BIHAR SHODH SAMAAGAM
Multidisciplinary, Multi-Lingual, Peer Reviewed Open Access Journal
issn : 3048-6971
Vol. 3, Issue 2, April-June, 2025
Available online : https://www.biharshodhsamaagam.com/

"Nutritional status of pregnant women belonging to urban areas of Patna District"

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Background: Maternal nutrition plays a vital role in ensuring the health and well-being of both the mother and the developing fetus. During pregnancy, the body undergoes significant physiological and metabolic changes that increase the demand for essential nutrients. Inadequate nutrition during this critical period can lead to complications such as low birth weight, anemia, preterm delivery, and increased maternal morbidity and mortality. Despite growing awareness about prenatal care, nutritional deficiencies remain a persistent issue among pregnant women, especially in urban areas of developing countries like India.

In cities such as Patna, rapid urbanization and lifestyle changes have led to a double burden of malnutrition, where women may face both undernutrition and overnutrition. While access to healthcare services is relatively better in urban settings, socio-economic disparities, poor dietary habits, and lack of awareness continue to impact maternal health outcomes negatively. Additionally, pre-existing health conditions such as diabetes and hypertension can further complicate pregnancy and elevate nutritional requirements. Understanding the dietary patterns, health status, and socio-demographic factors of pregnant women is essential for designing effective interventions.

Objective: to assess the nutritional status, dietary intake, and health-related conditions of pregnant women in Patna Urban.

Methods: A descriptive and purposive sampling technique was adopted 50 pregnant women were selected from maternity clinic and data was collected using a pre-tested, structured interview schedule, which gathered information on socio-demographics, clinical signs of nutritional deficiency, anthropometric measurements, dietary intake using the 24-hour recall method, and hemoglobin levels. Nutrient intake was analyzed and compared against ICMR's Recommended Dietary Allowances (RDA). Descriptive statistics and SPSS software were used for data analysis.

Results: This demographic, combined with limited financial autonomy, may restrict access to adequate nutrition. While some women reported health issues such as diabetes, hypertension, and thyroid disorders, no pre-pregnancy complications like abortion or stillbirth were noted, though a few experienced delivery-related issues.

Clinically, most women appeared generally healthy, but some showed signs of nutritional deficiencies such as dry hair and edema, indicating poor dietary intake. Severe anemia was rare, but symptoms like poor appetite and suboptimal food choices reflected nutritional inadequacies. Dietary assessments showed that while basic food groups like cereals, vegetables, and oils were consumed daily, intake of nutrient-rich foods like green leafy vegetables, fruits, and dairy products was inconsistent. Meal frequency was also low, with many women eating only two meals a day. Nutrient intake fell significantly short of ICMR-recommended levels, especially for energy, protein, iron, and calcium. Despite

some use of nutritional supplements, the overall dietary intake remained insufficient, highlighting the need for targeted nutrition education and intervention to support maternal and fetal health during pregnancy.

Conclusion: some pregnant women in Patna are managing to access basic nutrition, many are still not meeting the essential dietary requirements for a healthy pregnancy. This gap in nutrition highlights the need for targeted health interventions, including education on the importance of balanced meals, proper nutrient intake, and meal frequency. Additionally, healthcare providers should work closely with pregnant women to identify and address nutritional deficiencies, with particular focus on urban areas like Patna where access to healthcare is available but barriers to proper nutrition still exist. These efforts are essential to improving maternal and fetal health outcomes and reducing the risk of complications during pregnancy and childbirth.

Keywords: Pregnancy, assessment, BMI, Nutritional status, RDA, healthy diet, ANC

1.INTRODUCTION

Nutrition is a fundamental human necessity and an essential prerequisite for a healthy and active life. It plays a crucial role from the earliest stages of life, supporting proper growth, development, and overall health. The science of nutrition historically evolved through the examination of diseases that arose due to inadequate diets, underlining its importance in disease prevention and health promotion. Nutritional status is a direct reflection of the nutrients consumed and how effectively the body utilizes them. In developing countries like India, malnutrition remains a major public health concern, manifesting as both macro- and micronutrient deficiencies that impact large sections of the population.

Despite the known importance of nutrition during pregnancy, many women in developing nations remain nutritionally vulnerable. According to the World Health Organization, nearly 56% of pregnant women in developing countries are anemic, reflecting the high prevalence of iron deficiency and other nutritional gaps. Women's physiological needs—such as higher nutrient demands during pregnancy and lactation—combined with socio-economic factors like poverty, low literacy, and gender inequality, contribute to their increased risk of malnutrition. These issues often perpetuate an intergenerational cycle of malnutrition, where malnourished mothers give birth to undernourished infants who, in turn, may grow up to become malnourished mothers themselves.

In India, numerous governmental policies and health programs have been introduced to combat maternal and child malnutrition. However, implementation challenges—particularly in areas plagued by poverty, gender discrimination, and lack of awareness—continue to hinder progress. The focus of maternal nutrition interventions has long been centered on the well-being of the newborn, often overlooking the broader nutritional needs of women before and during pregnancy and lactation. Yet, addressing maternal nutrition is essential not only for current health outcomes but also for breaking the cycle of poor health and undernutrition in future generations.

Current data on maternal nutrition in India remains outdated and insufficient. There is no consistent national-level monitoring of women's health indicators such as pre-pregnancy weight and gestational weight gain, two key predictors of pregnancy outcomes and child development. The absence of such data leads to a significant underestimation of the real scale of maternal malnutrition. Studies suggest that women in India, particularly in impoverished states like Bihar, often maintain the same low-calorie diets during pregnancy and lactation as before, which can further deteriorate their health and nutritional status.

Anemia is one of the most prevalent conditions among pregnant women in India. The Indian Council of Medical Research (ICMR) district nutrition survey (1999–2000) reported anemia in 84.2% of pregnant women, with 13.1% suffering from severe anemia. Although some improvements in maternal health have been noted, for example, a reported 15% drop in maternal mortality rates in Bihar due to increased institutional deliveries malnutrition remains a significant obstacle to maternal and child health.

One of the critical gaps in addressing maternal nutrition is the lack of dietary education and awareness, particularly in rural areas. In these regions, traditional beliefs, superstitions, and cultural taboos often dictate dietary practices during pregnancy and childhood illnesses. Misconceptions may lead to unnecessary dietary restrictions that can exacerbate malnutrition in both mothers and children. For example, certain foods may be avoided during pregnancy or illness due to unfounded fears, negatively impacting nutrient intake.

II METHODOLOGY

The present study titled "Nutritional Status of Pregnant Women Belonging to Urban Areas of Patna District" was conducted using a structured and systematic approach involving the selection of sample, data collection, and data analysis. A purposive sampling procedure was adopted for collecting relevant data in urban areas of Patna district were selected due to ease of access, time constraints, and availability of necessary resources. A total of 50 pregnant women were selected as respondents. Specifically, 10 were selected from Jyotipunj Hospital, 20 from Mahavir Vatsalya Hospital, and another 20 from Dr. Shanti Roy's clinic. All respondents were selected with prior permission from the respective hospital administrations and were interviewed using a pre-tested, structured schedule.

The schedule was designed to collect comprehensive information relevant to the study objectives, including general demographic data, anthropometric measurements, clinical signs of nutritional deficiency, dietary habits, and hemoglobin levels. General information included variables such as age, religion, caste, type of family, education level, and occupation of the respondents. Clinical examinations were carried out by visually observing the women for physical signs of nutrient deficiencies, such as general appearance, presence of pale conjunctiva, night blindness, condition of the lips and tongue, bleeding gums, fluorosis, dental caries, hair texture, oedema, anemia, and skin condition. These non-invasive assessments provided preliminary insight into the nutritional status of each subject. Anthropometric measurements were conducted to assess the nutritional status quantitatively. Body Mass Index (BMI) was calculated using the standard formula and ICMR guidelines and were categorized into standard nutritional classifications.

Information about dietary intake was collected through a 24-hour dietary recall method, as described by Swaminathan (2004). Each respondent was asked to recall all food and beverage consumption within the previous 24 hours. The types of food consumed were classified into key food groups, including cereals, pulses, milk and milk products, green leafy vegetables, roots and tubers, fruits, meats, fats and oils, and sugar. The daily intake of each food item was recorded and analyzed to estimate the intake of major nutrients, namely energy, protein, fat, carbohydrates, calcium, and iron. The nutrient intake values obtained from the recall were then compared against the Recommended Dietary Allowances (RDA) for Indian women as specified by the Indian Council of Medical Research (ICMR, 2010), to identify any deficiencies. Hemoglobin levels were also recorded as a key indicator of iron status and anemia, though the methodology for hemoglobin assessment.

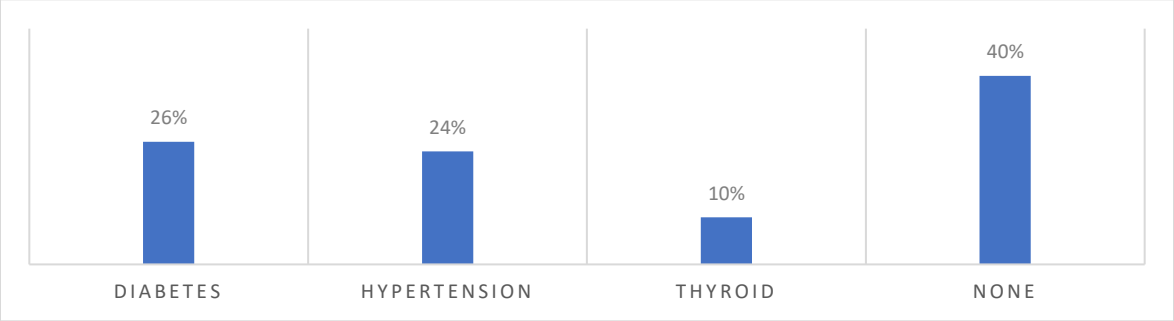
The data collected was analyzed using descriptive statistical methods. Mean values were calculated for continuous variables such as height, weight, BMI, and nutrient intake, while percentages were used to interpret the prevalence of clinical signs and nutritional categories among the participants. The study was conducted over a two-month period, from April to May 2017, allowing for adequate interaction with the respondents and accurate data capture. This methodology enabled a thorough and context-specific assessment of maternal nutritional status, providing a foundation for evidence-based interventions to improve maternal and child health outcomes in the region. The latest version of SPSS was used to examine the data.

III RESULT AND DISCUSSION

The general profile of the respondents revealed that 52% were aged 20–29, 30% under 20, and 18% over 30. Half lived in nuclear families, and the rest in joint families. Educationally, 46% were graduates, 28% had completed intermediate, 4% were below 8th standard, and only 2% were illiterate. Regarding occupation, 68% were housewives, 22% held private jobs, and 10% worked in government services. Religiously, 86% were Hindu, 12% Muslim, and 2% Christian. Most women married after 20, and education appeared linked with employment, enabling women to support their families financially and contribute to household well-being.

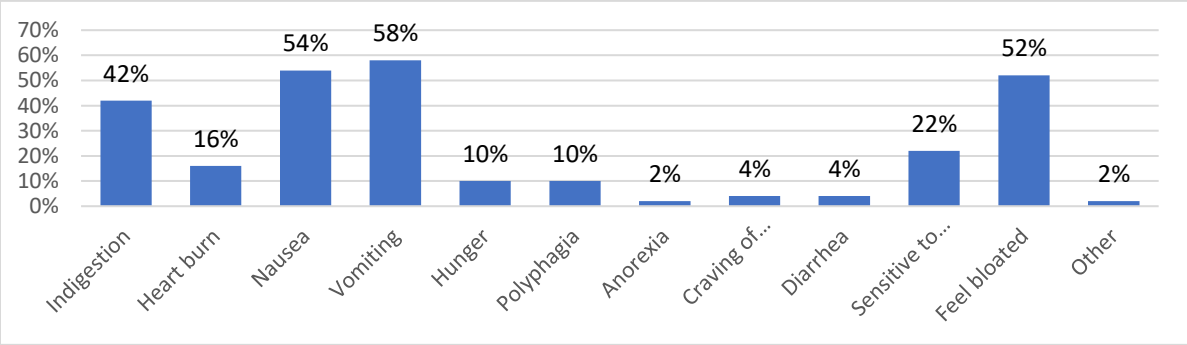
The obstetric history of the pregnant women showed that 52% were married and had their first pregnancy between the ages of 20–29, while 30% married and conceived before 20, and 18% after 30. A majority (92%) were pregnant for the first time, and 76% were in their third trimester.

GRAPH-1 RISK FACTOR DISTRIBUTION



No pre-pregnancy risk factors like abortion, stillbirth, or chronic illnesses were reported, though 8% had delivery complications. Present health issues included diabetes (26%), hypertension (24%), and thyroid problems (10%).

GRAPH-2 SYMPTOMS WHILE PREGNANCY



Common pregnancy symptoms included vomiting (58%), nausea (54%), bloating (52%), and indigestion (42%), while

others experienced heartburn, food cravings, and sensitivity to odors. Anthropometric measurements of subjects indicate that 24 women had normal BMI, 23 women were overweight and3 were of class 1 obesity.

CLINICAL ASSESSMENT

The clinical assessment of pregnant women showed that 48% had a good general appearance, while 42% were rated fair. All women had normal lip conditions, healthy gums, and no signs of pale conjunctiva or night blindness. Tongue color was normal in 60% of the women, with 22% showing paleness and 18% redness. Dental fluorosis was absent in 86% of the cases, though 12% had chalky teeth and 2% showed pitting. Dental carriers were found in 8%, while 6% had slight issues. Hair conditioning was normal in 50%, but 36% had loss of luster, 10% had dry and discolored hair, and 4% had sparse, brittle hair. Edema was present in 16% of women. Anemia was observed in only 2%, and most women (98%) were free from it. Skin was smooth and moist in 58%, glowing in 40%, and dermatitis was seen in just 2%. Out of 50 women, only 1 was vegetarian, 4 were eggetarian, and the remaining 45 were non-vegetarian. The data suggests that only a few women follow healthy eating habits. Many are busy with household work 17 women skipped mid-morning and snack meals, while 27 missed dinners. Only 6 women maintained a balanced diet. Pregnant women should be more aware of how poor eating habits can affect both their health and their baby's development.

NUTRITIONAL ASSESSMENT

A balanced diet with essential nutrients and around 30 minutes of daily exercise is important during pregnancy. Caloric needs increase by trimester: around 1,800 calories in the first, 2,200 in the second, and 2,400 in the third. However, in urban areas, most women eat only twice a day; the data shows that 42 women had just two meals daily, and only 8 ate four to six times a day. Eating properly helps the baby grow well. Appetites varied—many women had an average appetite, while 23 did not feel eager to eat. Eating out isn't unsafe during pregnancy if hygiene is maintained. In this study, 33 women occasionally ate outside, 16 did so weekly, and only 1 never ate out. Six women ate at restaurants, 11 consumed packaged food, and 33 did not crave outside food. Most women (38) avoided carbonated drinks, though 3 had them once a week, 4 had them 1–2 times weekly, and 5 drank them daily (especially beverages like Mazza). Healthcare professionals should guide women to reach a healthy weight before pregnancy and maintain healthy weight gain during pregnancy based on their BMI. Supplements with folic acid, iron, and iodine are recommended, but excess vitamin A should be avoided. Among the participants, 32 used Mama Protinex, 12 used Mother's Horlicks, and 6 used Baby and Me supplements.

FOOD FREQUENCY

The data shows that all respondents (100%) consumed cereals, root and tuber vegetables, other vegetables, and fats and oils daily. Pulses and milk products were consumed daily by 80% of the women, while the remaining 20% consumed them 2–4 times a week. Green leafy vegetables were consumed daily by only 30% of the respondents, with the rest (70%) consuming them 2–4 times a week. Fruit consumption was daily for 32% and 2–4 times a week for 64%. Meats and poultry were eaten daily by 80% and 2–4 times a week by 20%. Sugar and jaggery were consumed daily by only 4%, 50% consumed them 2–4 times weekly, and 64% consumed them 1–2 times a week.

TABLE-1 COMPARISON BETWEEN RECOMMENDATION AND AVERAGE CONSUMPTION

Nutrients	Recommend by RDA (2010)	Average Consumption
Energy(kcal)	2250	1722.2
Protein(gm/day)	82.2	54.89
Fat(gm/day)	54.78	40.67
Carbohydrate(gm/day)	365.63	273.68
Iron(mg/day)	35	7.81
Calcium(mg/day)	1200	298.9

The data indicates a significant gap between recommended dietary allowances (RDA) and the average nutrient intake among the pregnant women surveyed. The recommended energy intake is 2250 kcal per day, while the average consumption is only 1722.2 kcal. Protein intake is also low, with an average of 54.89 grams per day against the recommended 82.2 grams. Fat intake averages 40.67 grams, below the RDA of 54.78 grams. Carbohydrate intake is 273.68 grams per day compared to the recommended 365.63 grams. Iron intake is critically low, with an average of just 7.81 mg per day against the recommended 35 mg. Similarly, calcium intake is far below the required level, with an average of only 298.9 mg compared to the RDA of 1200 mg.

IV SUMMARY AND CONCLUSION

The findings from the study on the nutritional status of pregnant women in Patna reveal significant concerns regarding both their socio-economic status and dietary habits, which impact maternal and fetal health. The study showed that the majority of the participants were young, with a notable proportion being first-time mothers in their third trimester. Despite having varying education levels and occupations, most of the women were housewives, which may limit their financial autonomy and influence their access to adequate nutrition.

Health-related complications such as diabetes, hypertension, and thyroid disorders were prevalent among some women, which can affect both maternal health and fetal development. However, pre-pregnancy risk factors like abortions or stillbirths were not reported, though some women experienced complications during delivery. These factors underscore the need for careful monitoring and management of maternal health throughout pregnancy to prevent adverse outcomes. From a clinical perspective, while many women appeared to be in good general health, some exhibited signs of nutritional deficiencies, such as hair conditions and edema. Fortunately, severe anemia was not widespread, but the presence of nutritional indicators like poor appetite and dry hair indicates suboptimal dietary intake. These physical signs suggest that some women may not be receiving adequate nutrition, even though they may not exhibit extreme symptoms of malnutrition.

Dietary habits highlighted that while women consumed basic food groups like cereals, vegetables, and oils daily, they often failed to include nutrient-dense foods like green leafy vegetables, fruits, and dairy products in their daily meals. The frequency of meals was also below recommended levels, with a significant number of women consuming only two meals per day. This could lead to nutrient deficiencies, which, as seen in the data, were evident in their inadequate

intake of calories, protein, iron, and calcium. The gap between actual intake and recommended levels is concerning, as it could lead to both immediate and long-term health consequences for the mother and the developing fetus.

Although some women used nutritional supplements like Mama Protinex, which is a positive sign, the overall intake of essential nutrients was insufficient. This emphasizes the need for better dietary practices and the importance of nutritional education. In particular, more attention should be paid to increasing the intake of micronutrients like iron and calcium, which are crucial for preventing maternal anemia and supporting fetal bone and muscle development.

In conclusion, the findings suggest that while some pregnant women in Patna are managing to access basic nutrition, many are still not meeting the essential dietary requirements for a healthy pregnancy. This gap in nutrition highlights the need for targeted health interventions, including education on the importance of balanced meals, proper nutrient intake, and meal frequency. Additionally, healthcare providers should work closely with pregnant women to identify and address nutritional deficiencies, with particular focus on urban areas like Patna where access to healthcare is available but barriers to proper nutrition still exist. These efforts are essential to improving maternal and fetal health outcomes and reducing the risk of complications during pregnancy and childbirth.

V RECOMMENDATION

improving maternal nutrition in urban areas like Patna requires a multifaceted approach. By promoting better dietary habits, increasing awareness about the importance of a balanced diet, ensuring regular health monitoring, and providing access to nutrient-dense foods and supplements, maternal health outcomes can be significantly improved. Additionally, integrating health and nutrition services, especially for women with existing health issues, can help reduce the risks associated with pregnancy-related complications and improve overall well-being. These recommendations can contribute to healthier pregnancies, improved birth outcomes, and ultimately, better maternal and child health in the region.

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