Perception of nursing mothers on the causes and prevention of malnutrition among children in selected primary health centers in Ogbomoso

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Abstract
Malnutrition is a major public health issue, especially in developing countries, contributing significantly to child morbidity and mortality. This study explores the perceptions and knowledge of nursing mothers in Ogbomoso, Nigeria, regarding the causes and prevention of malnutrition. Data from 116 mothers were collected using a structured questionnaire. The results reveal significant gaps in mothers' knowledge about malnutrition, its causes, and preventive measures. Cultural beliefs and practices, including food taboos, were identified as major contributors to undernutrition. Statistical analysis showed no significant relationship between mothers' knowledge of malnutrition and their education or income levels, indicating widespread misinformation across socioeconomic strata.

The study highlights the need for comprehensive, culturally sensitive educational programs to improve maternal knowledge and practices about child nutrition. These findings can help health policymakers and practitioners develop effective public health strategies to combat child malnutrition in developing regions.

Keywords: Malnutrition, nutritional knowledge, cultural beliefs, child health

1. Introduction
1.1 Background Information
Malnutrition is a pervasive public health challenge that significantly impacts the health and development of children worldwide. Defined as the condition resulting from an imbalance in nutrient intake - either insufficient or excessive - malnutrition encompasses both undernutrition and overnutrition. Undernutrition, which includes stunting (low height for age), wasting (low weight for height), and micronutrient deficiencies, is particularly devastating for children, as it hinders their physical and cognitive development and increases their vulnerability to diseases. Overnutrition, on the other hand, leads to obesity and associated health issues such as diabetes and cardiovascular diseases.

In the global context, the World Health Organization (WHO) estimates that malnutrition contributes to nearly half of all deaths in children under five, amounting to approximately three million deaths annually (WHO, 2020) [1]. This statistic underscores the critical need for addressing malnutrition to improve child survival rates and overall public health.

Nigeria, one of the most populous countries in Africa, faces significant challenges related to child malnutrition. According to the United Nations Children's Fund (UNICEF), 37% of Nigerian children under the age of five are stunted, 7% are wasted, and 22% are underweight (UNICEF, 2019). These figures reflect the severe nutritional deficits that affect a substantial portion of the child population, with long-term implications for the nation's health, economic productivity, and development.

1.2 Significance of the study
The significance of this study lies in its focus on understanding the perceptions and knowledge of nursing mothers regarding the causes and prevention of malnutrition among children. Nursing mothers play a pivotal role in child nutrition, as they are often the primary caregivers responsible for feeding and caring for their children. Their knowledge, beliefs, and practices directly influence the nutritional status and health outcomes of their children.

By examining the perceptions and knowledge of nursing mothers in Ogbomoso, Oyo State, this study aims to identify critical gaps in nutritional knowledge and the influence of cultural beliefs on child nutrition. Cultural beliefs and practices can significantly impact dietary habits, sometimes leading to food restrictions that contribute to malnutrition. Understanding these cultural dynamics is essential for designing effective, culturally sensitive interventions that can improve child nutrition and reduce malnutrition rates.

The findings from this study will provide valuable insights for healthcare professionals, policymakers, and community leaders. These insights will help in formulating targeted educational programs and policies that address the specific needs and challenges faced by nursing mothers in Ogbomoso. Furthermore, the study's results can serve as a reference for similar communities in Nigeria and other developing countries facing malnutrition challenges.
Research Objectives
The primary objective of this study is to assess the perceptions and knowledge of nursing mothers regarding the causes and prevention of malnutrition among children in selected primary health centers in Ogbomosho. The specific objectives of the study include:

1. To assess the nutritional knowledge of mothers regarding their children's nutrition
   - This involves evaluating mothers’ understanding of essential nutrients, their sources, and their roles in child growth and development.

2. To identify the factors associated with malnutrition among children
   - This includes examining socio-economic factors, such as income and education levels, as well as environmental factors that contribute to malnutrition.

3. To evaluate the adherence of mothers to cultural beliefs regarding food intake for their children
   - This objective focuses on understanding how cultural practices and taboos influence mothers' dietary choices for their children and how these practices contribute to malnutrition.

4. To determine the consequences of malnutrition as perceived by the mothers
   - This involves exploring mothers’ awareness of the health implications of malnutrition, including its impact on physical health, cognitive development, and susceptibility to diseases.

2. Literature Review
Malnutrition is a major public health issue, particularly in developing countries where it significantly impacts child morbidity and mortality rates. It encompasses both undernutrition, which includes stunting, wasting, and micronutrient deficiencies, and overnutrition, which leads to obesity and related health complications. Understanding the multifaceted causes of malnutrition and the role of various socio-economic and cultural factors is critical for developing effective intervention strategies.

2.1. Definitions and Importance of Nutrition
The American Medical Association defines nutrition as the science of food and the nutrients and substances therein, their action, interaction, and balance in relation to health and disease. It also includes the processes by which an organism ingests, digests, absorbs, transports, utilizes, and excretes food substances (American Medical Association, 2020) \(^3\).

Proper nutrition is essential for growth, development, and maintenance of health throughout life (Onigbinde, 2021) \(^7\). Proper nutrition provides energy, promotes growth and development, and regulating body processes (Behrman, Kliegman, & Jenson, 2020) \(^4\).

2.2. Prevalence of Malnutrition
Malnutrition remains a significant issue globally, with a particularly high prevalence in developing countries. UNICEF (2017) \(^8\) reports that undernutrition contributes to the deaths of about 5.6 million children under five annually. In the least developed countries, 42% of children are stunted and 36% are underweight due to poor nutrition (UNICEF, 2017) \(^8\). In Nigeria, about 37% of children under five are stunted, and 22% are underweight (UNICEF, 2019). The high rates of malnutrition in Nigeria are attributed to factors such as poverty, food insecurity, and illiteracy.

2.3. Causes of Malnutrition
Malnutrition is a complex condition with immediate, underlying, and basic causes. Immediate causes include inadequate dietary intake and disease. Underlying causes encompass food insecurity, inadequate care of women and children, unhealthy living conditions, and poor health services. Basic causes are related to national and household poverty, environmental degradation, conflicts, and gender discrimination (Olamirinde, 2021) \(^7\).

Immediate causes
- Inadequate dietary intake due to insufficient quality or variety of food and infrequent meals.
- Diseases that affect nutrient absorption and utilization (Olamirinde, 2021) \(^7\).

Underlying causes
- Food insecurity and inadequate care for women and children.
- Poor living conditions such as lack of clean water and sanitation, and inadequate health services (Olamirinde, 2020) \(^12\).

Basic causes
- Poverty, lack of education, and socio-economic inequalities.
- Environmental factors and political instability (Olamirinde, 2020) \(^12\).

2.4. Impact of Cultural Beliefs
Cultural beliefs and practices play a significant role in dietary habits, which can lead to malnutrition. For instance, certain foods are prohibited for children due to cultural beliefs, leading to nutrient deficiencies. Some locally available foods forbidden to infants and children include black-eyed beans, groundnut, melon seed, coconut water, leafy green vegetables, cocoyam, and sweet potato. These foods are restricted due to beliefs that they cause diarrhea, mental retardation, or other health issues (Ojofeitimi & Teniola, 2019) \(^6\).

2.5. Nutrient Requirements and Sources
There are six essential classes of nutrients required for human health: carbohydrates, proteins, lipids, vitamins, minerals, and water. These nutrients serve various functions, including providing energy, promoting growth and development, and regulating body processes (Behrman, Kliegman, & Jenson, 2020) \(^4\).

<table>
<thead>
<tr>
<th>Nutrient class</th>
<th>Primary function</th>
<th>Example of sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrates</td>
<td>Provide energy</td>
<td>Rice, maize, wheat, fruits</td>
</tr>
</tbody>
</table>

Table 1: Classes and sources of nutrients
2.6. Complications of Malnutrition
Malnutrition in children can lead to severe health complications such as anemia, poor mental and cognitive development, stunted growth, cardiovascular diseases, respiratory failure, goiter, infections, prolonged clotting time, xerophthalmia, mental retardation, and blindness (Ajzen & Fishbein, 2020) [10].

2.7. Assessment and Diagnosis
The assessment of malnutrition involves monitoring weight gain, comparing a child's weight or height to a healthy reference population, and measuring mid-upper arm circumference. Physical examinations are also conducted to identify signs of malnutrition such as loss of body fat, protrusion of bones, and thin, dry skin (Adetokunbo & Herbert, 2020) [11].

2.8. Theoretical Framework
This study is framed by the Theory of Planned Behavior (TPB) by Ajzen & Fishbein, which posits that an individual's behavior is best predicted by their intentions, which are influenced by their attitudes towards the behavior, subjective norms, and perceived behavioral control. This theory is relevant in understanding the nutritional behaviors of mothers and their adherence to cultural beliefs (Ajzen & Fishbein, 2020) [15].

2.9. Conceptual Framework
The cognitive theory of motivation, which deals with human cognitive processes such as thinking, perceiving, memory, and judging, is also applicable. This theory helps explain why mothers may adhere to certain cultural beliefs about food and how motivation can be influenced by knowledge and awareness (Audrey & Shirlee, 2021) [13].

3. Methodology
This section outlines the research design, setting, sampling techniques, data collection methods, data analysis procedures, and ethical considerations for the study on the perceptions of nursing mothers regarding the causes and prevention of malnutrition among children in selected primary health centers in Ogbomoso.

3.1. Research Design
A descriptive research design was adopted for this study. This design was chosen because it allows for a detailed description and interpretation of the knowledge and perceptions of nursing mothers about the causes and prevention of malnutrition among children. Descriptive research is appropriate for this type of study as it provides an accurate portrayal of characteristics of the subjects being studied.

3.2. Setting
The study was conducted in Ogbomoso, a city in Oyo State, southwestern Nigeria. Ogbomoso comprises five local government areas: Ogbomoso North, Ogbomoso South, Orire, Ogo-Oluwa, and Surulere. The primary health centers selected for the study included:

- Ibrahim Taiwo Maternity Center
- Ojagbo Primary Health Center
- Ikose Primary Health Center
- Masifa Primary Health Center

These centers were chosen because they are representative of the primary health services available to nursing mothers in the area.

3.3. Sampling Techniques
The study used cluster sampling to select participants. The primary health centers were randomly selected from the list of centers in Ogbomoso. Every nursing mother attending these centers during the study period was eligible to participate. The sample size was determined based on the

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### Table 2: Recommended dietary allowance (RDA) for infants and young children

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>0-2 months</th>
<th>2-6 months</th>
<th>6-12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories (Kg)</td>
<td>Kg * 120</td>
<td>Kg * 110</td>
<td>Kg * 100</td>
</tr>
<tr>
<td>Proteins (g)</td>
<td>Kg * 2.2</td>
<td>Kg * 2.0</td>
<td>Kg * 1.8</td>
</tr>
<tr>
<td>Vitamin A (IV)</td>
<td>1500</td>
<td>1500</td>
<td>1500</td>
</tr>
<tr>
<td>Vitamin D (IV)</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Ascorbic Acid (mg)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Folacin (mcg)</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Niacin (mg)</td>
<td>5</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Riboflavin (mg)</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Thiamin (mg)</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>400</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>Iodine (mcg)</td>
<td>25</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>6</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

---

The Recommended Dietary Allowance (RDA) for infants and young children varies based on age and includes specific amounts for calories, proteins, vitamins, and minerals necessary for healthy growth (Alade, 2021) [14].
average attendance of mothers at the selected centers, which ranged between 30 to 55 per week. Using Yamane’s (1967) formula for sample size determination, the sample size was calculated as follows:

\[ n = \frac{N \times e^2}{1 + N(e)^2} \]

where:
- \( N = 164 \) (target population)
- \( e = 0.05 \) (level of significance)

\[ n = \frac{164}{1 + 164(0.05)^2} = \frac{164}{1.41} \approx 116 \]

Thus, the sample size was 116 respondents.

3.4. Instrument for Data Collection
Data was collected using a self-designed questionnaire. The questionnaire was divided into three sections:
- **Section A:** Demographic and personal data of the mothers.
- **Section B:** Knowledge of mothers about malnutrition.
- **Section C:** Perceptions of mothers regarding the factors contributing to malnutrition and their adherence to cultural beliefs.

3.5. Validity and Reliability of the Instrument
The validity of the questionnaire was assessed through face and content validity. The instrument was reviewed by experts in the field to ensure clarity, relevance, and comprehensiveness. Reliability was established through a pilot study involving 20 nursing mothers from a different primary health center, and the Cronbach’s alpha coefficient was calculated to ensure internal consistency.

3.6. Data Collection Procedures
Data were collected by distributing the questionnaire to nursing mothers at the selected primary health centers. The respondents were informed about the study’s purpose, and their consent was obtained before administering the questionnaire. The data collection spanned four weeks to ensure adequate sample representation.

3.7. Data Analysis
Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics such as frequencies and percentages were used to summarize the demographic data and the responses to the knowledge and perception questions. Inferential statistics, specifically chi-square tests, were employed to test the hypotheses at a 0.05 level of significance.

### Table 3: Demographic characteristics of respondents

<table>
<thead>
<tr>
<th>Demographic variable</th>
<th>Frequency (n=116)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25 years</td>
<td>30</td>
<td>25.9</td>
</tr>
<tr>
<td>26-35 years</td>
<td>54</td>
<td>46.6</td>
</tr>
<tr>
<td>36-45 years</td>
<td>20</td>
<td>17.2</td>
</tr>
<tr>
<td>Above 45 years</td>
<td>12</td>
<td>10.3</td>
</tr>
<tr>
<td><strong>Educational Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Education</td>
<td>20</td>
<td>17.2</td>
</tr>
<tr>
<td>SSCE Holder</td>
<td>40</td>
<td>34.5</td>
</tr>
<tr>
<td>OND/HND Holder</td>
<td>30</td>
<td>25.9</td>
</tr>
<tr>
<td>Degree Holder</td>
<td>26</td>
<td>22.4</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below #10,000</td>
<td>40</td>
<td>34.5</td>
</tr>
<tr>
<td>#10,000-#20,000</td>
<td>35</td>
<td>30.2</td>
</tr>
<tr>
<td>#20,000-#30,000</td>
<td>25</td>
<td>21.6</td>
</tr>
<tr>
<td>Above #30,000</td>
<td>16</td>
<td>13.8</td>
</tr>
</tbody>
</table>

### Table 4: Knowledge of mothers about malnutrition

<table>
<thead>
<tr>
<th>Knowledge Item</th>
<th>Frequency (n=116)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you heard of malnutrition?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>100</td>
<td>86.2</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>13.8</td>
</tr>
<tr>
<td>What is malnutrition?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The supply of food nutrients in little or excess quantities</td>
<td>50</td>
<td>43.1</td>
</tr>
</tbody>
</table>
Giving of a diet that is below standard | 30 | 25.9
A deficiency of all classes of essential nutrients in a diet | 36 | 31.0

Where did you hear about malnutrition?
| Hospital | 60 | 51.7
| Friends | 20 | 17.2
| Mass media | 26 | 22.4
| Relatives | 10 | 8.6

Table 5: Perceptions of mothers on malnutrition

<table>
<thead>
<tr>
<th>Perception Item</th>
<th>Strongly Agree (SA)</th>
<th>Agree (A)</th>
<th>Disagree (DA)</th>
<th>Undecided (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of money can lead to malnutrition in children.</td>
<td>40</td>
<td>50</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>An uneducated mother may not have knowledge about nutritional requirements of her child.</td>
<td>50</td>
<td>46</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mothers' beliefs about some food can lead to malnutrition in their children.</td>
<td>45</td>
<td>48</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Malnutrition can possibly lead to death of a child if not properly treated.</td>
<td>60</td>
<td>40</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>A child whose mother does not know her nutritional need will certainly be malnourished.</td>
<td>55</td>
<td>44</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Malnutrition can be prevented and avoided.</td>
<td>70</td>
<td>30</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Children in monogamous families are well nourished compared to children in polygamous families.</td>
<td>35</td>
<td>40</td>
<td>30</td>
<td>11</td>
</tr>
</tbody>
</table>

4. Results
4.1. Demographic Characteristics
The study involved 116 nursing mothers from selected primary health centers in Ogbomoso, Oyo State, Nigeria. The demographic data revealed the following characteristics:

1. Age Distribution
   - 18-25 years: 25.9%
   - 26-35 years: 46.6%
   - 36-45 years: 17.2%
   - Above 45 years: 10.3%

2. Educational Level
   - Primary Education: 17.2%
   - SSCE Holder: 34.5%
   - OND/HND Holder: 25.9%
   - Degree Holder: 22.4%

3. Income Level
   - Below ₦10,000: 34.5%
   - ₦10,000-₦20,000: 30.2%
   - ₦20,000-₦30,000: 21.6%
   - Above ₦30,000: 13.8%

4.2. Knowledge of Malnutrition
The assessment of mothers' knowledge about malnutrition showed significant gaps. The findings include:

1. Awareness of Malnutrition
   - Yes: 86.2%
   - No: 13.8%

2. Understanding of Malnutrition
   - The supply of food nutrients in little or excess quantities: 43.1%
   - Giving of a diet that is below standard: 25.9%
   - A deficiency of all classes of essential nutrients in a diet: 31.0%

3. Sources of Information on Malnutrition
   - Hospital: 51.7%
   - Friends: 17.2%
   - Mass Media: 22.4%
   - Relatives: 8.6%

4.3. Perceptions and Cultural Beliefs
Mothers' perceptions and adherence to cultural beliefs were found to influence their dietary practices for their children:

1. Cultural Beliefs Impacting Nutrition
   - Lack of money can lead to malnutrition: 77.6% agree
   - An uneducated mother may not know nutritional requirements: 82.8% agree
   - Cultural beliefs about certain foods can lead to malnutrition: 80.2% agree

4.4. Statistical Analysis
The chi-square test revealed no significant relationship between mothers' knowledge of malnutrition and their educational level ($\chi^2 = 3.214, p > 0.05$) or income level ($\chi^2 = 2.873, p > 0.05$). This indicates that misinformation and cultural influences on malnutrition are pervasive across different socioeconomic strata.

5. Discussion
5.1. Interpretation of Findings
The study's findings indicate substantial gaps in nursing mothers' knowledge about malnutrition, its causes, and prevention. Despite high awareness levels, detailed understanding of malnutrition remains limited. This aligns with previous research that highlights the need for enhanced nutritional education among caregivers (Behrman, Kliegman, & Jenson, 2020) [4]. Cultural beliefs and practices were identified as significant contributors to undernutrition. Many mothers adhered to food taboos that restrict the intake of nutritious foods by children. This finding is consistent with studies that
emphasize the impact of cultural practices on dietary habits and child nutrition (Ojoefitimi & Teniola, 2019) [6].

5.2. Implications for Public Health
The lack of a significant relationship between mothers' knowledge of malnutrition and their educational or income levels suggests that misinformation and cultural influences are widespread. This underscores the need for comprehensive, culturally sensitive educational programs to improve maternal knowledge and practices regarding child nutrition. Educational interventions should be tailored to address specific cultural beliefs and provide practical, accessible nutritional information. Health policymakers and practitioners must engage community leaders and use culturally relevant methods to disseminate information effectively.

6. Recommendations
1. Develop Culturally Sensitive Educational Programs
   - Programs should consider local beliefs and practices and provide clear, practical guidance on child nutrition.

2. Engage Community Leaders
   - Collaborate with community leaders to promote nutritional education and counteract harmful cultural beliefs.

3. Enhance Healthcare Services
   - Improve the availability and accessibility of nutritional counseling services at primary health centers.

4. Monitor and Evaluate Interventions
   - Regularly assess the effectiveness of educational programs and adapt strategies based on feedback and outcomes.

Conclusion
The study highlights significant gaps in nursing mothers' knowledge about malnutrition and the influence of cultural beliefs on child nutrition. Addressing these gaps through culturally sensitive educational programs is crucial for improving child health outcomes in Ogbomoso and similar settings. This research contributes to the broader discourse on public health strategies aimed at reducing child malnutrition in developing regions.

Conflict of Interest
Not available

Financial Support
Not available

References


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