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Exploring the Knowledge-Attitude-Practice Nexus: Maternal Competencies in Under-Five Nutrition in Enugu, South-East, Nigeria

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Abstract

Introduction: Under-five nutrition is important for a child's survival. Globally, about 150 million under five are stunted, 42.8 million of them suffer from wasting, with 12.2 million severely wasted. Nearly 45% of deaths among children under 5 are linked to undernutrition. The burden is highest in Sub-Saharan Africa and South Asia, with 30–36% stunted, 6–15% wasted, and 20–30% underweight.

Objective: To explore the nexus between maternal knowledge, attitudes, and practices in under-five nutrition in Enugu, South-East, Nigeria

Methodology: The study was a descriptive cross-sectional study. The analysis was conducted using generated tables, frequency, and percentage. Summary statistics were used to represent quantitative data. Chi-square was used, at 95% confidence interval, and P-value was set at 0.05.

Results: The respondents demonstrated good knowledge (94.7%) and a positive attitude (83%) towards under-five nutrition. However, proper nutritional practices were less common, with 56.03% exhibiting poor practices and only 43.97% following recommended practices.

Conclusion and recommendations: Despite high maternal knowledge and positive attitudes, the translation into proper nutritional practices for under-five children remains limited. Interventions should focus on practical nutrition education, skill-building, and supportive programs that help mothers apply their knowledge effectively to improve child nutrition outcomes.

Keywords: under-five; nutrition, knowledge; attitude; practice

Introduction

The first five years represent a critical window for physical and mental development, and inadequate nutrition during this period can have long-lasting negative consequences [1-5]. Malnutrition is a major global public health concern, especially in low- and middle-income countries where food insecurity and poor dietary habits are prevalent [6] Children under five are vulnerable to malnutrition due to their rapid growth and increased nutritional requirements. Undernutrition can lead to weakened immunity, increased infections, cognitive impairment, and higher mortality [7,8]. An estimated 149 million children under five are stunted, 45 million are wasted, and 38.9 million are overweight, with the greatest burden in low-resource regions [9]. Mothers' role in ensuring adequate nutrition for children under 5 is important because they are primarily responsible for feeding practices and dietary choices. Their knowledge, attitudes, and practices (KAP) regarding child nutrition significantly influence the nutritional status and health outcomes of their children. Maternal education level, cultural beliefs, socio-economic status, and access to reliable health information shape feeding decisions and behaviours [10,11]. Understanding maternal KAP is therefore essential for designing effective interventions to promote optimal feeding habits and reduce childhood malnutrition.

Maternal knowledge is a key determinant of appropriate feeding practices, including exclusive breastfeeding and complementary feeding. WHO recommends exclusive breastfeeding for the first six months, followed by the introduction of complementary foods while continuing breastfeeding up to two years or beyond [9]? However, many studies report significant gaps in maternal nutrition knowledge? For example, in India only 42% of mothers correctly identified the recommended duration of exclusive breastfeeding [12]. Similar studies in Pakistan and other low-resource settings report poor maternal understanding of meal

frequency and dietary diversity for young children [13]. In sub-Saharan Africa, higher maternal nutrition knowledge has been linked to improved child nutrition outcomes, but low literacy and limited health education remain barriers in many communities [14]. In Nigeria, only 35% of mothers in Lagos knew the correct timing for complementary feeding, and widespread gaps in micronutrient awareness have been documented in northern regions [15,16].

Attitudes toward child nutrition influence whether recommended feeding practices are implemented. A positive attitude can motivate caregivers to prioritize healthier dietary choices, but attitudes are often shaped by cultural norms, family beliefs, and misinformation. In Ethiopia, many mothers gave water to infants under six months due to misconceptions about dehydration despite knowing the benefits of exclusive breastfeeding [17]. In South Africa, traditional beliefs and convenience often led mothers to deviate from feeding guidelines even when they were aware of them [18]. Similar cultural pressures have been observed in Sokoto State, Nigeria, where early cessation of exclusive breastfeeding was common despite maternal awareness of its benefits [19]. These findings highlight how entrenched cultural beliefs and social influences can undermine optimal feeding behaviours.

Maternal feeding practices encompass actual behaviours such as breastfeeding initiation and duration, complementary feeding, food preparation, and hygiene during feeding. Although many mothers may understand recommended practices, actual implementation remains inconsistent. Globally, adherence to optimal feeding practices is often hindered by cultural norms, misinformation, lack of support, and work-related challenges [20]. Breastfeeding is foundational to early child nutrition because breast milk provides essential nutrients and immune protection during the first six months of life [9,21]. Maternal education, antenatal care attendance, and postnatal counselling are positively associated with early initiation and longer duration of breastfeeding, whereas workplace constraints and social stigma can discourage exclusive breastfeeding [22,23].

Addressing gaps in maternal knowledge, attitudes, and feeding practices through targeted nutrition education, breastfeeding support, and improved access to supplementation programs has demonstrated positive impacts on child nutrition outcomes [24,25]. Understanding the nexus between maternal KAP and child nutrition is thus essential to developing effective interventions that translate knowledge into improved feeding behaviours, ultimately reducing under-five malnutrition.

Methodology

The study site: The study site was Enugu State University of Technology, Enugu, South East, Nigeria. Enugu State is located between latitude 6o 30' N and longitude 7o 30' E within an area of 7,161 square kilometers. The estimated population of Enugu State based on the 2006 Nigeria's census, and a growth rate of 2.33% is 4,411,100; females constitute 50.1% of the population of Enugu State. Women of reproductive age (15 to 49 years) constitute 26% of her population [26].

Study Design: The study was a descriptive cross-sectional study

Study Population: The study population was mothers with at least parity one who attended under 5 clinics and wards in Enugu State University Teaching Hospital, Enugu, South-East Nigeria.

Sample Size Determination: The sample size was determined using the Fisher's formula for sample size determination for cross sectional study [27]. The total number of respondents was 282.

Sampling technique: A stratified sampling technique with proportionate allocation was employed. Mothers were stratified into three groups based on hospital location: Children's Outpatient Department (400), Children's Ward (30), and Well Child Clinic (10), giving a total population of 440. Proportionate allocation yielded sample sizes of 256, 20, and 6 respectively, summing to 282. Minor adjustments were made during rounding to maintain the total sample size. Systematic sampling was used to select participants within each stratum. The nurses' register served as the sampling frame, and the sampling interval was approximately 2 in all strata. The first participant was selected using simple random sampling technique by balloting, after which every 2nd mother was recruited until the required sample size for each stratum was obtained. The research was done in the month of November 2025.

Study Instruments: This was a pretested, semi-structured, interviewer administered questionnaire adapted to explore the respondents' knowledge, attitude and practice regarding under 5 nutrition.

Outcome Measures: The main outcome variables were knowledge, attitude, practice regarding under 5

nutrition. Knowledge: Assessed using 10 items (score range: 0–10); correct responses scored 1 and incorrect/"don't know" scored 0. Scores were classified as poor (0–5) or good (6–10). Attitude: Measured with 10 Likert-scale items (1–5 points), with reverse scoring for negative items. Total scores (10–50) were categorized as poor (10–25) or good (26–50). Practice: Evaluated using six indicators. Each good practice scored 1 and poor practice scored 0 (total: 0–6). Scores were classified as poor (0–3) or good (4–6).

Statistical Analysis: Completed questionnaires were checked for completeness and consistency, and data cleaning was performed to address missing or inconsistent responses. Data were entered and analysed using IBM SPSS version 28. Results were presented using tables, frequencies, and percentages. Continuous variables were summarized using mean and standard deviation. Chi-square test of significance was used to test any relationship between variables. The analysis of data was done at 95% confidence interval. P-value was set at 0.05

Ethical Considerations: Ethical approval was obtained from Enugu State University Teaching Hospital Ethics Committee. All the participants gave their informed consent. Participation was voluntary with the right to withdraw at any time without consequences and confidentiality was maintained.

Limitations: Causal relationships cannot be established in this study. Some variables are sensitive and therefore may led to non-response or social desirability bias.

Results

This study involved a total of Two hundred and eighty-two (282) respondents.

Table 1: Socio-demographic characteristics of respondents (n = 282)

Variable	Frequency (n)	Percentage (%)
Age		
21-25	32	11.3
26-30	102	36.2
31-35	103	36.5
36-40	30	10.6
≥40	15	5.3
Mean SD) = 31.49±4.86		
Marital status		
Single	29	10.3
Married	253	89.7
Highest level of education		
No formal education	5	1.8
Primary education	12	4.3
Secondary education	64	22.7
Tertiary education	201	71.3
Primary occupation		
Government employed	46	16.3
Private employed	30	10.6
Self employed	162	57.4
Unemployed	29	10.3
Student	1	0.4
Housewife	14	5.0
Number of children <5 years		
one	149	52.8
Two	118	41.8
Three	15	5.3

Table 1 showed that the mean age of respondents was 31.49 ± 4.86 years, with most aged 31–35 years (36.5%). The majority had tertiary education (71.3%), were married (89.7%), and self-employed (57.4%). Over half had one child under five years (52.8%).

Table 2: Knowledge of respondents regarding Under-Five Nutrition (n = 282)

Variable	Yes (n)	Yes (%)	No (n)	No (%)
Exclusive breastfeeding for 6 months	223	79.1	59	20.9
Water needed during 6 months	117	41.5	165	58.5
Complementary feeding at 6 months	282	100	0	0
Sugary drinks preferred to water	30	10.6	252	89.4
Dietary diversity	282	100	0	0
Meal skipping acceptable	104	36.9	178	63.1
Fruits and vegetable important	268	95.0	14	5.0
Factory food better	8	2.8	274	97.2
Adequate meal frequency	224	79.4	58	20.6
Poor diet increases illness risk	282	100	0	0

Table 2 showed that all respondents had good knowledge of complementary feeding, dietary diversity, and the link between poor diet and illness. Most also demonstrated good knowledge of fruits and vegetables (95.0%), meal frequency (79.4%), and exclusive breastfeeding (79.1%). In addition, the majority correctly rejected sugary drinks (89.4%) and factory-made foods (97.2%). However, there was gaps in knowledge regarding water intake before six months (41.5%) and the appropriateness of meal skipping in young children (36.9%).

Table 3: Overall knowledge of under 5 nutrition

Variable	Frequency (282)	Percentage (%)	Chi-square (p-value)
Good knowledge	267	94.68	225.2 (0.001)
Poor knowledge	15	5.32	

Table 3 showed that 94.7% of respondents had good knowledge, while 5.3% had poor knowledge of under 5 nutrition.

Table 4: Attitude of respondents regarding Under-Five Nutrition (n = 282)

Variables	Yes (n)	Yes (%)	No (n)	No (%)
Adequate feeding is important	267	94.7	15	5.3
Good feeding improves health	282	100	0	0
Healthy food is affordable	206	73.0	76	27.0
Willing to learn more	268	95.0	14	5.0
Home-cooked food preferred	267	94.7	15	5.3
Crying indicates inadequate feeding	118	41.8	164	58.2
Willing to cook healthy food	282	100	0	0
Confidence in local foods	267	94.7	15	5.3
Feeding mainly mother's role	193	68.5	89	31.5
Confidence in food choices	256	90.8	26	9.2

Table 3 showed that most respondents had high agreement on the importance of proper feeding (94.7%), preference for home-cooked meals (94.7%), willingness to prepare healthy meals (100%), and recognition that good feeding supports child health (100%). Confidence in food choices (90.8%), valuing local foods (94.7%), and willingness to learn more (95.0%) were also high.

However, 58.2% believed that a child's absence of crying indicates adequate feeding, 68.5% considered feeding primarily the mother's role, and 27.0% had financial challenges in providing healthy foods.

Table 5: Overall attitude regarding under 5 nutrition

Variable	Frequency (282)	Percentage (%)	Chi-square (p-value)
Good attitude	234	82.98	122.68 (0.001)
Poor attitude	48	17.02	

Table 5 showed that 82.98% of the respondents had good attitude, while 17.02% had poor attitude.

Table 6: Respondents' practices regarding under 5 nutrition (n = 282)

Variable	Good practice n (%)	Poor practice n (%)

Exclusive breast feeding till 6 months	89 (31.6)	193 (68.4)
Adequate meal frequency	164 (58.2)	118 (41.8)
Parental encouragement during feeding	133 (47.2)	149 (52.8)
Hand washing before giving meal	162 (57.4)	120 (42.6)
Complementary feeding at 6 months	89 (31.6)	193 (68.4)
Stable food intake	229 (81.2)	53 (18.8)
Legumes intake	230 (81.5)	52 (18.5)
Animal source foods	208 (73.8)	74 (26.2)
Fruits intake	178 (63.1)	104 (36.9)
Vegetable intake	193 (68.5)	89 (31.5)

Table 6 showed that exclusive breastfeeding and timely complementary feeding were low (31.6%). Most children received adequate meals (58.2%) and commonly consumed staples, legumes, and animal-source foods (73–81), while fruit and vegetable intake was moderate (63–68.5%). 47.2% of mothers consistently encouraged meals and 57.4% always washing hands before food preparation. Only 44.3% of the respondents demonstrated good feeding and hygiene practices.

Table 7: Overall practice regarding under 5 nutrition

Variable	Frequency (282)	Percentage (%)	Chi-square (p-value)
Good attitude	123	43.97	4.099 (0.043)
Poor attitude	158	56.03	

Figure 7 showed that 56.03% of the respondents had poor practice, while 43.97% of them had good practice.

Discussion

The mean age of respondents was 31.49 ± 4.86 years, with most (36.5%) aged 31–35 years. This aligns with other Nigeria studies: in Lagos mothers had a mean age of 30.8 ± 5.2 years, with most aged 30–34 [28]. and Northern Nigeria the mean age was 29.7 ± 4.9 years, predominantly the mothers were between 25 to 34 years old [29]. Across West Africa and Africa [30], Ghanaian mothers averaged 31.0 ± 4.8 years [31], and Ethiopian mothers 30.5 ± 5.0 years [32]. In Asia, India (28.9 ± 4.2) [33], and Pakistan (29.6 ± 4.5) [34], report younger maternal populations, while China averages 30.2 ± 3.9 years [35]. High-income regions such as Europe and North America show maternal age means of 31–33 years [23]. Globally, mothers in their late 20s to mid-30s constitute the main population responsible for under 5 nutrition.

In this study, maternal knowledge of under-five nutrition was notably high (94.7%), indicating strong awareness among the respondents. This level of knowledge is considerably higher than what has been reported in other parts of Nigeria, where studies in Lagos found only 35% of mothers with adequate knowledge [28], and in Northern Nigeria 48–52% [29]. Across the African continent, maternal knowledge is generally moderate, ranging from 65% to 75% in Ethiopia [20], and in Ghana [17]. In Asia, similar trends have been observed, with India and Pakistan reporting that only 42–60% of mothers demonstrated adequate knowledge of child nutrition practices [33,34]. High-income regions such as Europe and North America report maternal knowledge often exceeds 85% [23], though translating this knowledge into optimal feeding practices is often a challenge. Taken together, these comparisons highlight that the mothers in this study demonstrated knowledge levels exceeding most regional and continental averages, likely influenced by the relatively high educational attainment and social stability of the study population. Maternal awareness of nutrition recommendations has been linked to improved child growth and survival [36]. Therefore, this high maternal knowledge reported in this study is important, as undernutrition remains a major global public health concern, contributing to stunting, wasting, and increased under-five mortality, particularly in low- and middle-income countries [6].

Maternal attitude in this study was also generally good, with 82.98% of respondents demonstrating good attitude toward under-five nutrition. This prevalence aligns with findings in Nigeria, where maternal attitude ranges from 65% to 80% [11,15], and across Africa, where 70–85% of mothers show good attitudes toward child feeding [17,18,37,38]. In Asia, good maternal attitudes range between 60% and 78% [33,34], while in Europe and North America they are often above 85% [23]. The global consistency of relatively high maternal attitude, despite variations in knowledge, suggests that mothers are generally

willing to adopt recommended feeding practices, although cultural, economic, and household factors can affect the translation of attitude into practice. In this study, the good maternal attitude indicates a favourable disposition toward child nutrition, even though some gaps in behaviours persist, reflecting a common pattern observed worldwide [39,40,41].

Despite high knowledge and favourable attitudes, maternal practice was suboptimal, with only 43.97% of mothers demonstrating good practice. Globally, this reflects a well-documented pattern: in Nigeria, adherence to recommended child feeding practices is often below 50% [28,29], and across Africa, only 41–50% of mothers implement recommended practices effectively [32,37,38]. In Asia, practice rates range from 35% to 50% [33,34,42], while in Europe and North America, even among mothers with high knowledge and positive attitudes, practice often reaches only 30–50% [43,44]. This persistent knowledge–attitude–practice gap underscores that awareness and willingness alone are insufficient to ensure optimal feeding behaviours. Economic constraints, cultural norms, workload, and social influences frequently limit mothers' ability to translate knowledge and attitude into consistent practice. The findings from this study, therefore, mirror a global challenge: while knowledge and attitude may be high, maternal practice frequently lags, emphasizing the importance of interventions that address structural and behavioural barriers to effective child nutrition. These findings reinforce evidence that interventions must go beyond education to address socio-economic and cultural determinants to improve child nutrition outcomes [6,41].

Conclusion and Recommendations

Mothers in Enugu, Nigeria, demonstrated high knowledge (94.7%) and positive attitudes (82.98%) toward under-five nutrition; however, practical implementation was low (43.97%), highlighting a persistent knowledge–attitude–practice gap. This suggests that awareness and willingness alone are insufficient to ensure optimal child feeding. To address this, targeted nutrition education programs should focus on actionable behaviours, while community support and counselling can reinforce recommended feeding practices. Economic empowerment and culturally sensitive interventions are also needed to overcome financial and social barriers. These strategies should be integrated into routine maternal and child health services.

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