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A study to find out the Prevalence of Anemia and compare Dietary practices and taboos among Anemic and Non Anemic Antenatal Mother attending OPD'S at selected Hospitals, Kolar in a view to develop an information Booklet

Mrs.V Supriya[1*], Gayathri K.V[2]
[1]II nd year M.Sc(N) Student, Sri Devaraj Urs College of Nursing Tamaka , Kolar. 563103, supriyaraghu2401@gmail.com
[2]Associate Professor of OBG[N], Sri Devaraj Urs College of Nursing, Tamaka , Kolar . 563103

Abstract
Anemia during pregnancy remains a major public health issue, particularly in low- and middle-income regions. This study was conducted to find out the prevalence of anemia and to compare dietary practices and food taboos among anemic and non-anemic antenatal mothers attending OPDs at selected hospitals in Kolar. A total of 100 antenatal mothers participated, and data were collected using structured questionnaires along with hemoglobin estimation to identify anemia status. The findings revealed that dietary diversity was poor among both groups, with non-anemic mothers showing relatively better practices in consuming iron, folic acid, and vitamin-rich foods, snacking frequency, and intake of animal-source foods. Cultural food taboos significantly influenced food choices, leading to the avoidance of several nutrient-rich foods essential during pregnancy, with a stronger impact on anemic mothers. The study highlights the need for culturally sensitive nutrition education and counseling to address food taboos, improve dietary practices, and reduce anemia among antenatal mothers to enhance maternal and fetal health outcomes.
Keywords: *Anemia prevalence, Antenatal mothers, Dietary practices, Food taboos, Maternal nutrition*

INTRODUCTION

Anemia during pregnancy is a major public health concern globally, particularly in low- and middle-income countries. Pregnancy increases iron and folate requirements to support maternal and fetal health, and deficiencies can lead to anemia, increasing risks of fatigue, infections, and complications. [1] Anemia is defined by reduced hemoglobin or red blood cells, reducing oxygen delivery to tissues, and is classified by WHO as mild, moderate, or severe. It can result from poor dietary intake, increased iron demand during pregnancy, blood loss, and infections like malaria and hookworm. [2] Iron deficiency anemia accounts for about 50% of cases globally. Anemia during pregnancy can lead to maternal complications during pregnancy, labor, and puerperium, and affect fetal outcomes including preterm birth and low birth weight. Poor dietary habits, cultural food taboos, and low dietary diversity during pregnancy contribute to anemia prevalence. [3] Many pregnant women avoid nutrient-rich foods like eggs, meat, fruits, and vegetables due to beliefs linking them to miscarriage or complications. Studies indicate a high prevalence of anemia among women aged 21–30, particularly in low socioeconomic groups, with increased prevalence in women with short birth intervals. Globally, 37% of pregnant women are anemic, with higher rates (56%) in LMICs. [4] Iron, folate, and vitamin B12 deficiencies, along with repeated pregnancies and early marriage, increase anemia risk. Symptoms of anemia include fatigue, pale skin, dizziness, and rapid heartbeat, while severe anemia can lead to preterm delivery, postpartum depression, and developmental delays in children. [5] Physiological anemia in pregnancy occurs due to plasma volume increase outpacing red cell mass. Addressing anemia requires dietary interventions, supplementation, and culturally sensitive education to overcome food taboos during pregnancy. Understanding local beliefs and practices around food is critical to reducing anemia and improving maternal and child health outcomes. [6] [7]

METHODOLOGY

A cross-sectional survey design was adopted for this study to assess the prevalence of anemia and compare dietary practices and food taboos among antenatal mothers. The study was conducted in the Obstetrics and Gynecology (OBG) department of R.L. Jalappa Hospital and Research Center, Kolar, Karnataka, over a period of three months.

A sample of 100 antenatal mothers attending the antenatal outpatient department (OPD) was selected using purposive sampling. The inclusion criteria were antenatal mothers attending the OPD who were willing to participate and provide informed consent. Antenatal mothers with known pathological disorders and those unwilling to participate were excluded from the study.

Data were collected using a structured tool comprising three components. A sociodemographic questionnaire was used to record the participants' age, educational status, socioeconomic status, gravida, and gestational age. A dietary practices and food taboos questionnaire was used to assess the frequency and types of foods consumed and restricted during pregnancy. Additionally, hemoglobin levels were measured for each participant and categorized using the WHO hemoglobin categorization chart.

Based on the hemoglobin estimation, participants were classified into two groups: the non-anemic group (hemoglobin levels ≥ 11 g/dL) and the anemic group (hemoglobin levels < 11 g/dL). Prior to data collection, ethical clearance was obtained from the Sri Devaraj Urs College of Nursing Institutional Ethics Committee (Approval No: SDUCON/IEC/130/2023), and permission was secured from the hospital authorities. The investigator introduced herself to the participants, explained the purpose and objectives of the study, and obtained written informed consent from all participants while ensuring confidentiality. Following this, hemoglobin estimation was carried out, and the structured questionnaire was administered to assess the dietary practices and food taboos among the participants. Upon completion of the data collection, an information booklet on anemia prevention and dietary practices during pregnancy was provided to all antenatal mothers to enhance their awareness and promote healthy practices during pregnancy.

RESULTS

The analysis revealed that the majority of anemic antenatal mothers (79%) and non-anemic mothers (84%) did not consume vitamin C and vitamin B12-rich diets regularly. Most anemic mothers (77%) and non-anemic mothers (70%) reported that their families did not provide them with their preferred foods during pregnancy. Additionally, a large proportion of anemic (66%) and non-anemic mothers (63%) did not consistently consume freshly prepared foods. Intake of iron and folic acid-rich foods such as ladies' finger and ridge gourd was notably lower among anemic mothers, with 75% reporting non-consumption, while 68% of non-anemic mothers reported consuming these foods. Snacking between meals was practiced by 57% of anemic mothers and 65% of non-anemic mothers. All mothers in both groups reported consuming carbohydrate-rich diets regularly. Overall, the findings indicate poor dietary diversity among antenatal mothers, with non-anemic mothers demonstrating relatively better dietary practices compared to anemic mothers, particularly in the intake of iron and folic acid-rich foods and snacking frequency.

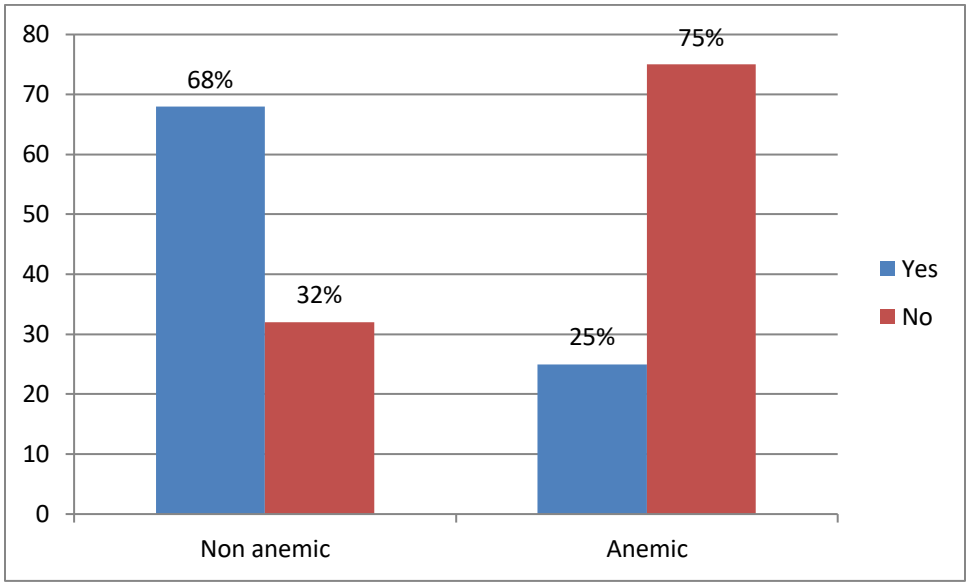

Figure 1: Comparison of Iron and Folic Acid-Rich Food Consumption Among Anemic and Non-Anemic Antenatal Mothers

Regarding protein intake, the majority of both anemic and non-anemic antenatal mothers (68% in each group) reported consuming protein-rich diets. Consumption of fatty foods was higher among anemic mothers, with 80% reporting intake, compared to 54% among non-anemic mothers. The intake of animal-source foods was lower among anemic mothers, with only 45% consuming these foods, whereas 66% of non-anemic mothers reported regular intake. Daily consumption of green leafy vegetables was reported by 56% of anemic mothers and 52% of non-anemic mothers. Additionally, 52% of anemic mothers and 59% of non-anemic mothers reported consuming vegetables daily. Overall, while protein intake was similar across both groups, non-anemic mothers demonstrated better practices in consuming animal-source foods and vegetables, whereas anemic mothers reported higher consumption of fatty foods during pregnancy.

Regarding the daily intake of pulses and grains, half of the anemic antenatal mothers (50%) reported consuming them regularly, while a slightly higher proportion (59%) of non-anemic mothers reported the same. Most anemic mothers (77%) were neutral regarding increasing the frequency of meals during pregnancy, while only 2% agreed to doing so, in contrast to 73% of non-anemic mothers who reported increasing meal frequency. Similarly, 77% of anemic mothers remained neutral about consuming additional protein-rich foods, while 86% of non-anemic mothers agreed to doing so. The intake of milk and milk products was higher among non-anemic mothers, with 68% agreeing to regular consumption, whereas 75% of anemic mothers remained neutral. Regarding iron-rich diet intake, only 19% of anemic mothers agreed to consuming such a diet, while 70% remained neutral, compared to 59% of non-anemic mothers who agreed to consuming iron-rich foods. Overall, these findings indicate that non-anemic mothers demonstrated better practices in increasing meal frequency, consuming protein-rich foods, milk products, and iron-rich diets during pregnancy, while a significant proportion of anemic mothers reported neutral responses, reflecting lower adherence to dietary practices essential for anemia prevention.

Regarding preferences for restricted foods, only 18% of anemic antenatal mothers reported liking to eat foods that were not allowed during pregnancy, while a higher proportion (68%) of non-anemic mothers reported the same. Consumption of foods rich in vitamin C, B12, omega-3, and fatty acids was notably low among anemic mothers, with only 19% agreeing to consuming these foods, compared to 73% of non-anemic mothers. The use of iodized salt in meal preparation was reported by 16% of anemic mothers and was significantly higher among non-anemic mothers at 70%. Concerning dietary patterns, 59% of anemic mothers reported not taking additional meals during pregnancy, whereas 41% reported doing so. In

comparison, 36% of non-anemic mothers took additional meals, while 64% did not. Regarding following a specific dietary regimen during pregnancy, 59% of anemic mothers reported not following one, while 41% did, compared to 36% of non-anemic mothers who followed a specific diet. Overall, these findings indicate that non-anemic mothers demonstrated healthier dietary behaviors during pregnancy, including higher intake of nutrient-rich foods, use of iodized salt, and a willingness to consume foods generally avoided due to taboos, while many anemic mothers reflected lower adherence to beneficial dietary practices.

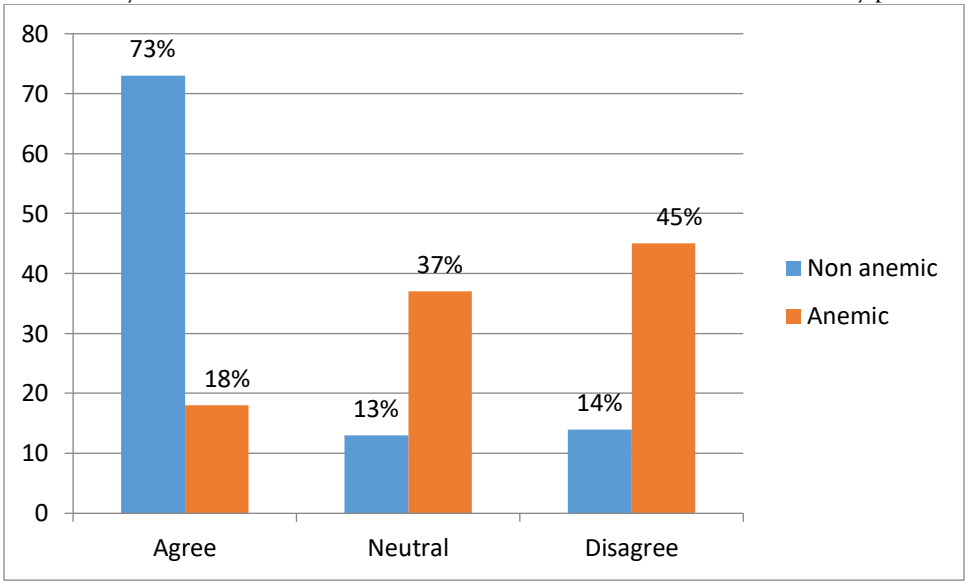

Figure 2: Comparison of Attitudes Toward Restricted Foods During Pregnancy Among Anemic and Non-Anemic Antenatal Mothers

Regarding the intake of nutrient-rich foods, only 19% of anemic antenatal mothers reported consuming foods high in vitamin C, B12, omega-3, and fatty acids, while a substantially higher proportion (73%) of non-anemic mothers reported consuming these foods regularly. The use of iodized salt in meal preparation was reported by just 16% of anemic mothers, compared to 70% of non-anemic mothers. In terms of daily dietary habits, 59% of anemic mothers indicated they did not take additional meals during pregnancy, whereas 41% reported doing so. Among non-anemic mothers, 36% reported taking additional meals while 64% did not. Similarly, when asked about following a specific dietary regimen during pregnancy, 59% of anemic mothers reported not following one, while 41% did, compared to 36% of non-anemic mothers who followed a specific diet plan. Overall, these findings indicate that non-anemic antenatal mothers demonstrated better adherence to consuming nutrient-rich foods, using iodized salt, and following dietary regimens during pregnancy, whereas anemic mothers showed lower adherence to these beneficial dietary practices.

The study found that 52% of anemic antenatal mothers reported avoiding excessive workload during pregnancy, while a higher proportion of non-anemic mothers (75%) reported not avoiding work. Use of iodized salt in cooking was reported by 43% of anemic mothers and 39% of non-anemic mothers, with the majority in both groups not using it consistently. Daily snacking between meals was reported by 55% of anemic mothers, whereas 77% of non-anemic mothers did not snack regularly. All anemic mothers reported taking iron and folic acid supplementation, while 55% of non-anemic mothers did not. Meal skipping during pregnancy was reported by 36% of anemic mothers and was higher among non-anemic mothers at 59%. Consumption of staples such as sugar, ragi, rice, grains, millets, potato, and banana was high in both groups. Non-anemic mothers demonstrated higher intake of pulses, legumes, green leafy vegetables, milk products, fruits, and omega-3-rich foods such as fish and walnuts compared to anemic mothers, who showed lower intake of these nutrient-dense foods. Both groups reported cravings for items like mango, pickle, ghee, and sweets, though non-anemic mothers reported a wider variety of cravings, including grapes and green leafy vegetables. Food avoidance patterns were evident in both groups, with universal avoidance of raw egg, alcohol,

colostrum milk, papaya, gooseberries, guava, and blackberries, and high avoidance of items like potato, cold items, sweets, and oil-rich foods due to cultural taboos and beliefs. Overall, non-anemic mothers exhibited better dietary diversity, higher intake of nutrient-rich foods, and fewer meal-skipping practices, while food taboos significantly influenced dietary patterns in both groups during pregnancy.

The study revealed that both anemic and non-anemic antenatal mothers commonly avoided certain foods during pregnancy due to cultural beliefs and perceived health risks. Universally, all mothers reported avoiding raw eggs due to fears of fetal abnormalities, alcohol due to the risk of abortion and fetal death, colostrum milk and chapatti due to beliefs of causing indigestion, and papaya, gooseberries, guava, and blackberries due to fears of abortion or harm to the baby. Additional reasons for avoidance included concerns that cold items and juice could cause chills for the baby, potato and brinjal could lead to swelling and knee pain, sweets and salad might cause vomiting, and oil-rich and spicy foods could cause indigestion or gastritis. Some mothers avoided corn due to concerns about intrauterine growth retardation and pineapple for fears of abortion. Ridge gourd and snake gourd were avoided due to perceived risks of causing skin abnormalities in the baby, while mushrooms and jackfruit were believed to cause seizures. Other avoided foods included tea and coffee, perceived to reduce appetite and iron absorption, and cucumber and ladies' finger, believed to cause skin issues or amniotic fluid aspiration. Overall, these findings indicate that cultural beliefs and misconceptions significantly influenced dietary restrictions among antenatal mothers, leading to the avoidance of several nutrient-rich foods essential for maternal and fetal health during pregnancy

The study found that both anemic and non-anemic antenatal mothers reported avoiding several fruits during pregnancy, primarily papaya, blackberries, and gooseberries, with universal avoidance in both groups. Additional fruits commonly avoided included pineapple, amla, jackfruit, pumpkin, and black grapes, with slightly higher avoidance rates among non-anemic mothers. Regarding vegetables, a high proportion of mothers in both groups avoided potato and brinjal, while other vegetables like ridge gourd, pumpkin, snake gourd, cucumber, and ladies' finger were also avoided to varying extents, reflecting cultural beliefs and perceived health concerns. Notably, 86% of anemic mothers and 95% of non-anemic mothers reported willingly avoiding certain foods during pregnancy. In terms of perceptions related to food taboos, 70% of anemic mothers reported feeling happy about following these restrictions, while 41% expressed a desire to consume the restricted foods, and 16% avoided them due to fears of harming the fetus. Similarly, among non-anemic mothers, the primary reason for following food taboos was fear of causing harm to the fetus (100%), while others felt happy, desired to eat the restricted foods, or followed taboos with parental consent. Overall, these findings indicate that strong adherence to food taboos and avoidance of specific fruits and vegetables during pregnancy was prevalent among both anemic and non-anemic mothers, driven by cultural beliefs and concerns about fetal health.

DISCUSSION

The findings highlight that anemia among antenatal mothers is influenced by dietary practices and food taboos, with non-anemic mothers demonstrating relatively better dietary diversity and practices compared to anemic mothers. The low intake of iron, folic acid, vitamin C, and B12-rich foods among anemic mothers indicates the need for targeted nutritional interventions. Food taboos significantly influenced food choices during pregnancy, leading to the avoidance of essential nutrient-rich foods, which may contribute to anemia and adverse pregnancy outcomes. Addressing these barriers requires culturally appropriate education and counseling to dispel misconceptions and promote healthy dietary practices during pregnancy to improve maternal and fetal health outcomes.

CONCLUSION

The study concludes that anemia remains prevalent among antenatal mothers, with poor dietary diversity and adherence to food taboos contributing to this condition. Non-anemic mothers demonstrated better dietary practices, including higher intake of nutrient-rich foods and adherence to healthy dietary regimens. Culturally

sensitive health education and counseling interventions are essential to address food taboos, improve dietary practices, and reduce anemia prevalence among antenatal mothers, ultimately enhancing maternal and child health outcomes.

Future Directions:

Future research should focus on longitudinal and interventional studies to assess the effectiveness of culturally sensitive nutrition education in improving dietary practices and reducing anemia among antenatal mothers. Expanding the study across diverse geographic and socioeconomic groups will enhance generalizability. Additionally, exploring psychosocial and family influences on dietary practices and food taboos can help design holistic, community-based interventions. Incorporating biochemical assessments of iron, folate, and vitamin B12 levels, alongside hemoglobin, will provide a comprehensive understanding of micronutrient deficiencies contributing to anemia, informing policies for maternal nutrition programs.

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