnancy or birth, health professionals should conduct average prenatal care visits and diagnosis as soon as possible if the woman exhibits symptoms of preeclampsia [69].

Nutritional status. Nutritional status is an expression of a state of equilibrium in the form of a particular variable or the existence of a nutriture for a specific variable. Suppose fetal growth is disrupted due to nutritional deficiencies, either directly or indirectly due to placental dysfunction. In that case, the competition between the mother, fetus, and placenta for nutrition will affect the placenta's and the foetus's growth, which involves the baby's birth weight and the placenta's [70]. According to the researchers, a person's nutritional status can lead to preeclampsia. The standard category is 23.5-25 cm, and the abnormal category is fat or obese above 25 cm. The health of the pregnant mother and the fetus is affected by adequate nutritional intake [71]. During pregnancy, malnutrition can cause problems for the mother and fetus. The risk factor associated with preeclampsia is not limited to gizi that is overweight or obese. In mothers who are overweight, preeclampsia may occur due to metabolic syndrome, hyperleptinemia, and inflammatory reactions [72].

Body Mass Index. Studies from developed countries show that high prepregnancy body mass index (BMI) increases the risk of preeclampsia. An increased prepregnancy body mass index was positively correlated with an increased risk of preeclampsia; this was indicated by an adjusted odds ratio of 1.8 between obese women with a BMI over 30 and average-weight women with a BMI between 20 and 24.9 [73]. The only maternal feature with a higher chances ratio among those in our research was age, with mothers over 35 showing the most significant difference in risks. Our results are consistent with earlier research on pregnant women's populations in af-

fluent nations. The highest correlation between preeclampsia and rising BMI was observed in cases associated with term birth; however, there was no statistically significant interaction between preeclampsia and gestational age at delivery [74]. These findings found a higher correlation between term preeclampsia and rising BMI than between preeclampsia and preterm. A correlation between preeclampsia and BMI was comparable to that of resource-rich nations in direction and amplitude [75]. Therefore, it is crucial that those who are disproportionately affected by preeclampsia and associated pregnancy problems worldwide in terms of maternal morbidity and mortality [38].

among pregnant women were identified: parity, distance between pregnancies, pregnancy age, history of abortion, education, income, knowledge, prior history of illness, contraceptive use, ANC visit, nutritional status, Body Mass Index (BMI). To prevent preeclampsia in pregnant women who are at risk of developing the disease and put the lives of the mother and the fetus she is carrying at risk. This research can be used as a reference for health promotion related to preeclampsia risk factors for intervention.

Author Contributions

The authors provide equal contributions to this study.

CONCLUSIONS

Based on the results and discussion in the scoping review, several risk factors for preeclampsia

REFERENCES

1. Krannich, A.-L., & Reiser, D. (2021). The United Nations Sustainable Development Goals 2030. *Encyclopedia of Sustainable Management*, 1–5. doi: [10.1007/978-3-030-02006-4_178-1](https://doi.org/10.1007/978-3-030-02006-4_178-1)
2. Kurjak, A., Stanojević, M., & Dudenhausen, J. (2022). Why maternal mortality in the world remains tragedy in low-income countries and shame for high-income ones: will sustainable development goals (SDG) help? *Journal of Perinatal Medicine*, 51(2), 170–181. doi: [10.1515/jpm-2022-0061](https://doi.org/10.1515/jpm-2022-0061)
3. Baraki, A. G., Akalu, T. Y., Wolde, H. F., Lakew, A. M., & Gonete, K. A. (2020). Factors affecting infant mortality in the general population: evidence from the 2016 Ethiopian demographic and health survey (EDHS); a multilevel analysis. *BMC Pregnancy and Childbirth*, 20(1). doi: [10.1186/s12884-020-03002-x](https://doi.org/10.1186/s12884-020-03002-x)
4. Kemenkes. (2022). *Profil Kesehatan Indonesia 2021* [Indonesia Health Profile 2021]. Retrieved from https://www.kemkes.go.id/app_asset/file_content_download/Profil-Kesehatan-Indonesia-2021.pdf (in Indonesian).
5. WHO. (2023, February 22). *Maternal Mortality*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>
6. Leal Filho, W. (2020). Viewpoint: accelerating the implementation of the SDGs. *International Journal of Sustainability in Higher Education*, 21(3), 507–511. doi: [10.1108/ijshe-01-2020-0011](https://doi.org/10.1108/ijshe-01-2020-0011)
7. WHO, & UNICEF. (2021). Indicators for Assessing Infant and Young Child Feeding Practices: Definition and Measurement Methods (Part 2). Retrieved from http://apps.who.int/iris/bitstream/handle/10665/44306/9789241599290_eng.pdf?sequence
8. WHO. (2020, September 8). *Children: Improving Survival and Well-being*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality>
9. Humas. (2021). Hasil Sensus Penduduk 2020; BPS: Meski Lambat, Ada Pergeseran Penduduk Antarpulau [2020 Population Census Results; BPS: Although Slow, There is an Inter-island Population Shift]. Retrieved from <https://setkab.go.id/hasil-sensus-penduduk-2020-bps-meski-lambat-ada-pergeseran-penduduk-antarpulau> (in Indonesian).
10. Kemenkes. (2022). Laporan Akuntabilitas Kinerja Instansi Pemerintah (LAKIP) Direktorat Gizi dan Kesehatan Ibu dan Anak Tahun Anggaran 2022 [Government Agency Performance Accountability

- Report (LAKIP) Directorate of Nutrition and Maternal and Child Health Fiscal Year 2022]. Retrieved from https://e-renggar.kemkes.go.id/file_performance/1-465909-02-4tahunan-954.pdf (in Indonesian).
10. Pandiangan, D. P., & Erlinda Muslim. (2022). Designing Strategy to Increase Intention to Use Maternal Perinatal Death Notification (MPDN) Technology in North Sumatra. *Jurnal Sistem Teknik Industri*, 24(1), 66–84. doi: [10.32734/jsti.v24i1.7519](https://doi.org/10.32734/jsti.v24i1.7519)
 11. Pandiangan, D. P., & Erlinda Muslim. (2022). Designing Strategy to Increase Intention to Use Maternal Perinatal Death Notification (MPDN) Technology in North Sumatra. *Jurnal Sistem Teknik Industri*, 24(1), 66–84. doi: [10.32734/jsti.v24i1.7519](https://doi.org/10.32734/jsti.v24i1.7519)
 12. Peratama, A., Kusumajaya, H., & Agustin, A. (2023). Faktor-faktor yang Berhubungan dengan Kejadian Preeklamsia pada Ibu Hamil [Factors Associated with the Incidence of Preeclampsia in Pregnant Women]. *Jurnal Penelitian Perawat Profesional*, 5(2), 617–626. doi: [10.37287/jppp.v5i2.1526](https://doi.org/10.37287/jppp.v5i2.1526) (in Indonesian).
 13. Lawn, J. E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., Flenady, V., Frøen, J. F., Qureshi, Z. U., Calderwood, C., Shiekh, S., Jassir, F. B., You, D., McClure, E. M., Mathai, M., Cousens, S., Flenady, V., Frøen, J. F., Kinney, M. V., ... Draper, E. S. (2016). Stillbirths: rates, risk factors, and acceleration towards 2030. *The Lancet*, 387(10018), 587–603. doi: [10.1016/s0140-6736\(15\)00837-5](https://doi.org/10.1016/s0140-6736(15)00837-5)
 14. Nisly, G., Dillon, J. L., Darling, A., Myers, S., Al Shibli, N., Gatta, L. A., West-Honart, A., Wheeler, S., Grace, M. R., & Dotters-Katz, S. K. (2023). Risk Factors for Adverse Maternal Outcomes among Patients with Severe Preeclampsia Before 34 Weeks. *American Journal of Perinatology*. doi: [10.1055/a-2099-3912](https://doi.org/10.1055/a-2099-3912)
 15. Poniedziałek-Czajkowska, E., Mierzyński, R., & Leszczyńska-Gorzelak, B. (2023). Preeclampsia and Obesity—The Preventive Role of Exercise. *International Journal of Environmental Research and Public Health*, 20(2), 1267. doi: [10.3390/ijerph20021267](https://doi.org/10.3390/ijerph20021267)
 16. Ameen, R. A. E. H., Hany, A. M. M., & Ali, A. A. (2023). Prevalence rate and risk factors for preeclampsia and eclampsia among pregnant women attending Qena University Hospital During COVID-19 pandemic. *SVU-International Journal of Medical Sciences*, 6(1), 29–37. doi: [10.21608/svuijm.2022.147371.1330](https://doi.org/10.21608/svuijm.2022.147371.1330)
 17. Edrus, S., & Al-Mahmood, S. (2023). The prevalence of preeclampsia and eclampsia among pregnant women and its association with socio-demographic and anthropometric factors at hospital. *Al-Kitab Journal Of Medical Sciences*, 1(1), 23–31.
 18. Zainiyah, H. (2023). Risk Factors Associated with Preeclampsia in Pregnant Women (Parity, Obesity, Multiple Preganancy, History of Hypertension and Age with the Prevalence of Preeclampsia at Syamrabu Bangkalan Hospital, Bangkalan in 2022. *Jurnal Ilmiah Obsgin*, 15(1), 3–8.
 19. Djasri, H., Laras, S., & Utarini, A. (2019). Quality indicators for clinical care of patients with hypertension: scoping review protocol. *BMJ Open*, 9(7), e026167. doi: [10.1136/bmjopen-2018-026167](https://doi.org/10.1136/bmjopen-2018-026167)
 20. Putri, D. N., Setyawati, A., Saleha, S., & Situmorang, T. H. (2023). Faktor – Faktor Yang Berhubungan Dengan Kejadian Preeklamsia Pada Ibu Hamil Di Puskesmas Kemu Kabupaten Oku Selatan Tahun 2023 [Factors associated with the incidence of preeclampsia in pregnant women at the Kemu Health Centre, South Oku Regency, 2023]. *Innovative: Journal Of Social Science Research*, 3, 979–990 (in Indonesian).
 21. Sitohang, Y. M. R., Ismansyah, I., & Siregar, N. (2023). Hubungan Usia Kehamilan, Riwayat Abortus Dan Paritas Terhadap Kejadian Preeklamsia Berat Di RSUD Abdoel Wahab Sjahranie Tahun 2022 [Relationship between gestational age, history of abortion and parity to the incidence of severe preeclampsia at Abdoel Wahab Sjahranie Hospital in 2022]. *Jurnal Skala Kesehatan*, 14(1), 57–65. doi: [10.31964/jsk.v14i1.379](https://doi.org/10.31964/jsk.v14i1.379) (in Indonesian).

22. Silvana, R., Ramayanti, I., Kurniawan, & Dimar Ramadhina, A. (2023). Hubungan Antara Usia Ibu, Status Gravida, dan Riwayat Hipertensi dengan Terjadinya Preeklampsia [The Relationship Between Maternal Age, Gravida Status, and History of Hypertension with the Occurrence of Preeclampsia]. *Jurnal Ilmiah Multidisiplin*, 2(4), 1370–1375 (in Indonesian).
23. Ismarini, I., Ciselis, D., & Afrika, E. (2023). Hubungan Riwayat Hipertensi, Obesitas dan Usia Ibu dengan kejadian Preeklamsia di Rumah Sakit Muhammadiyah Palembang tahun 2022 [Associations of Hypertension, Obesity and Maternal Age with the incidence of Preeclampsia at Muhammadiyah Palembang Hospital in 2022]. *Jurnal Ilmiah Obsgin: Jurnal Ilmiah Ilmu Kebidanan & Kandungan*, 15(4), 143–152 (in Indonesian).
24. Rahmadiani, Y., Azissah, D., Habibi, J., Kesehatan, F. I., & Bengkulu, U. D. (2023). Faktor yang Berhubungan Dengan Kejadian Pre-Eklampsia Pada Ibu Hamil Di RSUD Rupit [Associated Factors with the Incidence of Pre-Eclampsia in Pregnant Women at Rupit Hospital]. *Jurnal Kebidanan Manna*, 2(1), 23–34 (in Indonesian).
25. Pasaeono, N. P., Zainuddin, A., & Saimin, J. (2023). Faktor Risiko Terjadinya Preeklamsia di RSUD Kolonodale Kabupaten Morowali Utara [Risk Factors for Preeclampsia in Kolonodale Hospital, North Morowali Regency]. *Jurnal Ners*, 7(2), 1607–1622. doi: [10.31004/jn.v7i2.19635](https://doi.org/10.31004/jn.v7i2.19635) (in Indonesian).
26. Therina, M., Samidah, I., & Handayani, T. S. (2023). Factors Associated with the Incidence of Preeclampsia in Pregnant Women at the Mukomuko Hospital Obstetrics Polyclinic in 2022. *Student Scientific Journal*, 1(1), 13–26.
27. Aini, F. N., Zuhriyatun, F., Poltekkes, W. H., & Semarang, K. (2023). Analisis Indeks Massa Tubuh (Imt) Dengan Kejadian Preeklampsia Pada Ibu Hamil [Analysis of Body Mass Index (BMI) with Preeclampsia in Pregnant Women]. *Jurnal Sains Kebidanan*, 5(1), 24–29.
28. Latipah, S., Afrilia, E. M., & An-nisa, C. (2023). Faktor Usia, Paritas dan IMT Ibu Hamil Berhubungan dengan Kejadian Preeklampsia di Tangerang [Age, Parity and BMI of Pregnant Women Associated with the Incidence of Preeclampsia in Tangerang]. *Jurnal Ilmiah Keperawatan Indonesia*, 6(2), 166. doi: [10.31000/jiki.v6i2.7635](https://doi.org/10.31000/jiki.v6i2.7635) (in Indonesian).
29. Suryadana, F. U., Aryawati, W., Amirus, K., Nuryani, D. D., & Muhani, N. (2023). Faktor Risiko Yang Mempengaruhi Kejadian Preeklampsia Pada Ibu Hamil Di RSUD Jendral Ahmad Yani Kota Metro Lampung Tahun 2022 [Risk Factors Affecting the Incidence of Preeclampsia in Pregnant Women at Jendral Ahmad Yani Hospital Metro Lampung City in 2022]. *Jurnal Pendidikan Dan Konseling*, 4, 1349–1358 (in Indonesian).
30. Lubis, D. S. (2023). Hubungan paritas ibu hamil dengan kejadian preeklampsia di rumah sakit ibunda kecamatan bagan sinembah kabupaten rokan hilir [The relationship between parity of pregnant women and the incidence of preeclampsia at ibunda hospital, bagan sinembah sub-district, rokan hilir district]. *Jurnal Ilmiah Ilmu Kesehatan*, 1(4), 298–308 (in Indonesian).
31. Daeli, I., Wardani, H. E., Tama, T. D., & Gayatri, R. W. (2023). Hubungan Kunjungan ANC terhadap Kejadian Preeklampsia pada Ibu Hamil di Puskesmas Wagir Tahun 2021-2022. *Sport Science and Health*, 5(7), 773–783. doi: [10.17977/um062v5i72023p773-783](https://doi.org/10.17977/um062v5i72023p773-783)
32. Dewi Eka Maharani, & Ocvita, W. E. (2023). Hubungan Karakteristik Ibu dan Riwayat Pemakaian Kontrasepsi Hormonal dengan Kejadian Preeklampsia pada Ibu Hamil [Relationship between Maternal Characteristics and History of Hormonal Contraceptive Use with Preeclampsia in Pregnant Women]. *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, 13(3), 737–750. doi: [10.32583/pskm.v13i3.969](https://doi.org/10.32583/pskm.v13i3.969) (in Indonesian).
33. Irawati, C., Budiati, E., & Rahayu, D. (2023). Analisis Faktor Risiko Kejadian Preeklampsia Berat di Kabupaten Mesuji Tahun 2023. *MAHESA : Malahayati Health Student Journal*, 3(5), 1339–1354. doi: [10.33024/mahesa.v3i5.9858](https://doi.org/10.33024/mahesa.v3i5.9858) (in Indonesian).
34. Yani, E. D., Maulina, N., & Rafsanjani, T. M. (2023). Berbagai Faktor Risiko Terhadap Kejadian Preeklampsia Pada Ibu Hamil di Wilayah Kerja Puskesmas Banda Raya Kota Banda Aceh [Various

Risk Factors for the Incidence of Preeclampsia in Pregnant Women in the Banda Raya Health Centre Working Area, Banda Aceh City]. *Jurnal Kesehatan Fakultas Kesehatan Universitas Dian Nuswantoro*, 22(1) (in Indonesian).

35. Fitriani, D., Apriani, W., & Sari, P. (2019). The Relationship between Distance of Pregnancy and Parity with The Incidence of Preeclampsia in RSUD dr. M. Yunus Bengkulu. *Jurnal Sains Kesehatan*, 26(3), 9–17. doi: [10.37638/jsk.26.3.9-17](https://doi.org/10.37638/jsk.26.3.9-17)
36. Aziz, M. A., Wibowo, A., Almira, N. L., & Sutjighassani, T. (2022). Relationship of Age, Body Mass Index, Gravida, and Parity in Pregnant Women with the Incidence Preeclampsia. *Indonesian Journal of Obstetrics & Gynecology Science*, 5(2), 208–216. doi: [10.24198/obgynia/v5n2.389](https://doi.org/10.24198/obgynia/v5n2.389)
37. Maeda, Y., Kaneko, K., Ogawa, K., Sago, H., & Murashima, A. (2020). The effect of parity, history of preeclampsia, and pregnancy care on the incidence of subsequent preeclampsia in multiparous women with SLE. *Modern Rheumatology*, 31(4), 843–848. doi: [10.1080/14397595.2020.1830466](https://doi.org/10.1080/14397595.2020.1830466)
38. Košir Pogačnik, R., Trojner Bregar, A., Lučovnik, M., Krajec, M., Verdenik, I., Blickstein, I., & Tul, N. (2018). The effect of interaction between parity, gestational diabetes, and pregravid obesity on the incidence of preeclampsia. *The Journal of Maternal-Fetal & Neonatal Medicine*, 33(6), 931–934. doi: [10.1080/14767058.2018.1509311](https://doi.org/10.1080/14767058.2018.1509311)
39. Kartikadewi, R., Theresia, E. M., & Meilani, N. (2019). Age, parity and birth spacing to the incidence of preeclampsia. *International Journal of Public Health Science*, 8(1), 45. doi: [10.11591/ijphs.v8i1.16646](https://doi.org/10.11591/ijphs.v8i1.16646)
40. Molitoris, J., Barclay, K., & Kolk, M. (2019). When and Where Birth Spacing Matters for Child Survival: An International Comparison Using the DHS. *Demography*, 56(4), 1349–1370. doi: [10.1007/s13524-019-00798-y](https://doi.org/10.1007/s13524-019-00798-y)
41. Hutcheon, J. A., Moskosky, S., Ananth, C. V., Basso, O., Briss, P. A., Ferré, C. D., Frederiksen, B. N., Harper, S., Hernández-Díaz, S., Hirai, A. H., Kirby, R. S., Klebanoff, M. A., Lindberg, L., Mumford, S. L., Nelson, H. D., Platt, R. W., Rossen, L. M., Stuebe, A. M., Thoma, M. E., ... Ahrens, K. A. (2018). Good practices for the design, analysis, and interpretation of observational studies on birth spacing and perinatal health outcomes. *Paediatric and Perinatal Epidemiology*, 33(1). doi: [10.1111/ppe.12512](https://doi.org/10.1111/ppe.12512)
42. Regan, A. K., Gissler, M., Magnus, M. C., Haberg, S. E., Ball, S., Malacova, E., Nassar, N., Leonard, H., & Pereira, G. (2019). Association Between Interpregnancy Interval and Adverse Birth Outcomes in Women With a Previous Stillbirth: An International Cohort Study. *Obstetrical & Gynecological Survey*, 74(9), 507–508. doi: [10.1097/ogx.0000000000000722](https://doi.org/10.1097/ogx.0000000000000722)
43. Gupta, G. (2018). A case control study to evaluate correlation of anemia with severe preeclampsia. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 7(7), 2773. doi: [10.18203/2320-1770.ijrcog20182879](https://doi.org/10.18203/2320-1770.ijrcog20182879)
44. Prasetya, P. A. C., Winardi, B., & Nuswantoro, D. (2020). Anemia in the first trimester is associated with anemia during pregnancy in Sidotopo Wetan Community Health Center, Surabaya. *Majalah Obstetri & Ginekologi*, 28(1), 16. doi: [10.20473/mog.v28i12020.16-19](https://doi.org/10.20473/mog.v28i12020.16-19)
45. Sari, A. R., Titisari, I., & Sendra, E. (2021). The Correlation of Maternal Age and the Incidence of Preeclampsia at Aura Syifa Hospital. *Jurnal Ners Dan Kebidanan (Journal of Ners and Midwifery)*, 8(3), 368–372. doi: [10.26699/jnk.v8i3.art.p368-372](https://doi.org/10.26699/jnk.v8i3.art.p368-372)
46. Farzaneh, F., Tavakolia, Z., & Soleimanzadeh Mousavi, S. H. (2018). Assessment of occurrence of preeclampsia and some clinical and demographic risk factors in Zahedan city in 2017. *Clinical and Experimental Hypertension*, 41(6), 583–588. doi: [10.1080/10641963.2018.1523919](https://doi.org/10.1080/10641963.2018.1523919)
47. Sambas, E. K., & Nurliawati, E. (2020). Overview of Preeclampsia Risk Factors on Pregnant Women at Dr. Soekardjo Hospital, Tasikmalaya, Indonesia. *The Proceedings of the 2nd Bakti Tunas Husada-Health Science International Conference (BTH-HSIC 2019)*. doi: [10.2991/ahsr.k.200523.057](https://doi.org/10.2991/ahsr.k.200523.057)
48. Rana, S., Lemoine, E., Granger, J. P., & Karumanchi, S. A. (2019). Preeclampsia. *Circulation Research*, 124(7), 1094–1112. doi: [10.1161/circresaha.118.313276](https://doi.org/10.1161/circresaha.118.313276)

49. Harris, L. H., & Grossman, D. (2020). Complications of Unsafe and Self-Managed Abortion. *New England Journal of Medicine*, 382(11), 1029–1040. doi: [10.1056/nejmra1908412](https://doi.org/10.1056/nejmra1908412)
50. Studnicki, J., Longbons, T., Reardon, D. C., Fisher, J. W., Harrison, D. J., Skop, I., Cirucci, C. A., Craver, C., Tsulukidze, M., & Ras, Z. (2022). The Enduring Association of a First Pregnancy Abortion with Subsequent Pregnancy Outcomes: A Longitudinal Cohort Study. *Health Services Research and Managerial Epidemiology*, 9, 233339282211309. doi: [10.1177/23333928221130942](https://doi.org/10.1177/23333928221130942)
51. Moustafa, A. Z., Araj, S., Clericuzio, N., Frieson, D., & Hendon, L. (2023). The Natural History of Fetal Triploidy in an Era of Limited Abortion Access: A Case Series [ID: 1380133]. *Obstetrics & Gynecology*, 141(5S), 82S-82S. doi: [10.1097/01.aog.0000930988.66530.d4](https://doi.org/10.1097/01.aog.0000930988.66530.d4)
52. Sun, H., Mao, J., Su, X., & Du, Q. (2023). Impact of spontaneous abortion history and induced abortion history on perinatal outcomes of singleton pregnancies. *BMC Public Health*, 23(1). doi: [10.1186/s12889-023-17264-5](https://doi.org/10.1186/s12889-023-17264-5)
53. Haslan, H., & Trisutrisno, I. (2022). Dampak Kejadian Preeklamsia dalam Kehamilan Terhadap Pertumbuhan Janin Intrauterine [Impact of Preeclampsia in Pregnancy on Intrauterine Fetal Growth]. *Jurnal Ilmiah Kesehatan Sandi Husada*, 445–454. [10.35816/jiskh.v11i2.810](https://doi.org/10.35816/jiskh.v11i2.810) (in Indonesian).
54. Luthfia, N., Hermawati, D., & Rizkia, M. (2021). [Gambaran Pengetahuan, Sikap Dan Kepatuhan Antenatal Care \(Anc\) Terkait Dengan Deteksi Dini Preeklampsia Pada Ibu Hamil](#) [Overview of knowledge, attitudes and adherence to antenatal care related to early detection of preeclampsia in pregnant women]. *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan*, 5(1), 106–115 (in Indonesian).
55. Sulistiyanti, A., Hastuti, F. D., & Rochmawati, L. (2021). [Tingkat pengetahuan dan sikap ibu hamil tentang preeklampsia di masa pandemi Covid-19](#) [Level of knowledge and attitudes of pregnant women about preeclampsia during the Covid-19 pandemic]. *Prosiding Seminar Informasi Kesehatan Nasional*, 127–133 (in Indonesian).
56. Garti, I., Gray, M., Bromley, A., & Tan, B. (Jing-Y. (2023). A socioecological description of the influencing factors to midwives' management of preeclampsia in a Ghanaian tertiary hospital. *PLOS ONE*, 18(9), e0291036. doi: [10.1371/journal.pone.0291036](https://doi.org/10.1371/journal.pone.0291036)
57. Karlina, K., Budiana, N. G., Surya, G., & Manuaba, I. (2020). [Tingkat pengetahuan ibu hamil tentang preeklampsia di puskesmas II Denpasar Selatan](#) [The level of knowledge of pregnant women about preeclampsia in South Denpasar Community Health Centre II]. *Jurnal Medika Udayana*, 9(8), 59–64 (in Indonesian).
58. Bromfield, S. G., Ma, Q., DeVries, A., Inglis, T., & Gordon, A. S. (2023). The association between hypertensive disorders during pregnancy and maternal and neonatal outcomes: a retrospective claims analysis. *BMC Pregnancy and Childbirth*, 23(1). doi: [10.1186/s12884-023-05818-9](https://doi.org/10.1186/s12884-023-05818-9)
59. Dines, V., Suvakov, S., Kattah, A., Vermunt, J., Narang, K., Jayachandran, M., Abou Hassan, C., Norby, A. M., & Garovic, V. D. (2023). Preeclampsia and the Kidney: Pathophysiology and Clinical Implications. *Comprehensive Physiology*, 4231–4267. doi: [10.1002/cphy.c210051](https://doi.org/10.1002/cphy.c210051)
60. He, X.-J., Dai, R., & Hu, C.-L. (2020). Maternal prepregnancy overweight and obesity and the risk of preeclampsia: A meta-analysis of cohort studies. *Obesity Research & Clinical Practice*, 14(1), 27–33. [10.1016/j.orcp.2020.01.004](https://doi.org/10.1016/j.orcp.2020.01.004)
61. Arafa, A., & Dong, J.-Y. (2020). Association between intrahepatic cholestasis of pregnancy and risk of gestational diabetes and preeclampsia: a systematic review and meta-analysis. *Hypertension in Pregnancy*, 39(3), 354–360. doi: [10.1080/10641955.2020.1758939](https://doi.org/10.1080/10641955.2020.1758939)
62. Olson, K. N., Redman, L. M., & Sones, J. L. (2019). Obesity "complements" preeclampsia. *Physiological Genomics*, 51(3), 73–76. doi: [10.1152/physiolgenomics.00102.2018](https://doi.org/10.1152/physiolgenomics.00102.2018)

63. Asres, A. W., Tilahun, A. W., Teklu, S., & Addissie, A. (2023). Association Between Preeclampsia and Hormonal Contraceptive Use among Pregnant Women in Northwest Ethiopia: A Case-Control Study. *Journal of Womens Healthcare & Midwifery Research*, 2(3), 1–6.
64. Harmawan, W. R. (2022). Kontrasepsi hormonal, riwayat preeklampsia dan hipertensi kronik berhubungan dengan kejadian preeklampsia [Hormonal contraception, history of preeclampsia and chronic hypertension are associated with the incidence of preeclampsia]. *Jurnal Medika: Karya Ilmiah Kesehatan*, 7(1) (in Indonesian).
65. Schreuder, A., Mokadem, I., Smeets, N. J. L., Spaanderman, M. E. A., Roeleveld, N., Lupattelli, A., & van Gelder, M. M. H. J. (2023). Associations of periconceptional oral contraceptive use with pregnancy complications and adverse birth outcomes. *International Journal of Epidemiology*, 52(5), 1388–1399. doi: [10.1093/ije/dyad045](https://doi.org/10.1093/ije/dyad045)
66. Asare, L., Asare, G. A., Owiredun, W. K. B. A., Obikorang, C., Appiah, E., Tashie, W., & Seidu, L. (2021). The Use of Hormonal Contraceptives and Preeclampsia among Ghanaian Pregnant Women. *Open Journal of Obstetrics and Gynecology*, 11(04), 419–433. doi: [10.4236/ojog.2021.114041](https://doi.org/10.4236/ojog.2021.114041)
67. Hamzah, S. T. R., Aminuddin, Idris, I., & Rachmat, M. (2021). Antenatal care parameters that are the risk factors in the event of preeclampsia in primigravida. *Gaceta Sanitaria*, 35, S263–S267. doi: [10.1016/j.gaceta.2021.10.073](https://doi.org/10.1016/j.gaceta.2021.10.073)
68. Tesfahun, E., Tadesse, S., Hailu, A., Minda, A., Ekubay, M., Tariku, B., & Dagnaw, A. (2023). Prevalence of Preeclampsia and Associated Factors among Antenatal Care Attending Mothers at Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia. *Advances in Public Health*, 2023, 1–5. doi: [10.1155/2023/1132497](https://doi.org/10.1155/2023/1132497)
69. Ningsih, F. (2020). Kepatuhan Antenatal Care Dengan Kejadian Preeklampsia Pada Ibu Hamil Di Puskesmas Kayon Kota Palangkaraya [Antenatal care adherence and the incidence of preeclampsia among pregnant women at Kayon Health Centre, Palangkaraya City]. *Jurnal Surya Medika*, 6(1), 96–100. doi: [10.33084/jsm.v6i1.1624](https://doi.org/10.33084/jsm.v6i1.1624) (in Indonesian).
70. Nugroho, N., & Rustiana, E. R. (2019). The Analysis of Food Consumption and Nutritional Status of Pregnant Women Towards Preeclampsia in Dr. M. Ashari Hospital Pematang 2018. *Public Health Perspective Journal*, 4(2), 104–108.
71. Ahmad, N., & Akbar B, T. (2022). Relationship Between Nutritional Status and Preeclampsia in West Bandung District. *KnE Medicine*. doi: [10.18502/kme.v2i2.11085](https://doi.org/10.18502/kme.v2i2.11085)
72. Astari, A. M., Evi, N., Choiriyah, M., Ariyani, P., & Fitriy, A. L. (2021). Analysis of Differences in Individual Characteristics, Lifestyle, Nutritional Status and Dieting Patterns in Pregnant Women with Preeclampsian History. *Journal of Nursing Science Update (JNSU)*, 9(1), 87–94. doi: [10.21776/ub.jik.2021.009.01.11](https://doi.org/10.21776/ub.jik.2021.009.01.11)
73. Barber, E., Ram, M., Mor, L., Ganor Paz, Y., Shmueli, A., Bornstein, S., Barda, G., Schreiber, L., Weiner, E., & Levy, M. (2023). Pregnancy and placental outcomes according to maternal BMI in women with preeclampsia: a retrospective cohort study. *Archives of Gynecology and Obstetrics*. doi: [10.1007/s00404-023-07148-9](https://doi.org/10.1007/s00404-023-07148-9)
74. Jiang, L., Lin, J., Yan, J., Lin, X., Han, Q., & Zhang, H. (2020). Prepregnancy body mass indexes are associated with perinatal outcomes in females with preeclampsia. *Experimental and Therapeutic Medicine*. doi: [10.3892/etm.2020.8677](https://doi.org/10.3892/etm.2020.8677)
75. Premru-Srsen, T., Kocic, Z., Fabjan Vodusek, V., Geršak, K., & Verdenik, I. (2019). Total gestational weight gain and the risk of preeclampsia by prepregnancy body mass index categories: a population-based cohort study from 2013 to 2017. *Journal of Perinatal Medicine*, 47(6), 585–591. doi: [10.1515/jpm-2019-0008](https://doi.org/10.1515/jpm-2019-0008)