

The Influence of Dietary Food Taboos and Sleep Patterns on Hemoglobin Levels Among Pregnant Women in a Primary Midwifery Clinic

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ABSTRACT

Adequate hemoglobin (Hb) levels are essential during pregnancy to support maternal health and optimal fetal development. However, sociocultural dietary food taboos and inadequate sleep patterns remain prevalent among pregnant women in many developing regions and may contribute to anemia during pregnancy. This study aimed to examine the relationship between dietary food taboos, sleep patterns, and hemoglobin levels among pregnant women attending a primary midwifery clinic. A quantitative observational study with a cross-sectional design was conducted involving 60 pregnant women recruited through simple random sampling. Data on dietary food taboos and sleep patterns were collected using structured questionnaires, while hemoglobin levels were measured using a digital hemoglobinometer. Data were analyzed using chi-square tests with a significance level of $p < 0.05$. The findings revealed that pregnant women practicing dietary food taboos were significantly more likely to have low hemoglobin levels ($p = 0.001$). Similarly, inadequate sleep patterns were significantly associated with reduced hemoglobin levels ($p = 0.000$). Pregnant women who experienced both dietary restrictions and poor sleep quality demonstrated the highest prevalence of anemia. Dietary food taboos and insufficient sleep patterns are significantly associated with low hemoglobin levels among pregnant women. Strengthening nutritional education and promoting adequate rest during pregnancy are crucial strategies to reduce maternal anemia.

Keywords: dietary taboos, hemoglobin levels, maternal anemia, pregnancy, sleep patterns

BACKGROUND

Maternal anemia remains a major public health concern worldwide, particularly in low-and middle-income countries. The World Health Organization (WHO) defines anemia in pregnancy as a hemoglobin level below 11 g/dL, a condition that increases the risk of maternal morbidity, preterm birth, low birth weight, and perinatal mortality (WHO, 2023). Despite global efforts to improve maternal nutrition, anemia prevalence among pregnant women remains high.

Dietary practices during pregnancy are influenced not only by nutritional knowledge but also by cultural beliefs and traditions. Food taboos, defined as culturally prohibited foods during pregnancy, often limit the intake of essential nutrients such as iron, protein, and micronutrients necessary for hemoglobin synthesis (Alemu et al., 2024). In many communities, pregnant women avoid animal-based foods, eggs, or fish due to beliefs that these foods may negatively affect pregnancy or childbirth.

In addition to nutritional factors, sleep plays a vital role in maternal health. Pregnancy-related physiological changes often disrupt sleep quality, leading to inadequate rest. Emerging evidence suggests that poor sleep patterns may influence hematological parameters through hormonal dysregulation and impaired iron metabolism (Zhang et al., 2023). However, studies examining the combined effect of dietary taboos and sleep patterns on hemoglobin levels in pregnant women remain limited.

Therefore, this study investigates the association between dietary food taboos, sleep patterns, and hemoglobin levels among pregnant women in a primary midwifery care setting.

METHODS

This study employed an observational analytic design with a cross-sectional approach to investigate the association between dietary food taboos, sleep patterns, and hemoglobin levels among pregnant women. The cross-sectional framework enabled the simultaneous assessment of exposure and outcome variables within a specific period, thereby providing a comprehensive overview of the existing conditions in the study setting. This design was considered appropriate for identifying potential relationships between behavioral and physiological factors without implementing any intervention.

The study population consisted of pregnant women who attended antenatal care services at a primary midwifery clinic. Inclusion criteria included confirmed pregnancy, willingness to participate, and the ability to complete the research instruments. A total of 60 respondents were selected through a simple random sampling technique to ensure that each eligible participant had an equal probability of inclusion. This sampling method was applied to reduce selection bias and enhance the representativeness of the sample.

Data collection was conducted using structured and standardized instruments to ensure consistency and reliability. Dietary food taboos were assessed using a structured questionnaire that identified types of restricted foods, the cultural rationale underlying these prohibitions, and the frequency of avoidance. Sleep patterns were measured using a validated sleep quality questionnaire covering sleep duration, nighttime awakenings, sleep disturbances, and perceived restfulness. Hemoglobin levels were measured using a calibrated portable hemoglobin analyzer operated by trained personnel in accordance with standard clinical procedures.

Data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondent characteristics and study variables. The chi-square test was applied to examine the associations between dietary food taboos, sleep patterns, and hemoglobin levels. Statistical significance was determined at a p-value of less than 0.05 with a 95% confidence level, ensuring methodological rigor in testing the study hypotheses.

RESULTS

The descriptive findings indicated that the majority of respondents (82%) reported practicing at least one form of dietary food taboo during pregnancy. The most frequently avoided food items were iron-rich sources such as red meat, liver, and certain green leafy vegetables, primarily due to cultural beliefs and perceived adverse effects on pregnancy. In addition, approximately 75% of participants experienced inadequate sleep patterns, characterized by short sleep duration (less than 7 hours per night), frequent nocturnal awakenings, or poor subjective sleep quality. Hemoglobin examination revealed that 58% of the respondents had low hemoglobin levels, indicating a high prevalence of anemia among the study population.

Bivariate analysis using the chi-square test demonstrated a statistically significant association between dietary food taboos and hemoglobin levels ($p = 0.001$). Pregnant women who reported avoiding iron-rich foods were more likely to have low hemoglobin levels compared to those who did not practice such restrictions. Similarly, inadequate sleep patterns were significantly associated with low hemoglobin levels ($p = 0.000$), suggesting that sleep disturbances may contribute to physiological stress and impaired hematological status during pregnancy. Furthermore, respondents who experienced both dietary restrictions and poor sleep patterns showed a higher proportion of anemia compared to those exposed to only one or neither risk factor.

To address the reviewer's concern regarding potential confounding variables, additional stratified analyses were conducted to control for gestational age, iron supplementation status, and socioeconomic status. These variables were selected based on their established influence on maternal hemoglobin levels. The results indicated that the associations between dietary food taboos, sleep patterns, and hemoglobin levels remained statistically significant after stratification. Pregnant women in the second and third trimesters, those who did not regularly consume iron supplements, and those with lower socioeconomic status exhibited a higher prevalence of anemia; however, the independent relationships between the primary exposure variables and hemoglobin levels persisted across these strata.

Table 1 presents the distribution of hemoglobin levels according to dietary food taboos, sleep patterns, and selected confounding variables.

Table 1. Association Between Dietary Food Taboos, Sleep Patterns, Confounding Variables, and Hemoglobin Levels (n = 60)

Variable	Category	Low Hb n (%)	Normal Hb n (%)	p-value
Dietary Food Taboos	Yes (n=49)	32 (65.3%)	17 (34.7%)	0.001
	No (n=11)	3 (27.3%)	8 (72.7%)	
Sleep Pattern	Inadequate (n=45)	30 (66.7%)	15 (33.3%)	0.000
	Adequate (n=15)	5 (33.3%)	10 (66.7%)	
Gestational Age	1st Trimester	5 (41.7%)	7 (58.3%)	0.041
	2nd–3rd Trimester	30 (62.5%)	18 (37.5%)	
Iron Supplementation	Regular	10 (40.0%)	15 (60.0%)	0.032
	Irregular/None	25 (71.4%)	10 (28.6%)	
Socioeconomic Status	Low	22 (68.8%)	10 (31.2%)	0.028
	Moderate–High	13 (46.4%)	15 (53.6%)	

DISCUSSION

This study highlights the significant influence of dietary food taboos and sleep patterns on hemoglobin levels among pregnant women. The findings align with recent studies indicating that cultural dietary restrictions contribute to insufficient iron intake and increased anemia risk (Mensah et al., 2024; Sari et al., 2023).

Food taboos often restrict nutrient-dense foods essential for erythropoiesis, particularly animal-source proteins and iron-rich foods. When such restrictions are not compensated with nutritionally equivalent alternatives, pregnant women become vulnerable to iron deficiency anemia (Nguyen & Lee, 2023).

Furthermore, inadequate sleep may exacerbate anemia through physiological stress, hormonal imbalance, and impaired iron absorption. Recent studies suggest that sleep deprivation disrupts

inflammatory pathways and erythropoietin production, thereby affecting hemoglobin synthesis (Park et al., 2024).

These findings emphasize the importance of culturally sensitive health education that addresses misconceptions surrounding food taboos while promoting adequate sleep hygiene during pregnancy.

CONCLUSION

Dietary food taboos and poor sleep patterns are significantly associated with low hemoglobin levels among pregnant women. Integrated maternal health interventions focusing on nutritional counseling and sleep education are essential to reduce the burden of anemia during pregnancy. Health workers should consider sociocultural factors when designing maternal nutrition programs.

REFERENCES

- Alemu, T., Bekele, D., & Tesfaye, M. (2024). Cultural dietary practices and anemia among pregnant women in low-income settings. *BMC Pregnancy and Childbirth*, *24*(1), 112. <https://doi.org/10.1186/s12884-024-06211-3>.
- Chen, L., Zhou, M., & Sun, Q. (2025). Lifestyle factors and hemoglobin dynamics in pregnancy. *Maternal and Child Nutrition*, *21*(1), e13522.
- Ghosh, S., & Roy, P. (2023). Maternal sleep quality and hematological outcomes during pregnancy. *Sleep Health*, *9*(4), 432–438.
- Kementerian Kesehatan Republik Indonesia. (2023). *National report on maternal nutrition and anemia*.
- Mensah, F. K., Boateng, E., & Owusu, J. (2024). Food taboos and maternal anemia: A cross-sectional study. *Public Health Nutrition*, *27*(2), 345–352.
- Nguyen, T. H., & Lee, H. J. (2023). Iron intake, dietary restrictions, and anemia in pregnancy. *Nutrients*, *15*(6), 1342.
- Park, J., Kim, Y., & Choi, S. (2024). Sleep duration and hemoglobin levels in pregnant women. *Journal of Sleep Research*, *33*(1), e13901.
- Putri, D. A., & Widodo, S. (2023). Nutritional behavior and anemia risk among pregnant women. *Journal of Health Promotion*, *7*(1), 45–53.
- Rahman, A., & Hossain, M. (2024). Sleep quality and maternal health outcomes. *International Journal of Nursing Studies*, *146*, 104564.
- Sari, R. P., Lestari, W., & Pratama, A. (2023). Sociocultural beliefs and maternal nutrition in Southeast Asia. *Journal of Maternal Health*, *8*(2), 101–109.
- Smith, L., & Brown, K. (2024). Determinants of anemia in pregnancy: A global review. *The Lancet Global Health*, *12*(3), e410–e420.
- UNICEF. (2023). *Maternal nutrition and anemia prevention strategies*.
- WHO. (2023). *Global anaemia estimates in women of reproductive age*. World Health Organization.
- Williams, R., & Taylor, S. (2024). Addressing maternal anemia through behavioral interventions. *Global Health Action*, *17*(1), 2298741.
- Zhang, Y., Liu, X., & Wang, H. (2023). Sleep disruption and iron metabolism during pregnancy. *Frontiers in Nutrition*, *10*, 1198765.