

Dietary Habits of Pregnant Women in Rural Areas: A Study in Bareilly District

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Abstract

Maternal nutrition is a critical determinant of both maternal and child health, directly influencing pregnancy outcomes, fetal growth, and the long-term health trajectory of the offspring. Malnutrition during pregnancy contributes to complications such as anemia, intrauterine growth retardation, low birth weight, and increased risk of maternal mortality. This study aimed to analyze the dietary patterns, nutrient intake, and associated socio-cultural and economic factors among pregnant women residing in the rural areas of Bareilly district, Uttar Pradesh.

A descriptive cross-sectional study was conducted among 200 pregnant women aged 18–40 years in the blocks of Fatehganj West, Bhojipura, Bithri Chainpur, and Faridpur. Data were collected using structured schedules, 24-hour dietary recall, Food Frequency Questionnaires (FFQ), and Dietary Diversity Scores (DDS) following the Food and Agriculture Organization (FAO) guidelines. Nutrient intake was calculated based on ICMR-NIN (2020) Food Composition Tables, and results were compared with the Recommended Dietary Allowances (RDA).

Findings revealed cereal-based monotonous diets with low consumption of fruits, milk, green leafy vegetables, and animal proteins. The mean intake of energy, protein, iron, calcium, and folic acid fulfilled only 47–83% of ICMR recommendations. Cultural beliefs, low income, limited access to diversified food, and poor nutrition counseling during antenatal visits were major determinants of dietary inadequacy. The study underscores the urgent need for multi-level interventions that integrate community nutrition education, gender-sensitive behavior change communication, and health system strengthening to improve maternal nutrition and break the intergenerational cycle of malnutrition.

Keywords: Maternal nutrition, dietary diversity, pregnancy, rural women, Bareilly, nutrient intake, anemia.

1. Introduction

Maternal nutrition plays an indispensable role in ensuring healthy pregnancy outcomes and the well-being of both mother and child. Adequate intake of energy, proteins, and essential micronutrients such as iron, calcium, and folic acid is necessary to support the physiological changes during pregnancy and to meet the nutritional demands of the growing fetus (ICMR-NIN, 2020). However, in many parts of rural India, women's diets remain inadequate in both quality and quantity due to socio-economic barriers, food taboos, and lack of awareness (Gupta & Mishra, 2021).

According to the National Family Health Survey (NFHS-5, 2021), over 52% of women in Uttar Pradesh suffer from anemia, highlighting persistent nutritional challenges. Rural populations, particularly in northern India, are characterized by cereal-dominant diets with minimal dietary diversity. Limited access to nutrient-rich foods such as fruits, milk, and meat further compounds the problem, especially among low-income households (WHO, 2016).

During pregnancy, the demand for iron increases by approximately 1,000 mg to support fetal development and maternal blood expansion. Similarly, calcium and folic acid are essential for skeletal development and neural tube formation. Deficiency in these nutrients can lead to complications such as preterm births, low birth weight, and maternal morbidity (Ministry of Health and Family Welfare [MoHFW], 2018).

Bareilly district in Uttar Pradesh represents a typical semi-rural context where dietary inadequacies and cultural food restrictions coexist. Understanding the specific dietary habits and barriers faced by pregnant women in this region is crucial for designing locally relevant nutrition interventions. This study thus explores the dietary diversity, nutrient adequacy, and socio-cultural determinants influencing food consumption among pregnant women in rural Bareilly.

2. Objectives

1. To describe the socio-demographic characteristics of pregnant women in rural Bareilly.
2. To assess the food consumption patterns and dietary diversity among the study participants.
3. To compare nutrient intake levels with ICMR Recommended Dietary Allowances (RDA).
4. To identify socio-economic and cultural determinants affecting dietary habits.
5. To recommend context-specific interventions for improving maternal dietary practices.

3. Methodology

3.1 Study Design and Sample

A descriptive cross-sectional research design was adopted. The study was conducted in four rural blocks of Bareilly district — Fatehganj West, Bhojipura, Bithri Chainpur, and Faridpur. A total of 200 pregnant women aged 18–40 years were selected using purposive sampling with the assistance of ASHA and Anganwadi workers.

3.2 Tools for Data Collection

Data were gathered using a pre-tested structured schedule, which included sections on socio-demographic information, food frequency, and 24-hour dietary recall. The Food Frequency Questionnaire (FFQ) and the Dietary Diversity Score (DDS) were used to evaluate food group consumption based on FAO guidelines.

3.3 Dietary Assessment

Nutrient intake was computed using the ICMR-NIN (2020) Food Composition Tables, and mean nutrient intake was compared with the ICMR RDA for pregnant women.

3.4 Data Analysis

Data were analyzed using descriptive statistics — frequencies, means, and percentages. Nutrient adequacy was calculated as a percentage of RDA.

3.5 Ethical Considerations

Informed consent was obtained from all participants. Confidentiality was maintained, and participation was voluntary.

4. Results

Table 1. Socio-Demographic Profile (N=200)

Variable	Category	%
Age 23–27 years	—	46.0
Illiterate	—	24.0
Homemakers	—	79.0
Joint families	—	67.0
Income < ₹10,000/month	—	36.0

Interpretation:

A significant proportion of respondents were young (23–27 years) and homemakers with limited education and financial autonomy. Joint family structures influenced intra-household food distribution, often deprioritizing women's nutritional needs.

Table 2. Food Consumption Frequency

Food Group	Daily (%)	Rare/Never (%)
Cereals	98.0	0.0
Pulses	52.5	10.5
Green leafy vegetables	22.0	33.5
Fruits	18.5	52.5
Milk/Dairy	26.0	40.5
Eggs/Meat/Fish	10.0	68.5

Interpretation:

Most women consumed cereals daily, while nutrient-dense food groups such as fruits, dairy, and animal protein were rarely eaten. This dietary pattern increases vulnerability to micronutrient deficiencies, particularly iron and calcium.

Table 3. Mean Nutrient Intake vs ICMR RDA

Nutrient	Intake	RDA	% of RDA
Energy	1880 kcal	2250 kcal	83.5%
Protein	45.6 g	55 g	82.9%
Calcium	620 mg	1200 mg	51.7%
Iron	13.8 mg	27 mg	51.1%
Folic Acid	190 µg	400 µg	47.5%

Interpretation:

Intake levels for critical nutrients like iron, calcium, and folic acid were almost half the recommended values, increasing risk of anemia, neural tube defects, and poor fetal growth.

Table 4. Dietary Diversity Score

Category	%
Very Poor/Poor (0–4 groups)	53.0
Moderate (5–6 groups)	33.0
Adequate (≥ 7 groups)	14.0

Interpretation:

More than half the respondents had poor dietary diversity, consuming fewer than five food groups daily — indicative of low micronutrient adequacy.

5. Discussion

The study highlights a severe lack of dietary diversity and inadequate nutrient intake among pregnant women in rural Bareilly. Similar patterns have been observed in other parts of India, including Bihar, Madhya Pradesh, and Odisha, where cereal-based diets dominate (Gupta & Mishra, 2021).

The predominance of plant-based foods with limited animal protein leads to poor bioavailability of essential nutrients like iron and zinc. Socio-cultural practices also restrict certain foods during pregnancy — such as papaya, eggs, or fish — due to misconceptions about miscarriage or “heat” in the body (WHO, 2016).

Low literacy levels and limited decision-making power among women exacerbate these issues. Many rely on older family members, especially mothers-in-law, for food choices, reinforcing restrictive norms. Furthermore, health workers' limited capacity for effective nutrition counseling during antenatal care reduces awareness about balanced diets.

The nutritional deficiencies observed in this study correspond with NFHS-5 findings, where anemia affects over half the pregnant population in Uttar Pradesh. The lack of adequate calcium and folic acid intake also aligns with national concerns on maternal bone health and neural tube defects (MoHFW, 2018).

Globally, studies show that improved maternal dietary diversity correlates with better birth outcomes (FAO, 2014). Therefore, addressing this challenge in Bareilly requires multi-dimensional action that extends beyond individual education to systemic change in food access, gender norms, and healthcare delivery.

6. Recommendations

6.1 Community-Level Actions

1. Conduct interactive **nutrition education and cooking demonstrations** at Anganwadi centers focusing on low-cost, locally available foods.
2. Include **husbands and mothers-in-law** in counseling to ensure shared household responsibility for maternal diet.
3. Promote **peer-support groups** where pregnant women can share experiences and motivate each other.

6.2 Food System Interventions

4. Encourage **kitchen gardens** to increase access to green leafy vegetables and seasonal fruits.
5. Support **backyard poultry and small livestock rearing** through women's Self-Help Groups for improved access to eggs and milk.
6. Advocate for the **use of fortified flour and double-fortified salt** to enhance micronutrient intake.

6.3 Health System Strengthening

7. Integrate **nutrition-focused counseling** into routine antenatal care visits.
8. Monitor **supplement adherence** (iron-folic acid and calcium tablets) and manage side effects to improve compliance.
9. Train frontline workers (ASHA, ANM, Anganwadi workers) in culturally sensitive communication strategies.
10. Introduce community-based tracking of **maternal hemoglobin and ferritin levels** for early identification of deficiencies.

6.4 Policy Recommendations

11. Integrate maternal dietary diversity indicators into national monitoring systems.
12. Expand the **Poshan Abhiyaan framework** to include behavior change modules on pregnancy nutrition.
13. Strengthen collaboration between agriculture, health, and rural development sectors to address food insecurity among women.

7. Conclusion

The study concludes that pregnant women in rural Bareilly have **low dietary diversity** and **critical nutrient deficiencies**, particularly in iron, calcium, and folic acid. These inadequacies increase the risk of anemia, preterm delivery, and poor neonatal outcomes.

Improving maternal nutrition requires integrated interventions across education, healthcare, and food systems. Empowering women through awareness, enhancing access to diverse foods, and fostering supportive family environments can lead to sustainable improvements in maternal and child health. Addressing these issues holistically will not only improve pregnancy outcomes but also contribute to breaking the intergenerational cycle of malnutrition in rural India.

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