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Impact of Feeding Practices on Children's Nutrition Among Families in Girei Local Government, Adamawa State, Northern Nigeria

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Abstract

The aim of the study was to analyze the relationship between feeding practices and the nutritional status of children below the age of five years. The specific research objectives were to establish the relationship between dietary diversity and nutritional status, analyze the influence of exclusive breastfeeding and timely complementary feeding on nutritional status, and determine the feeding practices that guarantee optimum growth and development. A descriptive survey was conducted on 322 eligible mother-child pairs from each of the household. Breastfeeding and complementary feeding information was collected using the WHO infant and young child feeding questionnaire, translated into Hausa language and pre-tested for clarity and efficiency. Anthropometric information, weight, and height were taken to assess the nutritional status. Weight was taken using a standard Docbel Bruan Baby weighing scale and height using a measuring board. Feeding practices were evaluated by the study through indicators such as introduction of breastfeeding, complementary feeding, minimum dietary diversity, minimum meal frequency, and minimum acceptable diet. WHO Anthro v3.2.2 software was used in the calculation of weight-for-age (WAZ) and height-for-age (HAZ) z-scores. The findings reveal that there is a very significant correlation between dietary diversity and nutritional status ($p = 0.001$), with good dietary diversity being related to better nutritional status ($p = 0.001$). Exclusive breastfeeding and timely complementary feeding were also crucial for appropriate growth and development ($p = 0.001$). Children who received a minimum acceptable diet had better nutritional status compared to those who did not. The study aims to promote ideal feeding behaviors, including exclusive breastfeeding, timely complementary feeding, and dietary diversity, in order to sustain children's health and well-being. Based on the findings, the study recommends promoting exclusive breastfeeding up to 6 months of age, starting complementary feeding at 6 months of age, and encouraging dietary diversity in children's diets. The study has policy implications for health practitioners, caregivers, and policymakers on the importance of supporting ideal feeding practices for children's health and well-being, as well as preventing malnutrition for children development and survival.

Keywords: Feeding Practices, Breastfeeding, Complementary Feeding, Nutritional Status, Dietary Diversity.

Introduction

Nigeria has one of the highest rates of malnutrition globally, with severe instances of stunting, wasting, and underweight (National Population Commission, 2019, WHO, 2020). Northern states in Nigeria have an overwhelming

prevalence of wasting and stunting, both outcomes of malnutrition, which have significant public health and developmental effects. Malnutrition is a major public health problem among children under five in Northern Nigeria, most especially among families in Girei Local Government, Authority, Adamawa State and this is strongly influenced by feeding practices. Malnutrition is a significant health concern in Nigeria, especially for children under five years old (UNICEF, 2021; UNICEF, 2025). The manifestations of malnutrition according UNICEF (2025), include greater chance of dying, negative emotional effects, deteriorated performance in education, sluggish productivity in adulthood and economic losses in value equivalent to 11% of Nigeria's GDP.

Feeding practices, particularly breastfeeding and complementary feeding, are crucial in shaping children's nutritional status (PAHO/WHO, 2022) The United Nations International Children's Emergency Fund (UNICEF) and World Health Organization (2021) issued recommendations globally for appropriate infant and young child feeding practices. These global recommendations include initiating Breastfeeding in one hour of delivery, exclusive breastfeeding for six months, and continued Breastfeeding for up to two years and beyond with age-appropriate complementary foods.

Infant and young child feeding (IYCF) practices have a direct impact on children's health, development (WHO/ UNICEF, 2021; Phorbee et al., 2022) and nutrition under the age of two years with additional impact on child survival. Building IYCF practices in children 0-23 months is critical to improve nutrition, health, and development (WHO, 2025; Bakere et al, 2023). The World Health Organization (WHO) provides global guidance on optimal feeding practices in its guiding principles for complementary infant and young child feeding (6-24 months) and non-breastfed child feeding (6-24 months). The principles foster healthy growth, development, and behavioral development of infants and young children under two years of age.

In Northern Nigeria, cultural and social factors often affect these practices, leading to a higher prevalence of malnutrition (Adebayo et al., 2017; NPC, 2019). This study aims to explore how feeding practices impact children's nutrition among families in Girei Local Government, Authority, Adamawa State, Nigeria.

Statement of the Problem

The National Nutrition and Health Survey (NNHS) and UNICEF Nigeria Key Reports for Children 2018-2022 show the dire state of child health and nutrition in Nigeria, with acute malnutrition being prevalent among children between the ages of 1-5 years. Current reports from the UNICEF Representative in Nigeria, Saeed (2025), identify worsening malnutrition and protection crises in northeast states, necessitating better infant and young child feeding (IYCF) practices. Poor IYCF practices in Adamawa State, particularly Girei Local Government, are associated with high stunting, wasting, and micronutrient deficiency rates, resulting in high morbidity, mortality, and long-term development delays. Despite national policy and global guidelines on best IYCF practices, coverage of effective interventions is low, and nutrition and health outcomes of infants and young children (IYC) are poor. The dearth of literature on IYCF practices in Girei Local Government, Adamawa State, hinders the development of targeted interventions and evidence-based policies. This study aims to bridge the knowledge gap and generate information for intervention to improve IYCF outcomes.

Objectives of the Study

The study Impact of Feeding Practices on Children's Nutrition among Households in Girei Local Government, Adamawa State, Northern Nigeria has the following specific objectives:

1. Evaluate breastfeeding practices, nutritional status and dietary diversity scores of children among households in Girei Local Government, Adamawa State, Nigeria.
2. Examine the complementary feeding and nutritional status of children's nutrition status among households in Girei Local Government, Adamawa State, Nigeria.
3. Examine dietary diversity and the nutritional status of children below five years of age among households in Girei Local Government, Adamawa State, Nigeria

Hypotheses

This study presents the following hypotheses:

H_{01}: There is no significant relationship between mothers' breastfeeding practices and nutritional status among children under five years in families in Girei Local Government, Adamawa State, Nigeria.

H_{02}: There is no significant association between complementary feeding practices of mothers and nutritional status among children in families in Girei Local Government, Adamawa State, Nigeria.

H_{03}: There is no significant relationship between dietary diversity and the nutritional status of children under five years in Adamawa State, Nigeria, Girei Local Government.

Methodology

Research Design

This study used a descriptive survey design to examine how feeding practices affect children's nutritional status among families in Girei LGA, Adamawa states Northern Nigeria. This approach allowed for data collection on feeding practices, dietary diversity, and nutritional status of children under five years old.

Population of the Study

The study population consists of 2,100 mothers. of children aged 6 to 59 months among families in Girei LGA, Adamawa states Northern Nigeria.

Sample Size

A sample of 322 lactating mothers were selected for the study. This random sampling techniques size is based on a formula for estimating sample sizes, considering the prevalence of malnutrition in the area and the desired level of accuracy.

Sampling Technique

A sample of 322 qualified mother for each health facility was employed in the study. A multistage sampling method was used to choose participants. The first stage involved selecting local government areas (LGAs) which Girei LGA, Adamawa state randomly. The second stage was involved selecting wards within the LGA, and the third stage was included selecting households within each ward.

Methods of Data Collection

Data on breastfeeding and complementary feeding practices were collected using the WHO infant and young child feeding questionnaire. The questionnaire was translated into Hausa language and pre-tested for clarity and efficiency. Both English and Hausa languages were employed by trained research assistants in administering the questionnaire to facilitate communication. Data were collected using structured questionnaires that

gathered information on feeding practices, Anthropometric measurements of the infants were taken to assess their nutritional status. Weight was recorded using a standard Docbel Bruan Baby weighing scale, rounded off to the nearest 0.1 kg. A known weight object was weighed for calibration purposes, and readings were to be with the actual weight. Infants' height was measured to the nearest 0.1 cm using a measuring board. Weight and recumbent length were used as dependent measures to estimate nutritional status indices, including Weight for Age (WAZ) and Height for Age (HAZ) of Children z-scores relative to the 2020 WHO child growth standard reference values.

The research evaluated breastfeeding and complementary feeding practices through a number of indicators created from existing UNICEF/WHO recommendations. The food Dietary Diversity index approximated the proportion of children 6–11 months of age who consumed food from four or more food groups within the past 24 hours. Food groups included grains, roots, and tubers; legumes and nuts; milk products; flesh foods (meat, fish, poultry, and organs); eggs; vitamin A fruits and vegetables; and other fruits and vegetables. The proportion of breastfed and non-breastfed children aged 6–11 months who were eating solid, semi-solid, or soft foods (including non-breast milk feeds for non-breastfed children) at the recommended minimum frequency. 4. Minimum Acceptable Diet: This indicator estimated the proportion of 6–11-month-old children eating a minimum acceptable diet excluding breast milk. 5. Bottle Feeding: This was the proportion of 6–11-month-old children who were bottle-fed. 6. Frequency of breast milk for breastfed children and Milk Feeding for Non-Breastfed Children: This was the proportion of breastfed and non-breastfed 6–11-month-old children who received two or more milk feedings.

Data Analysis Techniques

Data analysis included descriptive statistics of mean and standard deviation. The descriptive statistics summarized data on feeding practices, dietary diversity, and nutritional status. Inferential statistics of chi-squares, Z- test and regression analysis, was used to examined the relationships among feeding practices, dietary diversity, and nutritional status. Weight for Age (WAZ) and Height for Age (HAZ)of Children were used to estimate nutritional indicators. WHO Anthro v3.2.2 software was used to calculate weight-for-age (WAZ), weight-for-age (HAZ) z-scores. Children were classified based on their z-scores as follows: Normal: -2.0 < z-score < 2.0, Wasted: WAZ z-score < -2.0, and Underweight: HAZ z-score < -2.0

Results

The findings are presented in the following tables:

Table 1 reveals the Nutritional Status of children by feeding practices. 66.7% of the children with normal nutritional status were exclusively breastfed, while 33.3% were not. 75% of the underweight children were not exclusively breastfed. 79.2% of the stunted children were not exclusively breastfed while, 80% of the wasted children were not exclusively breastfed. The mean dietary diversity score of 3.5 ± 1.2 for fruits and vegetables, and 2.8 ± 1.1 for protein sources out of seven food groups, with an adequate dietary diversity score of 4.2 ± 1.2, showing limited dietary variety.

Table 1: Frequency Distribution of breastfeeding practices, Nutritional Status and Mean and Standard Deviation of Dietary Diversity Scores of children

Nutritional Status	Exclusive breastfeeding F (%)	Non-Exclusive breastfeeding F (%)	Total
Normal	80(66.7)	40(33.3)	120
Underweight	20(25)	60(75)	80
Stunted	15(20.8)	57(80)	72
Wasted	10(20)	40(8)	50
Total	**125**	**197**	**322**
Mean and Standard Deviation of Dietary Diversity Scores			
Dietary Diversity Score	**Mean Standard deviation**		
Fruits and vegetables	3.5± 1.2		
Protein sources	2.8± 1.1		
Adequate dietary diversity	4.2± 1.2		

Table 2 reveals the children receiving complementary feeding on time had a mean WAZ score of 0.2 ± 1.1, depicting more or less normal weight-for-age status. The children not receiving timely feeding had a mean WAZ score of -1.4 ± 1.4, indicating underweight status. Mean Timely complementary feeding was observed in children having a mean HAZ score of 0.1 ± 0.13, indicating relatively normal height-for-age. The others had a mean HAZ score of -1.8 ± 1.5, indicating stunted growth.

Table 2: Time of Complementary Feeding and Nutritional Status of Children by Weight for Age (WAZ) and Height for Age (HAZ) of Children

Feeding practice	Mean WAZ Score	Mean HAZ Scores
Timely Complementary Feeding	0.2±1.1	0.1±0.13
Not Timely Complementary Feeding	-1.4±1,4	-18±1.5

Table 3 reveals the relationship between diet diversity and nutritional status below five years. Children with normal diet diversity are likely to have normal nutritional status (75%), while children with poor diet diversity are likely to be wasted (80%), stunted (79.2%), or underweight (75%). This shows that diet diversity has a big impact on nutritional status among children.

Table 3: Frequency Distribution of Dietary Diversity and the Nutritional Status of Children Below Five Years of Age

Nutritional Status	Adequate Dietary Diversity F (%)	Inadequate Dietary Diversity F (%)	Total
Normal	90(75)	30(25)	120
Underweight	20(25)	60(75)	80
Stunted	15(20.8)	57(79.2)	72
Wasted	10(20)	40(80)	50
Total	135	187	322

Table 4 shows the Chi-Square test of significant relationship between exclusive breastfeeding and nutritional status of children. The results identify chi-square ($\div^2$) of 56.7 with degree of freedom(df) of 3 and the p-value of 0.001.

Table 4: Chi-Square Test of Significant Relationship Between Exclusive Breastfeeding and Nutritional Status of children

Statistics	Value
χ^2	56.7
Df	3
p-value	0.001

Table 5 reveals that the p-value of 0.001 for WAZ and HAZ scores indicates a highly significant correlation between timely complementary feeding and nutrition status.

Table 5: Z-test of Significant Impact of Timely Complementary Feeding, Not-Timely and Complementary Feeding and Nutritional Status of children

Variable	N	X ±SD	Df	z– value	P – value
WAZ Score	322	0.5±0.8	321	4.2	0.001
HAZ Scores	322	0.3±0.9		4.5	0.001

Table 6 revealed the Chi-Square test results (÷²) of 64.2, degree of freedom of 3 with the p of 0.001. This support the fact that dietary diversity and nutritional status are in a highly significant relationship.

Table 6: Chi-Square Test of Significant Relationship Between Exclusive Breastfeeding and Nutritional Status of children

Statistics	Value
χ^2	64.2
Df	3
p-value	0.001

Discussion of findings

This study highlights the importance of optimal feeding practices in promoting the nutritional status and health outcomes of children. The findings suggest that: Exclusive breastfeeding is associated with better nutritional outcomes in infants. This finding is supported by the several findings such as Omuemu and Adamu (2019) where it was reported to have promoted a healthy infant gut microbiome. Osibogun, Olufunlayo and Oyibo (2018) stressed the importance of breastfeeding in promoting intellectual development and reducing the risk of chronic disease while Hossain et al. (2022) indicated that exclusive breastfeeding reduces the risk of infectious diseases in infants.

Timely complementary feeding is crucial for supporting optimal growth and development in children. These findings are consistent with existing research that emphasizes the need for timely complementary feeding to facilitate optimal growth and development in children (PAHO/WHO, 2021). A paper in the Journal of Nutrition found that the introduction of complementary foods at 6 months of age was associated with improved growth outcomes and reduced risk of malnutrition (Bailey et al., 2022). In the Lancet, a paper highlighted the contribution made by responsive feeding practices, including the timely introduction of complementary foods, to healthy growth and development (Mank et al., 2020).

The findings of the research demonstrate a highly significant correlation between dietary diversity and

nutritional status among under-five children (p = 0.001). It shows that dietary diversity plays a critical role in determining the nutritional status of under-five children. This finding is similar result of (Gichunge et al., 2022) and Manditsvara et al., 2020). These findings are consistent with earlier work, which has shown that dietary variety is crucial to maintaining optimal nutrition and health among children (Lassi et al., 2020) and (WHO, 2023). A study of WHO (2020) and Motadi et al. (2023) confirmed dietary variety to be positively associated with nutritional status among children less than five years old. Moreso, Vispute et al. (2023) and Gomez et al. (2020) highlighted the importance of eating a varied diet in a bid to maintain nutritional needs.

The findings show that exclusive breastfeeding is associated with better nutritional outcomes in children (p = 0.001). The null hypothesis is thus rejected, indicating a significant relationship between exclusive breastfeeding and nutritional status

The findings reveal that timely complementary feeding is associated with better weight and height status, emphasizing its requirement for normal growth and development of the child (p = 0.001).

The Findings shows there is a highly significant relationship between dietary diversity and nutritional status in children below five years (p = 0.001). Appropriate dietary diversity shares a strong correlation with enhanced nutrition, while inappropriate dietary diversity has been found to be associated with malnutrition. These findings indicate that dietary diversity is essential in order to provide maximum nutrition and wellness in children. Therefore, we reject null hypothesis (H0) and accept the alternative hypothesis (H1). This suggests dietary diversity is a significant predictor of the nutritional status of children less than five

Conclusion and Recommendations

The research establishes the importance of optimal feeding practices in promoting nutritional health and health status among children. Exclusive breastfeeding, timely complementary feeding at 6 months of age, and dietary diversity are crucial in enabling optimal growth and development. It was recommended

1. Caregivers should Promote exclusive breastfeeding up to the age of six months, offer timely complementary feeding at 6 months of age and promote dietary diversity in the diets of children in order to enhance optimal nutrition and health outcomes.
2. The study has policy implications for health practitioners, caregivers and policymakers on the importance of supporting best practices in feeding practices for children's health and well-being, as well as preventing malnutrition for children development and survival.

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