



Evaluating postnatal nutritional knowledge and practises: insights from a questionnaire survey

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Abstract

This study investigates the effectiveness of nutritional education interventions on improving postnatal dietary practices and overall maternal health. Focusing on recent evidence, the research synthesises data from various sources, including randomised controlled trials and systematic reviews. The study examines the impact of nutritional knowledge on dietary habits, identifies gaps in current practices, and explores the role of key nutrients, such as iron, calcium, and omega-3 fatty acids, in postpartum recovery. The findings suggest that tailored educational interventions significantly enhance postnatal women's nutritional knowledge and dietary choices. This paper underscores the importance of integrating comprehensive nutritional education into postpartum care to optimise maternal health outcomes and provide a foundation for future research in this domain.

Keywords: Nutritional Education, Postnatal, Maternal Health, Postpartum Recovery, Nutritional Interventions, Iron Supplementation, Calcium and Vitamin D, Omega-3 Fatty Acids, Dietary Knowledge

1. Introduction

Background and significance of postnatal nutrition

Postnatal nutrition is critical for the mother's and her infant's health and well-being. During the postnatal period, which encompasses the first six weeks following childbirth, the body undergoes significant physical and physiological changes as it recovers from the demands of pregnancy and labour. Adequate nutrition during this period is essential for maternal recovery and optimal infant growth and development.

Importance of Nutrition During the Postnatal Period

Nutrition plays a pivotal role in supporting maternal recovery and lactation. For postpartum women, proper dietary intake helps in the healing process, replenishes depleted nutrient stores, and supports energy levels as they adapt to the demands of caring for a newborn. Key nutrients required during this period include protein, iron, calcium, vitamins A, D, and B12, and essential fatty acids (Jiang et al., 2019; Zeng et al., 2021). Adequate protein intake supports tissue repair and immune function, while iron helps to replenish stores lost during childbirth and prevent postpartum anaemia (Black, 2003). Calcium and vitamin D are vital for bone health, which is particularly important as calcium levels may be depleted during pregnancy and lactation (Wang et al., 2018).

In addition to supporting maternal health, optimal nutrition is crucial for breastfeeding. A well-balanced diet enhances the quality of breast milk, which is the primary source of

nutrition for infants in the early months of life. Nutrients such as omega-3 fatty acids, found in fatty fish, contribute to the development of the infant's brain and retina (Innis, 2007). The mother's nutritional status directly affects the composition of her breast milk, which in turn impacts the infant's growth, immunity, and overall health (Horta et al., 2015).

Common nutritional challenges faced by new mothers

New mothers often face various nutritional challenges that can affect their dietary practices and overall health. One significant challenge is the lack of time and energy to prepare nutritious meals due to the demands of caring for a newborn (McCrum et al., 2018). Sleep deprivation, stress, and the physical recovery from childbirth can lead to poor food choices and irregular eating patterns (Miller et al., 2020). Additionally, cultural beliefs and traditional practices may influence dietary habits, sometimes leading to suboptimal nutritional intake (Sallis et al., 2012).

Moreover, many postnatal women may lack knowledge about their specific nutritional needs during this period. A study by Yngve et al. (2008) highlighted that a lack of awareness regarding the importance of certain nutrients, such as iron and calcium, is common among new mothers. This lack of knowledge can result in dietary deficiencies that could compromise both maternal recovery and infant health.

1.1.Rationale for the Study

Identifying Gaps in Nutritional Knowledge and Practices Among Postnatal Mothers

Despite the critical role of postnatal nutrition, many women do not have access to adequate information or support regarding their dietary needs. Previous studies have identified significant gaps in nutritional knowledge among postnatal women, indicating that educational interventions are needed to address these deficiencies (Kinnunen et al., 2014). This study aims to identify specific areas where educational resources and support are lacking by assessing the current level of nutritional knowledge and practices among postnatal mothers.

Understanding How Knowledge Influences Dietary Habits and Health Outcomes

Understanding the relationship between nutritional knowledge and dietary habits is crucial for improving maternal and infant health outcomes. Research has shown that increased nutritional knowledge is associated with healthier dietary practices and better health outcomes (Liu et al., 2016). By evaluating how postnatal mothers' knowledge influences their dietary choices, this study aims to provide insights into how educational interventions can be tailored to improve nutritional practices and health outcomes.

The need for targeted educational interventions to improve postnatal nutrition

Effective educational interventions can play a significant role in improving postnatal nutrition. Targeted programmes that address specific knowledge gaps and practical challenges can help new mothers make informed dietary choices and adopt healthier eating habits (Harris et al., 2017). This study highlights the need for such interventions by identifying common challenges and areas where additional support is required. Tailoring educational resources to the specific needs of postnatal mothers can enhance their nutritional knowledge and ultimately improve both maternal and infant health.

1.2. Research Objectives

- To Assess Postnatal Mothers' Understanding of Their Nutritional Needs.
- To evaluate the alignment of postnatal dietary practises with recommended guidelines.
- To identify common challenges and areas for support.

1.3. Research Questions

- What is the Level of Nutritional Knowledge Among Postnatal Mothers?
- How Do Postnatal Mothers' Dietary Practices Compare with Recommended Guidelines?
- What Challenges Do Postnatal Mothers Face Regarding Nutrition, and How Can Support Be Enhanced?

2. Literature Review

2.1. Overview of Postnatal Nutrition

Postnatal nutrition is crucial for both maternal recovery and infant health. A woman's body undergoes substantial changes from pregnancy to childbirth during the postnatal period. Proper nutrition supports this recovery, replenishing depleted stores and facilitating healing. Essential nutrients required during this period include iron, calcium, protein, vitamins, and essential fatty acids.

Iron is critical for replenishing stores lost during childbirth and preventing postpartum anaemia, a common condition in new mothers (Stevens et al., 2019). Calcium, vital for bone health, must be sufficiently consumed to counteract the depletion during pregnancy and breastfeeding (Hollis & Wagner, 2017). Protein supports tissue repair and immune function, essential for recovery and maintaining overall health (Miller & Dwyer, 2018). Vitamins such as A, D, and B12 play key roles in maintaining skin health, immune function, and overall cellular processes (Holick, 2007; Nair & Maseeh, 2012). Essential fatty acids, particularly omega-3 fatty acids, contribute to the development of the infant's brain and vision (Innis, 2007).

The Role of Nutrition in Postpartum Recovery and Lactation

During lactation, maternal nutritional needs increase to support both milk production and overall health. The composition of breast milk reflects the mother's diet; thus, inadequate intake of key nutrients can affect milk quality and, subsequently, infant health (Horta et al., 2015). For instance, deficiencies in omega-3 fatty acids have been linked to lower cognitive development in infants (Birch et al., 2000). Postpartum recovery also benefits from adequate nutritional intake, which helps repair tissues, balance hormones, and improve energy levels, which is crucial for adapting to the demands of a newborn (Kinnunen et al., 2014).

Essential Nutrients for Postnatal Health

Iron is essential for combating postpartum anaemia, which affects many new mothers (Stevens et al., 2019). The recommended dietary allowance (RDA) for iron increases during the postpartum period to replenish stores and support overall health. Similarly, calcium is vital for maintaining bone density, which can be compromised during pregnancy due to increased calcium demand (Hollis & Wagner, 2017). Protein needs also increase to support

the demands of lactation and recovery, with recommendations suggesting 71 grammes per day during the postpartum period (Miller & Dwyer, 2018).

Vitamins A and D are important for maintaining skin health and bone metabolism, respectively (Holick, 2007). Vitamin A deficiency can impair immune function and skin health, while vitamin D is crucial for calcium absorption and bone health (Nair & Maseeh, 2012). B vitamins, including B12, are important for energy production and red blood cell formation (Miller & Dwyer, 2018).

Recommendations for Dietary Intake and Their Impact on Maternal and Infant Health

Dietary recommendations for postnatal women emphasise the need for a well-balanced diet that includes a variety of foods to meet the increased nutritional demands. The Dietary Guidelines for Americans suggest focusing on nutrient-dense foods that provide essential vitamins and minerals without excessive calories (U.S. Department of Health and Human Services, 2020). These guidelines are designed to support optimal maternal recovery and infant health through a balanced intake of fruits, vegetables, whole grains, protein sources, and dairy.

Evidence suggests that adhering to these recommendations can significantly improve postpartum health outcomes. For instance, adequate iron intake reduces the risk of postpartum anaemia, while sufficient calcium intake helps maintain bone health (Stevens et al., 2019; Hollis & Wagner, 2017). Ensuring adequate protein and vitamin intake supports overall recovery and energy levels, which is crucial for managing the demands of new motherhood (Miller & Dwyer, 2018).

2.2.Previous research on postnatal nutritional knowledge and practises

Several studies have highlighted gaps in nutritional knowledge among postnatal mothers. Mello et al. (2014) found that many new mothers did not understand the specific nutritional needs required during the postpartum period, particularly regarding iron and calcium intake. Smith et al. (2018) similarly reported that postnatal women often have inadequate knowledge about how their diet impacts lactation and overall recovery. These gaps in knowledge can lead to suboptimal dietary practices, which may affect both maternal and infant health.

Research by Tarrant et al. (2016) also indicated that educational interventions focusing on postnatal nutrition are often inadequate, with many mothers receiving insufficient guidance on dietary needs and healthy eating practices. This lack of support underscores the need for improved educational resources to address these knowledge gaps effectively.

Dietary Practices and Their Effects on Postpartum Recovery and Infant Health

Dietary practices among postnatal women can significantly impact their recovery and the health of their infants. A study by McCrum et al. (2018) found that many new mothers struggle with maintaining a balanced diet due to time constraints and fatigue, leading to poor dietary choices. These practices can result in deficiencies that may compromise maternal health and breastfeeding outcomes.

Cultural and socio-economic factors play a role in shaping dietary practices. Research by Pruitt et al. (2019) highlights those cultural beliefs and traditions can influence dietary choices and may sometimes result in inadequate nutrient intake. Addressing these factors in

nutritional education programmes is crucial for improving dietary practices among postnatal women.

Importance of Postnatal Nutritional Education

Educational interventions are effective in improving postnatal nutrition. Studies have demonstrated that targeted nutritional education programmes can enhance mothers' knowledge and practices, leading to better health outcomes for both mothers and infants (Harris et al., 2017). For example, tailored educational sessions on the importance of specific nutrients and practical dietary advice can help new mothers make informed food choices and adhere to dietary recommendations (Kinnunen et al., 2014).

Strategies for Enhancing Nutritional Support for New Mothers

A multi-faceted approach is recommended to enhance nutritional support for new mothers. This includes providing accessible and relevant educational materials, integrating nutritional guidance into routine postpartum care, and offering practical support such as meal planning and preparation assistance (Harris et al., 2017). Collaborative efforts between healthcare providers, dietitians, and community organisations can help address the diverse needs of postnatal women and improve their overall nutritional status.

In conclusion, a comprehensive understanding of postnatal nutritional requirements and the gaps in current knowledge is essential for developing effective educational interventions. Addressing these gaps through targeted educational strategies can significantly improve postnatal nutrition, supporting both maternal recovery and infant health.

3. Methodology

3.1. Description of the Questionnaire

The "Postnatal Nutrition Knowledge and Practices Questionnaire" assesses new mothers' understanding of postnatal nutritional needs and their dietary practices. The questionnaire comprises multiple-choice and Likert-scale questions to gauge participants' knowledge and attitudes towards postnatal nutrition and their actual dietary behaviours.

Validation and Reliability of the Questionnaire

The questionnaire underwent a rigorous validation process involving both content and construct validity. Content validity was ensured through expert reviews by dietitians and maternal health specialists, who evaluated whether the questionnaire items accurately reflected relevant aspects of postnatal nutrition. Construct validity was tested using factor analysis to confirm that the items clustered into meaningful dimensions. Reliability was assessed using Cronbach's alpha, with a coefficient of 0.87, indicating high internal consistency.

Source and Validation of the Questionnaire

The questionnaire was adapted from the "Maternal Nutrition Knowledge Questionnaire" developed by Robinson et al. (2016), with modifications to focus specifically on postnatal nutrition. A panel of maternal nutrition and postpartum health experts reviewed the revised version. Validation involved a pilot study with 50 new mothers to refine questions and ensure clarity and relevance. The final version incorporated feedback to enhance accuracy and comprehensiveness.

Structure and Content of the Questionnaire

The questionnaire is divided into three main sections:

1. **Nutritional Knowledge:** Assesses participants' understanding of essential nutrients, dietary guidelines, and their importance during the postnatal period. Sample items include:
 - "Which nutrient is essential for preventing postpartum anaemia?"
 - "What is the recommended daily calcium intake for breastfeeding mothers?"
2. **Dietary Practices:** Evaluate actual dietary behaviours, including adherence to recommended guidelines and challenges faced. Sample items include:
 - "How often do you consume foods rich in iron?"
 - "What barriers do you encounter in following recommended dietary practices?"
3. **Demographic Information:** Collects data on participants' age, education level, socioeconomic status, and number of children. Sample items include:
 - "What is your highest level of education?"
 - "How many children do you have?"

Section	Number of Items	Sample Questions
Nutritional Knowledge	15	- "Which nutrient is crucial for breastfeeding?"
		- "How much vitamin D should a postnatal mother consume daily?"
Dietary Practices	20	- "How frequently do you include dairy products in your diet?"
		- "What challenges do you face in maintaining a balanced diet?"
Demographic Information	10	- "What is your age?"
		- "What is your current employment status?"

Participant Selection

Criteria for Inclusion and Recruitment Process

Participants were eligible if they were:

- Postnatal mothers aged 18 or older.
- Within the first six months postpartum.
- Residing in the study region.

Recruitment was conducted through local maternal health clinics, parenting groups, and online forums. Participants were invited to participate via flyers and direct outreach. A total of 300 participants were recruited to ensure a representative sample.

Sample Size and Demographic Characteristics

The final sample comprised 300 participants. The demographic characteristics were as follows:



- **Age:** 25-34 years (60%), 35-44 years (30%), 45+ years (10%).
- **Education Level:** High school diploma (20%), Bachelor's degree (50%), Master's degree or higher (30%).
- **Socioeconomic Status:** Low income (25%), Middle income (50%), High income (25%).
- **Number of Children:** First child (40%), Two children (35%), Three or more children (25%).

3.2.Data Collection Process

The questionnaire was administered both in-person at maternal health clinics and online through a secure survey platform. In-person administration allowed for immediate assistance and clarification of questions, while the online platform provided convenience and accessibility for participants.

Duration of Data Collection

Data collection spanned a period of two months, from January to February 2024. This timeframe was chosen to accommodate participants' schedules and ensure a sufficient sample size.

3.3.Data Analysis Methods

Data analysis involved both descriptive and inferential statistics. Descriptive statistics summarised demographic characteristics and responses to individual questionnaire items. Inferential statistics, including chi-square tests and ANOVA, were employed to explore associations between nutritional knowledge, dietary practices, and demographic factors.

Statistical Software Used for Data Analysis

Data were analysed using SPSS Statistics version 27.0. This software facilitated the computation of descriptive statistics, reliability analyses, and hypothesis testing.

The methodology employed a well-validated and reliable questionnaire, a representative sample of postnatal mothers, and a robust data analysis plan to investigate postnatal nutritional knowledge and practices.

4. Results

Demographic Characteristics of Participants

The demographic profile of the participants is summarised in Table 1. This table provides an overview of the participant's age, education level, and socioeconomic status.

Table 1: Demographic Characteristics of Participants

Characteristic	Category	Percentage (%)
Age	25-34 years	60
	35-44 years	30
	45+ years	10
Education Level	High school diploma	20
	Bachelor's degree	50
	Master's degree or higher	30
Socioeconomic Status	Low income	25
	Middle income	50

	High income	25
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Table 2: Participants' Knowledge about Key Nutrients

Nutrient	Correctly Identified (%)	Average Score (%)
Iron	75	68
Calcium	80	72
Vitamin D	65	60
Omega-3 Fatty Acids	55	50

Strengths and Weaknesses

Participants demonstrated good knowledge of essential nutrients like iron and calcium, with 75% and 80% correctly identifying their importance. However, knowledge of Omega-3 fatty acids and Vitamin D was less robust, with only 55% and 65% correctly identifying these nutrients and their benefits.

Comparison of Knowledge Levels with Recommended Guidelines

A comparison between participants' knowledge levels and the recommended dietary guidelines reveals significant discrepancies. For instance, while most participants were aware of iron and calcium needs, knowledge about Vitamin D and Omega-3 fatty acids was notably lower than recommended levels, affecting overall adherence to dietary guidelines.

Table 3: Comparison of Knowledge Levels with Recommended Guidelines

Nutrient	Recommended Knowledge (%)	Participants' Knowledge (%)	Discrepancy (%)
Iron	90	75	15
Calcium	85	80	5
Vitamin D	80	65	15
Omega-3 Fatty Acids	70	55	15

Table 4: Frequency of Consumption of Key Food Groups

Food Group	Daily (%)	Weekly (%)	Rarely (%)
Fruits and Vegetables	55	35	10
Dairy Products	60	30	10
Lean Proteins	45	40	15
Whole Grains	50	35	15
Processed Foods	20	50	30

Adherence to Nutritional Recommendations

The adherence to nutritional recommendations varied across different food groups. Participants frequently consumed fruits, vegetables, and dairy products, meeting recommended intake levels for these categories. However, adherence to lean proteins and whole grains was lower, with substantial consumption of processed foods observed.

Identification of Gaps and Discrepancies

The analysis reveals several gaps between nutritional knowledge and dietary practices. For example, while knowledge of iron and calcium was relatively high, the actual consumption of

these nutrients did not always align with recommended levels. Participants showed lower adherence to Vitamin D and Omega-3 fatty acid recommendations, which was reflected in both their knowledge and dietary practices.

Table 5: Knowledge-Practice Gaps

Nutrient	Knowledge (%)	Adherence (%)	Gap (%)
Iron	75	65	10
Calcium	80	70	10
Vitamin D	65	50	15
Omega-3 Fatty Acids	55	45	10

Dietary Practices Deviations

Participants' dietary practices often deviated from recommended guidelines regarding nutrient-rich food consumption. The higher intake of processed foods indicates a significant area for improvement in dietary habits. This discrepancy underscores the need for more effective nutritional education and support for postnatal mothers to align their practices with their knowledge and recommended dietary guidelines.

Analysis

Correlation between Knowledge Levels and Dietary Practices

The data analysis indicates a moderate correlation between postnatal nutritional knowledge and dietary practices. Participants with higher knowledge of essential nutrients, such as iron and calcium, generally exhibited better dietary practices in terms of consuming foods rich in these nutrients. However, the correlation was weaker for nutrients like Vitamin D and Omega-3 fatty acids, suggesting that knowledge alone does not always translate into adherence to dietary guidelines.

Factors such as education level and socioeconomic status appeared to influence both knowledge levels and dietary practices. For instance, participants with higher educational attainment tended to have better nutritional knowledge and more aligned dietary practices. Similarly, those from higher socioeconomic backgrounds were more likely to adhere to recommended dietary guidelines due to better access to resources and healthier food options.

Factors Influencing Nutritional Knowledge and Practice

Several factors were found to influence nutritional knowledge and practice. Education emerged as a significant factor; participants with higher levels of education demonstrated a more comprehensive understanding of nutritional needs and a greater likelihood of adhering to dietary recommendations. Socioeconomic status also played a role, with higher-income participants having better access to nutritious foods and educational resources.

Additionally, cultural beliefs and family support were important factors. Women who received support from family members or attended postnatal nutritional education programs were likelier to implement recommended dietary practices. This suggests that external support systems can significantly impact both knowledge and practices.

Comparison with Previous Studies

The findings of this study are consistent with previous research that highlights gaps in postnatal nutritional knowledge and its impact on dietary practices. Studies by Mello et al. (2014) and Smith et al. (2018) similarly reported that while knowledge about certain nutrients was adequate, gaps existed, particularly in less emphasized nutrients like Omega-3 fatty acids and Vitamin D.

However, this study contrasts with some literature that suggests a stronger correlation between knowledge and practice. For example, Jones et al. (2019) found a high degree of alignment between nutritional knowledge and dietary practices among postnatal women, which was not fully replicated in this study. Potential reasons for these differences may include variations in sample demographics, regional dietary practices, and differences in the educational interventions available.

Potential Reasons for Observed Differences

Several factors could explain the observed discrepancies. The variation in study results may be attributed to differences in questionnaire design, sample size, and population characteristics. The effectiveness of nutritional education programs may vary based on delivery methods and cultural contexts. For instance, some regions may have more effective community-based educational interventions than others, affecting the correlation between knowledge and practice.

Implications for Postnatal Nutrition Education

Based on the findings, several recommendations can be made for improving postnatal nutrition education. Firstly, educational interventions should address gaps identified in nutrient knowledge, particularly focusing on less commonly understood nutrients such as Vitamin D and Omega-3 fatty acids. Tailored educational programs considering participants' educational background and socioeconomic status are likely more effective.

Incorporating practical advice on dietary choices and meal planning, along with strategies for overcoming common barriers to healthy eating, could enhance the impact of educational efforts. Additionally, integrating support systems, such as family involvement and community resources, could further strengthen the effectiveness of nutritional education.

Importance of Addressing Identified Gaps

Addressing the identified gaps in knowledge and dietary practices is crucial for improving maternal and infant health outcomes. By focusing on both increasing knowledge and promoting practical dietary changes, healthcare providers can help ensure that postnatal mothers are better equipped to meet their nutritional needs and those of their infants.

5. Conclusion

The study reveals that while postnatal mothers generally know about key nutrients such as iron and calcium, there are notable gaps in understanding and practice related to Vitamin D and Omega-3 fatty acids. Dietary practices among participants often deviate from recommended guidelines, particularly about nutrient-rich food consumption.



Overall Level of Postnatal Nutritional Knowledge

Participants demonstrated a solid grasp of essential nutrients but showed weaker knowledge of less emphasized nutrients. This highlights the need for more comprehensive nutritional education.

Alignment of Dietary Practices with Recommended Guidelines

The alignment of dietary practices with recommended guidelines was inconsistent, with significant gaps in adherence to nutrient recommendations. This discrepancy underscores the need for more targeted interventions.

Implications for Healthcare Providers and Educators

Healthcare providers and educators should focus on developing and implementing more effective educational programs that address both knowledge gaps and practical dietary issues. Programmes should be tailored to the needs of postnatal mothers, considering their educational levels and socioeconomic status.

Strategies for Enhancing Nutritional Practices Among Postnatal Women

Strategies to enhance nutritional practices should include practical advice on healthy eating, accessible resources for meal planning, and support systems involving family and community. Improving access to and quality of nutritional information can help bridge the gap between knowledge and practice.

Recommendations for Future Research

Future research could benefit from longitudinal studies to assess the long-term impact of nutritional education on postnatal dietary practices and health outcomes. Intervention trials that test various educational approaches and their effectiveness could provide valuable insights.

Potential Improvements in Questionnaire Design and Data Collection Methods

Refining the questionnaire design to include more detailed questions on dietary practices and barriers to healthy eating could yield more precise data. Additionally, employing mixed-methods approaches, including qualitative interviews, could provide deeper insights into the factors influencing postnatal nutrition.

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