

ASSOCIATION BETWEEN TRADITIONAL DIETARY PRACTICES AND PREVALENCE OF ANEMIA IN PREGNANT WOMEN ATTENDING RURAL PRIMARY HEALTH CENTERS IN SWAT

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Abstract

Background

Periconceptual anemia is a major health issue facing the general population especially in rural areas where deficiencies in nutrition and cultural eating habits are very rife. The nature of traditional food restrictions, iron-enriched foods, and the use of tea/coffee post-meal cause the reduction of hemoglobin levels and poor maternal and fetal outcomes. The knowledge of such associations is essential in formulating appropriate interventions.

Aim

This was done to determine the prevalence of anemia in pregnant women visiting the rural primary health centers in Swat as well as to determine its relationship with the traditional dietary practices.

Methods

The study was a cross-sectional descriptive study during the period between July 2025 and September 2025. Fifteen hundred pregnant women at their second and third trimesters were recruited based on the non-probability convenience sampling. A structured questionnaire existed that was used to capture data about the socio-demographic data, obstetric history, and traditional dietary practices. A conventional hemoglobinometer was used to estimate the level of hemoglobin. The analysis of data was performed with the help of SPSS version 25 with the help of descriptive statistics and Chi-square tests, which identify the relationship between variables with a significance level of $p < 0.05$.

Results

There was a high prevalence of anemia with moderate anemia in 36.7% and mild anemia in 30% of the respondents. The dietary restrictions such as avoiding meat, eggs, and green leafy vegetables and taking tea or coffee after meals were highly linked with anemia ($p < 0.01$). Lack of education and joint family were found to have effect on the dietary practice and anemia.

Conclusion

Rural communities are largely prone to maternal anemia because of their

traditional dietary practices. Nutrition education, counseling, and iron supplementation interventions should be culturally sensitive to enhance maternal hemoglobin levels and lead to the achievement of the healthier outcomes of the pregnancy.

INTRODUCTION

Anemia is a disorder, which is marked by a low level of number of red cells or hemoglobin level that makes the blood to have less oxygen transportation capacity. Maternal anemia is the term that is used to indicate maternal anemia or pregnancy, which may lead to the poor health of the mother and the unborn baby (1). Traditional food practices refer to culturally-based food preferences and ways of preparation that are generally adhered to by a particular group (1,2). Prevalence plays an important role as the percentage of people in a population with a particular condition at a specific time (3). Female pregnant women are the most susceptible to anemia because the body needs more iron, and the body is changing. The main indicators that are applied in the determination of maternal anemia include hemoglobin level, iron supplementation and dietary diversity. Community-based healthcare facilities that offer necessary maternal and child health services in underserved communities are called primary health centers, which are typically based in rural areas (4).

Anemia among pregnant women is still very high in the whole world. It is estimated that millions of pregnant women are still impacted by it, and much higher relative rates in low- and middle-income countries (5). In rural areas, the rate of anemia among pregnant women usually ranges at over 40 percent owing to socioeconomic factors, access to good healthcare facilities as well as nutrition (6). Iron deficiency in pregnancy poses a threat to maternal health, preterm birth, low birth weight, and perinatal complications, being one of the major issues of the resource-constrained environments (3).

Mothers' nutrition is a vital pathway of anemia. Recent studies have shown that sufficient consumption of iron, folic acid and vitamin B12 is necessary to sustain hemoglobin levels. Rural people tend to avoid some foods as a result of

cultural beliefs or taboos (2). Such practices might restrict intake of the iron rich foods like meat, green leafy vegetables and legumes. Poor nutrition is a contributing factor to the occurrence of the iron-deficiency anemia in pregnant women. There is evidence that the cultural food avoidances and low dietary diversity are significant contributors to the etiology of maternal anemia (6).

Both dietary practices and prevalence of anemia are subject to socioeconomic factors. Women in the lower income families can use low nutrition foods as staples exposing them to anemia. The awareness of maternal nutrition and the level of education influence food preferences and compliance with iron supplementation (7). Decision-making authority and family support in the allocation of food in households also influence the dietary variety and nutritional sufficiency. These are the wider contextual factors that have direct implications on the susceptibility of a pregnant woman to anemia in rural settings.

Pregnancy has cultural beliefs which influence the nutrition of the mother. Some communities limit the intake of eggs, meat, or milk products during pregnancy because of wrong beliefs about the consequences of pregnancy (8). Such dietary taboos which are culturally motivated may result in deficiencies of nutrients. Knowledge of the dietary practices that relate to anemia will be instrumental in the creation of culturally relevant interventions. Studies have revealed that migrant and rural women tend to be very dependent on cultural food standards that can be contradictory to suggested nutritional habits (9).

The maternal anemia continues to exist due to health system factors. The availability of primary health centers, lack of information on nutrition, and inconsistency in provision of iron-folic acid tablets undermine the prevention programs on anemia. Community health nurses are in a better position to inform women on how to eat, check

the levels of hemoglobin, and supplement, but there are gaps in service delivery (10). Primary care and nutrition counseling should be strengthened to decrease anemia among underserved communities. Enquiring the relationship between the traditional diet and anemia in pregnant women who are receiving primary health care in the rural areas will inform the practices of the people in the field of health. The recognition of certain dietary habits predisposing to anemia will allow the design of nutrition education and culturally-competent management. The research can also be used to shape the policies that would incorporate the community-based strategies in maternal health interventions to enhance maternal and infant outcomes in rural settings (11).

Methodology

The descriptive design used was cross-sectional to examine the relationship between the traditional dietary practices and the level of anemia among pregnant women visiting rural primary health centers. This design was chosen because it was desired to measure exposure (dietary habits) and outcome (anemia) simultaneously among the target population. The sample was selected rural primary health centers in swat. and was carried out over three months between July 2025 and September 2025. The study population of the study was the pregnant women who had their second and third trimester during the study period and could be identified as permanent residents of the area and visited the health centers. Women who had the chronic diseases that influenced hemoglobin levels, those on long-term medication, and all who were not willing to take part were excluded. The sample of 150 participants was recruited through non-probability convenience sampling. The 40% assumed prevalence of maternal anemia in rural communities was used to calculate the sample size with a 95% confidence interval and a 5% level of error.

Data Collection

A structured questionnaire and hemoglobin were used to collect data. The questionnaire has

consisted of the socio-demographic section, obstetric history, and traditional diet, involving food restriction and the frequency of ingesting foods rich in iron, culturally mediated eating behaviors and eating habits. The appropriate hemoglobinometer at the health centers was used to measure the hemoglobin levels. Anemia was determined as hemoglobin less than 11 g/dL. The approvals to use the data were received through permission by the authorities of the health centers and the ethical approval was done by the [Specify Institutional Review Board]. The objectives of the study were explained to the participant's; informed consent was made written. The questionnaire was administered through face-to-face interviews by trained research assistants and a hemoglobin test using standard clinical procedures to promote both the validity and safety of the test.

Data Analysis

Data analysis and entry were done in the SPSS 25. Calculation of descriptive statistics was done (frequencies, percentages, means and standard deviations of socio-demographic factors, dietary habits and hemoglobin levels). The Chi-square test was used to test the association between the traditional dietary practices and maternal anemia. The p-value below 0.05 was regarded as significant. The results were presented in tables and charts to give a clear picture about the level of anemia with the relationship with food habits among the rural pregnant women.

Results and Analysis

The table gives the age, gestational age, education, occupation and type of family of 150 pregnant women. Majority of the participants were aged 25 to 35 (43.3) and in second trimester (60%). Most of them were housewives (86.7) and were also living in joint families (76.7%). The level of education was low with 36.7% being illiterate and lower levels with 13.3% having graduate degree and above. These traits give a background on the eating habits and the incidence of anemia among the study subjects.

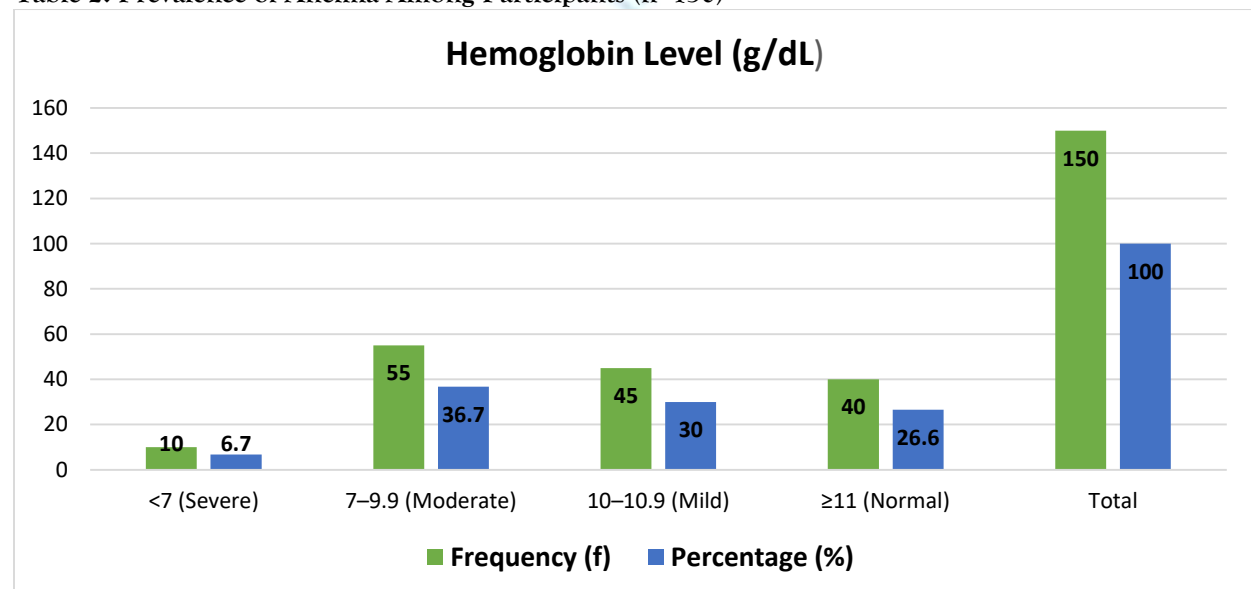
Table 1: Socio-Demographic Characteristics of Participants (n=150)

Characteristics	Frequency (f)	Percentage (%)
Age (years)		
<25	60	40
25–35	65	43.3
>35	25	16.7
Gestational Age		
Second Trimester	90	60
Third Trimester	60	40
Education Level		
Illiterate	55	36.7
Primary	45	30
Secondary	30	20
Graduate and Above	20	13.3
Occupation		
Housewife	130	86.7
Employed	20	13.3
Family Type		
Nuclear	35	23.3
Joint	115	76.7

The Figure presents the level of hemoglobin and the rate of anemia in pregnant women. The most common were moderate anemia (36.7%) and mild anemia (30). Major anemia was lower and only 6.7% of the participants had severe anemia. It was

only in 26.6% females that hemoglobin was normal. Such results indicate that anemia is one of the major public health issues in the rural population.

Table 2: Prevalence of Anemia Among Participants (n=150)



This table gives a general overview of the dietary trends of the pregnant women based on their cultures. More than half (53.3%) did not eat meat or 40 percent did not eat eggs during pregnancy. The absence of green leafy vegetables was found in 20th part of the participants. Iron-rich or fortified

foods were minimized and 46.7% drank tea or coffee right after eating which will inhibit the absorption of iron. The data depict the possible dietary risk factors that cause anemia.

Table 2: Traditional Dietary Practices Among Participants (n=150)

Dietary Practice	Frequency (f)	Percentage (%)
Avoids meat during pregnancy	80	53.3
Avoids eggs	60	40
Avoids green leafy vegetables	30	20
Consumes legumes regularly	50	33.3
Consumes iron-fortified foods occasionally	40	26.7
Drinks tea or coffee immediately after meals	70	46.7

The table shows the correlation between certain eating habits and prevalence of anemia. Not consuming meat, eggs, and green leafy vegetables was strongly related to increased incidences of anemia ($p < 0.01$). The consumption of tea or coffee right after meals was also significantly

associated ($p = 0.008$). Such results suggest that dietary restrictions that were used traditionally could lead to maternal anemia within the rural population. The findings highlight the necessity of culturally competent nutrition interventions.

Table 3: Association Between Traditional Dietary Practices and Anemia (n=150)

Dietary Practice	Anemia Present (f)	Anemia Absent (f)	χ^2 (p-value)
Avoids meat	50	30	10.2 (0.001)
Avoids eggs	40	20	8.5 (0.004)
Avoids green leafy vegetables	25	5	12.0 (0.000)
Drinks tea/coffee after meals	45	25	7.1 (0.008)

Discussion

The current research paper tested the relationship between the traditional food habits and the occurrence of anemia among the pregnant women accessing rural primary health centers in Swat. The results showed that anemia is a common problem with majority of the cases being moderate and mild anemia with only a quarter of the study participants having normal hemoglobin. Such findings are consistent with those of the world and other regions that reveal that anemia is a significant public health issue among low-resource women. The same trends were noted in rural and underserved communities, where nutritional deficiencies and socioeconomic factors have a significant role in

anemia during pregnancy (7). The results support the high load of anemia in pregnant women in the rural communities.

The socio-demographic variables indicated that a majority of the participants were aged between 25 and 35 years, in joint families, with low scores in formal education. These attributes can affect the choice of diet, availability of nutritional information, and compliance with antenatal advice. It has been found that socioeconomic status, literacy level, and household dynamics are the main determinants of nutritional practices and the risk of anemia during pregnancy, as demonstrated by research in low-income settings (13). Poor educational attainment and lack of empowerment in making decisions may prevent

the acquisition of knowledge on healthy eating habits and iron supplementation.

Some common diet traditions were common among the participants such as not eating meat and eggs, or green leafy vegetables and drinking tea or coffee right after meals. These were major practices which were linked to increased cases of anemia. This result corresponds with the fact that cultural beliefs about food and restricting practices are known to cause nutritional limitations during pregnancy (14). The same studies in conflict-affected and rural areas found that dietary restrictions due to food taboos and cultural reasons lead to a decrease in dietary diversity and worsen anemia in pregnant women (12).

Another significant finding of the study was that the prevalence of anemia was greatest in women who did not consume several iron-dense foods concomitant to each other, and therefore the cumulative effects of dietary limitations to hemoglobin concentrations. The past studies have established that the low quality of dietary diversity is among the most significant predictors of maternal anemia, particularly in low-income and more conservative societies (15). These results demonstrate the significance of dietary diversity in the prevention of iron-deficiency anemia and maternal health.

All participants did not strictly follow dietary restrictions; nevertheless, legumes and iron fortified foods were sometimes still taken. This variation indicates the variations in cultural beliefs, household norms and availability of nutritional resources. The same trends were noted in the research, which indicates that at least partial compliance with better dietary habits can have a beneficial effect on the level of hemoglobin and decrease the risk of anemia (16). This implies that marginal, culturally acceptable changes in maternal diet can be useful Healthwise.

The results indicate the significance of health education and counseling interventions in rural primary health centers. Community health nurses and nutritionists could be crucial in enhancing awareness with respect to iron rich foods, the time of meals, and adverse effects of taking tea or coffee shortly after meals. The programs in similar environments have shown such positive impacts as

changing eating habits, following iron-folic acid intake, and decreasing the incidence of anemia (14). Also, community-based and mobile health interventions have demonstrated potential in the development of nutrition awareness among disadvantaged pregnant women (17).

Finally, the article has shown that there is a significant correlation between the traditional dietary habits and anemia in pregnant women in rural Swat. Its findings are consistent with other studies that indicate cultural food taboos and low nutritional diversity is a factor that contributes to maternal anemia. Such findings underscore the importance of culturally-based health promotions that are sensitive of the dietary misperceptions but at the same time do not ignore the local customs. Enhancing nutrition education, improving the compliance of iron supplementation, and ongoing counseling by means of primary health centers could be used to decrease the prevalence of anemia and improve the outcomes of pregnancy among rural populations.

Conclusion

The research found that anemia was high in pregnant women who were attending rural primary health centres in Swat with moderate anemia and mild anemia being the most prevalent. Conventional dieting habits such as the shunning of meat, eggs and green leafy vegetables and intake of tea or coffee immediately after a meal were largely linked with anemia. Socio-demographic variables like low educational level and joint family structure seemed to affect the habits of food and dietary habits were, in turn, related to hemoglobin levels. The results highlight cultural food taboos, which are further augmented by lack of nutritional literacy, as a major contributor to maternal anemia in rural population. This underscores the dire need to have focused public health measures that would curb both nutritional deficiencies and dietary habits that are culturally inclined.

Recommendations

1. Nutrition Education: The rural primary health centers should be used to provide health education to pregnant women on the benefits of iron-rich foods, the benefits of meal

- diversity, and the negative impacts of food restrictions in pregnancy.
2. Culturally Sensitive Counseling: Community health nurses ought to offer counseling that does not interfere with the beliefs but promotes the incorporation of the nutrients in the diet. Gradual changes in diet could be more acceptable and sustainable instead of radical changes that occur instantly.
 3. Advertisement of Iron Supplementation: Continuous anemia screening and administration of iron supplements needs to be reinforced in the rural health centers that will help in preventing severe maternal anemia and its associated damages.
 4. Education on Beverage Consumption: The pregnant women should be advised not to take tea or coffee right after meals to aid in the absorption of iron.
 5. Involvement of Family Members: The Family members, especially the elderly who affect eating habits should be included in the education programs to embrace healthier diets during pregnancy.
 6. Future Research: It is suggested that longitudinal research be done to determine the long-term effect of dietary-based interventions and counseling on maternal anemia and pregnancy outcomes in rural settings.
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