



**PREGNANT WOMEN WHO EXPERIENCE PSYCHOLOGICAL
RESPONSES TO ANTENATAL CARE SERVICES IN MEDAN
TUNTUNGAN NORTH SUMATRA: DOES
SOCIOECONOMIC INFLUENCE?**

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ABSTRACT

Background: Safe Motherhood consists of four pillars: family planning, antenatal care services, safe birth, and essential/emergency obstetric and neonatal care, Environmental health, the amount of knowledge of healthy living practices, the level of health care during maternity and postpartum, and the socioeconomic situations of the community.

Objective: to analyze pregnant women who experience psychological responses to antenatal care services in socioeconomic situations.

Methods: correlation analytical research, with a cross-sectional design. The sampling technique used was purposive sampling for 1 month, which obtained up to 102 samples. This research was carried out at Medan Tuntungan North Sumatra. The independent variable was socioeconomic position, education level, location, age, work status, and anxiety, and the dependent variable was antenatal care services. Data were collected using the The instruments in this study are the Depression Anxiety Stress Scale 42 (DASS 42) The overall Cronbach's alpha for the DASS-21 scale was 0.74. Statistical test using the Chi-Square test.

Results: socioeconomic(p -value=.000), education level (p -value=.000), Residence (p -value=.000), age (p -value=.000), work status (p -value=.000), and anxiety (p -value=.000). There is a significant related between socioeconomic position, education level, location, age, work status, and anxiety among antenatal care services.

Conclusion: Pregnant women's access to antenatal care services is influenced by socioeconomic position, education level, location, age, work status, and anxiety

Keywords: Pregnant, women, Anxiety, antenatal care services, cross-sectional, Chi-Square test.

ABSTRAK

Latar Belakang: Safe Motherhood terdiri dari empat pilar: keluarga berencana, perawatan antenatal, persalinan aman, dan layanan obstetrik dan neonatal esensial/darurat. Kesehatan lingkungan, pengetahuan tentang praktik hidup sehat, tingkat layanan kesehatan selama persalinan dan pascapersalinan, serta kondisi ekonomi masyarakat.

Tujuan: Menganalisis respons psikologis ibu hamil terhadap layanan perawatan antenatal di berbagai situasi sosial ekonomi.

Metode: Penelitian ini merupakan penelitian analitik korelasional dengan desain potong lintang. Teknik pengambilan sampel yang digunakan adalah purposive sampling selama satu bulan, sehingga menghasilkan ukuran sampel sebanyak 102. Penelitian ini dilakukan di Medan Tuntungan, Sumatera Utara. Variabel independennya adalah status sosial ekonomi, tingkat pendidikan, lokasi, usia, status pekerjaan, dan kecemasan, sedangkan variabel dependennya adalah layanan perawatan antenatal. Data dikumpulkan menggunakan instrumen Depression Anxiety Stress Scale 42 (DASS 42). Nilai alpha Cronbach keseluruhan untuk skala DASS-21 adalah 0,74. Uji statistik menggunakan uji Chi-Square.

Hasil: sosial ekonomi (nilai-p = .000), tingkat pendidikan (nilai-p = .000), tempat tinggal (nilai-p = .000), usia (nilai-p = .000), status pekerjaan (nilai-p = .000), dan kecemasan (nilai-p = .000). Terdapat hubungan yang signifikan antara status sosial ekonomi, tingkat pendidikan, lokasi, usia, status pekerjaan, dan kecemasan terkait perawatan antenatal.

Kesimpulan: Akses ibu hamil terhadap perawatan antenatal dipengaruhi oleh status sosial ekonomi, tingkat pendidikan, lokasi, usia, status pekerjaan, dan kecemasan.

Kata Kunci: Hamil, wanita, Kecemasan, layanan perawatan antenatal, cross-sectional, uji Chi-square.

INTRODUCTION

Maternal and newborn mortality rates are still a major matter of debate due to their continually high levels (Boerma et al., 2023). To minimize these rates, the WHO created the Four Pillars of Safe Motherhood concept, which depicts the breadth of mother and child safety. Safe Motherhood (1987) has four pillars: family planning, antenatal care services (ANC), safe birth, and essential/emergency obstetric and neonatal care (Tassi et al., 2021). Psychological factors can influence access and use of antenatal services because psychological conditions such as anxiety and stress will reduce interest and even if fear occurs, it will cause trauma and impact physical condition (Atkinson & Teychenne, 2022), Postpartum hemorrhage, eclampsia, botched abortion, infection, and other problems directly affect pregnant women in Indonesia, contributing to the country's high maternal death rate (Gustiani & Kartini, 2023). The four too-to hazards are indirect reasons of increased maternal mortality: being too young or too elderly, having too many pregnancies, and being too near to a pregnancy. (Berti et al., 2022). This condition is also reinforced by the three too-late risks: too late in identifying the indicators and danger signs, too late in getting to a health facility, and too late in getting services or aid from a health facility (Dubois et al., 2023). The Maternal Mortality Rate is part of maternal and child health that influences the Sustainable Development Goals (SDGs) (Olea-Ramirez et al., 2024), namely poverty eradication, inequality reduction, and environmental protection, which must be completed by 2030 and the National Medium Term Development Plan 2020-2024 in the health sector (Rahman & Qattan, 2021). The Maternal Mortality Rate can also describe maternal health, nutritional status, maternal health (Fleszar et al., 2023), Environmental health, the level of awareness of healthy lifestyle behaviors, the level of health services during childbirth and

postpartum, and the socioeconomic conditions of the community, number of maternal deaths per 100 000 live birth (WHO, 2025). Indonesia continues to have the worst maternal mortality rate in Southeast Asia, falling well short of the global SDGs target of lowering maternal mortality to 183 per 100,000 live births in 2024 and fewer than 70 per 100,000 live births in 2030 (Syairaji et al., 2024). This circumstance highlights the need for more strategic and comprehensive measures, since achieving the Maternal death Rate objective of 183 per 100,000 live births by 2024 will necessitate a minimum 5.5% annual reduction in maternal death rates (Zhang et al., 2024). The maternal mortality rate in Indonesia reached 4,005 in 2022 and is expected to rise to 4,129 in 2023, according to Ministry of Health data. Meanwhile, newborn fatalities in 2022 were 20,882, compared to 29,945 in 2023 (Jingsung & Elliana Benly, 2025). The most common causes of maternal mortality were hypertension during pregnancy, sometimes known as eclampsia, and hemorrhage (Maged et al., 2020). Low birth weight or preterm, as well as asphyxia, were the leading causes of infant death (Techane et al., 2022). Midwives can help reduce pregnancy and delivery complications by teaching pregnant women about them (Bahri Khomami et al., 2021). Midwives, as healthcare professionals, are responsible for preparing for pregnancy, delivery, postpartum care, and providing safe and simple infant care (Namutebi et al., 2023). Health workers play an important role in lowering maternal and infant mortality rates, as does increasing the use of comfortable antenatal care with no psychological burden (Wilson et al., 2021), as well as providing pregnant women with both physical and psychological fitness, which has a positive impact on pregnancy psychology (Atkinson & Teychenne, 2022). The mother's socioeconomic status and family support are critical for improving her mental and psychological well-being and pregnancy outcomes. This can benefit both the mother's physical and psychological well-being (S & S, 2025). Based on the above, the author is interested in conducting research on Pregnant Women Who Experience Psychological Responses To Antenatal Care Services In Medan Tuntungan North Sumatra: Does Socioeconomic Influence? This research has received a letter of ethical approval from Universitas NHM with number: No. 2762/KEPK/UNIV-NHM/EC/II/2025

METHOD

Participant characteristic and research design

The subject matter is a correlational analytic investigation, trying to explain, estimate, and test associations based on current theories to see the link between the variables of Experience psychological responses and socioeconomic. This type of research is descriptive analytic with a cross-sectional design. The population in this study was all pregnant women first trimester at Medan Tuntungan in the last three months, with an average of 102 mothers.

Sampling procedures

The sampling technique in this study is non-probability sampling with a purposive sampling technique, and is taken according to the criteria. Inclusion criteria: Women in their first trimester of pregnancy, Exclusion criteria: Has a history of severe mental disorders such as schizophrenia, Bleeding during pregnancy, Pregnancy abnormalities (fibroids, cancer, cysts, and diseases causing bleeding)

Sample size, power, and precision

Sample number using the Lameshow formula and obtained of 102 respondents. The variables that are seen here are independent variables: Anxiety, Socioeconomic status, education level,

Residence, Age, Employment status, and Wealth status, and dependent variables, which are the antenatal care services. The instruments in this study are the Depression Anxiety Stress Scale 42 (DASS 42) The overall Cronbach's alpha for the DASS-21 scale was 0.74. The DASS-21 subscales had Cronbach's alpha values of 0.66, 0.29 and 0.52 for Anxiety. (DASS-Anxiety) The items are scored is Normal (scale 0–9), Mild (10–13), Moderate (14–20), Severe (21–27), Extremely severe (28–42). The ordinal alpha for DASS-D, DASS-A and DASS-S subscales were 0.83, 0.74 and 0.87.

Measures and covariates

The method of collecting data in this research is using primary data, because the researcher collected the data by using the Depression Anxiety Stress Scale 42 (DASS 42), which had been tested for validity and reliability.

Data analysis

The univariate analysis performed produced the frequency and percentage values of each variable studied and the distribution of the Anxiety, Socioeconomic status, education level, Residence, Age, Employment status, Wealth status, and dependent variables, which are the antenatal care services. The study initially employed the Chi-Square Test. Subsequently, a collinearity test was conducted to determine whether there was a statistically significant relationship among the independent variables. Additionally, we utilized the IBM SPSS Statistics 26 software to conduct the statistical analyses for the survey, and the statistical test results were obtained using a 95% degree of significance, and the error rate (α) = 5%. For the interpretation of the results, if the p-value of the value α is 0.05.

RESULTS AND DISCUSSION

Characteristic of Respondents

The study showed that the proportion of pregnant women

Table 1 The Results of Bivariate Analysis (n=113)

Variable	Antenatal Care Services		P-value
	Yes (n=78)	No (n=24)	
Socioeconomic status			.000*
Poorest	95.1%	2.9%	
Poorer	95.6%	2.4%	
Middle	95.7%	2.3%	
Richer	96.8%	1.2%	
Richest	96.1%	1.9%	
Education level			.000*
No education	90.6%	7.4%	
Primary	90.3%	7.7%	
Secondary	91.5%	6.5%	
Higher	94.9%	3.1%	
Residence			.000*
Urban	92.8%	8.2%	
Rural	90.1%	6.9%	
Age group			.000*
15-19	90.3%	2.7%	
20-24	96.8%	7.2%	

25-29	96.6%	6.4%	
30-34	92.3%	5.7%	
35-39	89.7%	8.3%	
40-44	90.7%	7.3%	
45-49	85.4%	4.6%	
Employment status			.000*
Unemployed	89.8%	8.2%	
Employed	91.7%	6.3%	
Anxiety			.000*
Normal	98.1%	1.9%	
Mild	98.6%	1.4%	
Moderate	98.7%	1.3%	
Severe	93.8%	2.1%	
Extreme Severe	93.1%	2.9%	

* Indicated 0.05 level

Table 1 shows the findings of bivariate analysis. Based on Socioeconomic status, pregnant women with richer have the highest proportion of pregnant women and Socioeconomic status significant related among experiencing antenatal care services. supported by other research that the Implementation of ANC variables that were in line with and not in line with guidelines in pregnant women revealed a p-value = 0.019 (Ramadhani et al., 2021). Even after controlling for confounding factors such as ethnicity and underlying baseline health state, higher socioeconomic status level predicts better pregnancy outcomes. To eradicate health disparities in pregnancy, significant efforts are necessary (Nicholls-Dempsey et al., 2023). Besides that, Being exposed to socioeconomic status was frequent among pregnant women in their third trimester. Pregnant women of low socioeconomic status and older age should be regarded as a critical demographic for public health initiatives (Zhou et al., 2022). Another research That had the greatest impact on antenatal care behavior among Indonesian pregnant women. These elements were separated into three categories: personal, external, and social support. Knowledge, education, economic status, husband's support, family support, occupation, parity, and economic position were the main influences on participants' antenatal care visits (Kartika et al., 2024). Based on education level, pregnant women with higher education levels have the highest proportion of experiencing antenatal care services, and education level is significantly related to experiencing antenatal care services. Pregnant women showed a significant willingness to obtain information as part of standard prenatal treatment, Although health care professionals accepted the necessity for education, it was obvious that they felt unequipped to do this; reasons included lack of time, ambiguity about clinical paths, and anxiety about the possible emotional impact of education (Montague et al., 2022). There was a substantial and direct association between educational level and understanding of antenatal care status (Fegita et al., 2022). Regarding the type of residence, pregnant women in urban areas have a higher ratio than those in rural areas, who are experiencing antenatal care services and residence is significant related to experiencing antenatal care services. in accordance with other research Three-fourths of pregnant women in Ethiopia seek antenatal care services at least once. The frequency of antenatal care services visits was associated with place of residence, educational attainment, age in the five-year-old group, and wealth index (urban/rural) (Wake et al., 2023). According to the study, the average number of antenatal care visits is quickly increasing among pregnant women in both urban and rural regions of Bangladesh. However, the pace of change in antenatal care visits is larger in rural areas than in metropolitan areas. It was discovered that, for each given survey year, the rate of mean antenatal care visits was greater among women from urban regions than among women from rural parts of Bangladesh (Tanvia et al., 2025). Based on Age Group, pregnant women in the 25-29 age

group have the highest proportion of experiencing antenatal care services, and Age Group significantly related among experiencing antenatal care services. supported by other research that Most pregnant women are uneducated and between the ages of 20 and 35 (Fegita et al., 2022). Research on the impact of maternal age has been uneven (18-20), possibly due to the use of multiple age groups in analysis (Aksünger et al., 2022). Factors such as maternal age being 15-24 years (AOR = 6.9, 95% CI: 2.89-8.81), Maternal age, education, parity, frequency, timing, and media access were all substantially associated with missing antenatal care services follow-up. As a result, all stakeholders should focus on advocating for and expanding the advantages of antenatal care services, which in turn play a significant role in increasing client follow-up for these critical services (Mussa et al., 2023). As people age, they become more mature and capable of thinking. As people mature, they become more prepared for pregnancy, including their physical, emotional, and psychological maturity (Govender et al., 2020). Regarding Employment status, employed pregnant women have a higher ratio than those unemployed, to experiencing antenatal care services and Employment status significantly related among those experiencing antenatal care status. Women who lost their jobs unexpectedly during pregnancy were more likely to lack dental insurance, not have a dental cleaning, have an oral health concern, and have unmet dental care needs (Testa & Gimeno Ruiz de Porras, 2023). Finally, based on Anxiety, Moderate Anxiety of pregnant women have the highest proportion of experiencing antenatal care services, and Anxiety is significantly related among experiencing antenatal care services. supported by other research that the research area had a significant incidence of pregnancies-related anxiety, which was positively correlated with young age, low income, inadequate social support, high perceived stress, depression, and unplanned pregnancy (Tarafa et al., 2022). other research results Mild somatic symptoms (AOR = 3.938; 95% CI: 2.888-3.368) were a strong risk factor for prenatal depression among women, and the risk increased with the anxiety level or somatic symptoms level (Guo et al., 2021). according to research results, Anxiety during pregnancy is substantially correlated. In this study the prevalence of pregnancy-related anxiety was shown to be higher than in previous studies (Abegaz et al., 2022). According to research results in China, Pregnant Chinese women had elevated levels of pregnancy-related anxiety. Better family functioning and perceived social support may minimize the incidence of pregnancy-related anxiety, as well as the mediating benefits of resilience. Healthcare professionals should be concerned with pregnancy-related anxiety and take appropriate steps to decrease it. Antenatal care providers might successfully minimize or prevent pregnancy-related anxiety by boosting social support and increasing family functioning. More significantly, employing resilience-promoting practices is critical for reducing anxiety and supporting mental health in pregnant women (Huang et al., 2022)

LIMITATION OF THE STUDY

The researchers recognize the study's shortcomings. The first is the husband's support status, which may lead to the mother's worry. They were unable to assess the availability of antenatal care services, which might cause mother psychological discomfort. As a result, it would have been good to incorporate spouses' support in measuring mother anxiety, even if cultural aspects have yet to be investigated.

CONCLUSIONS AND SUGGESTIONS

Pregnant women's access to antenatal care services is influenced by socioeconomic position, education level, location, age, work status, and anxiety. Future researchers should undertake further study on husband support, access to health care, culture, and spirituality in connection to maternal health during childbirth.

ETHICAL CONSIDERATIONS

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Conflict of Interest

No conflict of interest that is directly or indirectly related to the current article was found.

REFERENCES

- Abegaz, M. Y., Muche, H. A., & Aynalem, G. L. (2022). Determinants of Pregnancy-Related Anxiety among Women Attending Antenatal Checkup at Public Health Institutions in Debre Markos Town, Ethiopia. *Depression Research and Treatment*, 2022, 1–10. <https://doi.org/10.1155/2022/6935609>
- Aksünger, N., De Sanctis, T., Waiyaiya, E., van Doeveren, R., van der Graaf, M., & Janssens, W. (2022). What prevents pregnant women from adhering to the continuum of maternal care? Evidence on interrelated mechanisms from a cohort study in Kenya. *BMJ Open*, 12(1), e050670. <https://doi.org/10.1136/bmjopen-2021-050670>
- Atkinson, L., & Teychenne, M. (2022). Psychological, Social and Behavioural Changes During Pregnancy: Implications for Physical Activity and Exercise. In *Exercise and Physical Activity During Pregnancy and Postpartum* (pp. 21–45). Springer International Publishing. https://doi.org/10.1007/978-3-031-06137-0_2
- Bahri Khomami, M., Walker, R., Kilpatrick, M., de Jersey, S., Skouteris, H., & Moran, L. J. (2021). The role of midwives and obstetrical nurses in the promotion of healthy lifestyle during pregnancy. *Therapeutic Advances in Reproductive Health*, 15. <https://doi.org/10.1177/26334941211031866>
- Berti, C., Elahi, S., Catalano, P., Bhutta, Z. A., Krawinkel, M. B., Parisi, F., Agostoni, C., Cetin, I., & Hanson, M. (2022). Obesity, Pregnancy and the Social Contract with Today's Adolescents. *Nutrients*, 14(17), 3550. <https://doi.org/10.3390/nu14173550>
- Boerma, T., Campbell, O. M. R., Amouzou, A., Blumenberg, C., Blencowe, H., Moran, A., Lawn, J. E., & Ikilezi, G. (2023). Maternal mortality, stillbirths, and neonatal mortality: a transition model based on analyses of 151 countries. *The Lancet Global Health*, 11(7), e1024–e1031. [https://doi.org/10.1016/S2214-109X\(23\)00195-X](https://doi.org/10.1016/S2214-109X(23)00195-X)
- Dubois, A.-C., Seghers, N., Van Dorselaer, I., Dario, Y., Swolfs, I., & Gérain, P. (2023). “Already too late”: A qualitative study of respite care among mothers of children with special healthcare needs and disabilities. *Journal of Pediatric Nursing*, 72, e114–e121. <https://doi.org/10.1016/j.pedn.2023.06.017>

- Fegita, P., Hikmah, M., & Malik, R. (2022). Relationship between education level, age , and knowledge of pregnant women with antenatal care status. *Scientific Journal*, 1(2), 154–164. <https://doi.org/10.56260/sciena.v1i2.41>
- Fleszar, L. G., Bryant, A. S., Johnson, C. O., Blacker, B. F., Aravkin, A., Baumann, M., Dwyer-Lindgren, L., Kelly, Y. O., Maass, K., Zheng, P., & Roth, G. A. (2023). Trends in State-Level Maternal Mortality by Racial and Ethnic Group in the United States. *JAMA*, 330(1), 52. <https://doi.org/10.1001/jama.2023.9043>
- Govender, D., Naidoo, S., & Taylor, M. (2020). “I have to provide for another life emotionally, physically and financially”: understanding pregnancy, motherhood and the future aspirations of adolescent mothers in KwaZulu-Natal South, Africa. *BMC Pregnancy and Childbirth*, 20(1), 620. <https://doi.org/10.1186/s12884-020-03319-7>
- Guo, J., Zheng, A., He, J., Ai, M., Gan, Y., Zhang, Q., Chen, L., Liang, S., Yu, X., & Kuang, L. (2021). The prevalence of and factors associated with antenatal depression among all pregnant women first attending antenatal care: a cross-sectional study in a comprehensive teaching hospital. *BMC Pregnancy and Childbirth*, 21(1), 713. <https://doi.org/10.1186/s12884-021-04090-z>
- Gustiani, R., & Kartini, F. (2023). Factors Affecting Postpartum Haemorrhage on Postpartum Mother. *PLACENTUM: Jurnal Ilmiah Kesehatan Dan Aplikasinya*, 11(1), 13. <https://doi.org/10.20961/placentum.v11i1.55528>
- Huang, J., Xu, L., Xu, Z., Luo, Y., Liao, B., Li, Y., & Shi, Y. (2022). The relationship among pregnancy-related anxiety, perceived social support, family function and resilience in Chinese pregnant women: a structural equation modeling analysis. *BMC Women's Health*, 22(1), 546. <https://doi.org/10.1186/s12905-022-02145-7>
- Julian Jingsung, & Nindy Elliana Benly. (2025). Effectiveness of the implementation of the birth planning and complication prevention (P4K) program for pregnant women in supporting the optimization of the labor process in the Working Area of Poasia Health Center, Kendari City. *International Journal of Science and Research Archive*, 14(1), 114–123. <https://doi.org/10.30574/ijjsra.2025.14.1.2639>
- Kartika, K., Rukmini, S. D., Haksama, S., Ismuntania, I., & Rakhman, F. (2024). Determinant factors of antenatal care used by pregnant women in Indonesia: A systematic review. *African Journal of Reproductive Health*, 28(10s), 226–238. <https://doi.org/10.29063/ajrh2024/v28i10s.27>
- Maged, A. M., Elsherief, A., Hassan, H., Salaheldin, D., Omran, K. A., Almohamady, M., Dahab, S., Fahmy, R., AbdelHak, A., Shoab, A. Y., Lotfy, R., Lasheen, Y. S., Nabil, H., & Elbaradie, S. M. Y. (2020). Maternal, fetal, and neonatal outcomes among different types of hypertensive disorders associating pregnancy needing intensive care management. *The Journal of Maternal-Fetal & Neonatal Medicine*, 33(2), 314–321. <https://doi.org/10.1080/14767058.2018.1491030>
- Montague, A., Vandrevalla, T., Calvert, A., Yeh, I.-L., Star, C., Khalil, A., Griffiths, P., Heath, P. T., & Jones, C. E. (2022). Experiences of pregnant women and healthcare professionals of participating in a digital antenatal CMV education intervention. *Midwifery*, 106, 103249. <https://doi.org/10.1016/j.midw.2022.103249>
- Mussa, I., Makhubela-Nkondo, O., Maruta, M. B., & Debella, A. (2023). Missed Opportunity of Antenatal Care Services Utilization and Associated Factors among Reproductive Age Women in Eastern Hararghe Zone, Eastern Ethiopia: Mixed Methods Study. *Journal of Pregnancy*, 2023, 1–13. <https://doi.org/10.1155/2023/8465463>
- Namutebi, M., Nalwadda, G. K., Kasasa, S., Muwanguzi, P. A., & Kaye, D. K. (2023). Midwives' perceptions towards the ministry of health guidelines for the provision of immediate postpartum care in rural health facilities in Uganda. *BMC Pregnancy and Childbirth*, 23(1), 261.

<https://doi.org/10.1186/s12884-023-05585-7>

- Nicholls-Dempsey, L., Badeghiesh, A., Baghlaf, H., & Dahan, M. H. (2023). How does high socioeconomic status affect maternal and neonatal pregnancy outcomes? A population-based study among American women. *European Journal of Obstetrics & Gynecology and Reproductive Biology: X*, 20, 100248. <https://doi.org/10.1016/J.EUROX.2023.100248>
- Olea-Ramirez, L. M., Leon-Larios, F., & Corrales-Gutierrez, I. (2024). Intervention Strategies to Reduce Maternal Mortality in the Context of the Sustainable Development Goals: A Scoping Review. *Women*, 4(4), 387–405. <https://doi.org/10.3390/women4040030>
- Rahman, R., & Qattan, A. (2021). Vision 2030 and Sustainable Development: State Capacity to Revitalize the Healthcare System in Saudi Arabia. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 58. <https://doi.org/10.1177/0046958020984682>
- Ramadhani, I. N., Masni, Syam, A., Seweng, A., Stang, & Nur, R. (2021). The relationship between socioeconomic status and nutritional status of pregnant women in temporary shelter, Talise, Palu. *Gaceta Sanitaria*, 35, S171–S175. <https://doi.org/10.1016/j.gaceta.2021.10.018>
- S, J., & S, P. (2025). Examining socioeconomic factors influencing maternal health in pregnancy. *Journal of Human Behavior in the Social Environment*, 35(4), 469–487. <https://doi.org/10.1080/10911359.2024.2310272>
- Syairaji, M., Nurdianti, D. S., Wiratama, B. S., Prüst, Z. D., Bloemenkamp, K. W. M., & Verschueren, K. J. C. (2024). Trends and causes of maternal mortality in Indonesia: a systematic review. *BMC Pregnancy and Childbirth*, 24(1), 515. <https://doi.org/10.1186/s12884-024-06687-6>
- Tanvia, L., Haque, E. E., & Bari, W. (2025). Rural-urban disparity in uptaking skilled antenatal care visits by pregnant women in Bangladesh: Zero and One Inflated Poisson regression model. *PLoS ONE*, 20(1 January), 1–23. <https://doi.org/10.1371/journal.pone.0318341>
- Tarafa, H., Alemayehu, Y., & Nigussie, M. (2022). Factors associated with pregnancy-related anxiety among pregnant women attending antenatal care follow-up at Bedelle general hospital and Metu Karl comprehensive specialized hospital, Southwest Ethiopia. *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsy.2022.938277>
- Tassi, W. D., Sinaga, M., & Riwu, R. R. (2021). Analisis Faktor-faktor yang Mempengaruhi Perilaku Ibu Hamil dalam Pemanfaatan Pelayanan Antenatal Care (K4) di Wilayah Kerja Puskesmas Tarus. *Media Kesehatan Masyarakat*, 3(2), 175–185. <https://doi.org/10.35508/mkm.v3i2.3251>
- Techane, M. A., Alemu, T. G., Wubneh, C. A., Belay, G. M., Tamir, T. T., Muhye, A. B., Kassie, D. G., Wondim, A., Terefe, B., Tareegn, B. T., Ali, M. S., Fentie, B., Gonete, A. T., Tekeba, B., Kassa, S. F., Desta, B. K., Ayele, A. D., Dessie, M. T., Atalell, K. A., & Assimamaw, N. T. (2022). The effect of gestational age, low birth weight and parity on birth asphyxia among neonates in sub-Saharan Africa: systematic review and meta-analysis: 2021. *Italian Journal of Pediatrics*, 48(1), 114. <https://doi.org/10.1186/s13052-022-01307-5>
- Testa, A., & Gimeno Ruiz de Porras, D. (2023). The association of employment status and unwanted job loss with maternal oral health experiences: findings from the pregnancy risk assessment monitoring system. *BMC Oral Health*, 23(1), 168. <https://doi.org/10.1186/s12903-023-02869-4>
- Wake, S. K., Botoré, A., Mohammed, A., Gemedé, K., Bariso, M., & Gerema, U. (2023). Disparities in Antenatal Care Visits between Urban and Rural Ethiopian Women. *Journal of Pregnancy*, 2023. <https://doi.org/10.1155/2023/9031344>
- WHO. (2025). *Maternal Key Facts Mortality*. <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>
- Wilson, A. N., Ravaldi, C., Scoullar, M. J. L., Vogel, J. P., Szabo, R. A., Fisher, J. R. W., & Homer, C. S. E. (2021). Caring for the carers: Ensuring the provision of quality maternity care during a

- global pandemic. *Women and Birth*, 34(3), 206–209.
<https://doi.org/10.1016/j.wombi.2020.03.011>
- Zhang, C., Ren, J., Sun, K., Liu, X., Zhou, J., Lin, X., Zhang, G., Cao, J., & Huang, H.-F. (2024). *Global, Regional and National Burden of Maternal and Neonatal Disorders, 1990-2021, and Projections to 2050: A Systematic Analysis of the Global Burden of Disease Study 2021*.
<https://doi.org/10.2139/ssrn.5007229>
- Zhou, W., Zhu, X., Hu, Z., Li, S., Zheng, B., Yu, Y., & Xie, D. (2022). Association between secondhand smoke exposure in pregnant women and their socioeconomic status and its interaction with age: a cross-sectional study. *BMC Pregnancy and Childbirth*, 22(1), 695.
<https://doi.org/10.1186/s12884-022-04968-6>