ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)
The African Journal of Behavioural and Scale Development Research
AJB-SDR Vol. 4, No 1, 2022

The Influence of Child Feeding on the Occurrence of Under-nutrition among Children Between 0 and 2 Years in Ado-Ekiti, Ekiti State, Nigeria

Ogunsile, Seyi Elizabeth and Akudje, Beauty Oghenebriore
Department of Human Kinetics and Health Education, Ekiti State University, Ado- Ekiti

Abstract
The purpose of this research was to determine the influence of child feeding on the occurrence of under-nutrition among children between 0 and 2 years in Ado-Ekiti, Ekiti State. Descriptive research design was adopted. One hundred and eighty five children ≤2 years constituted the samples for this study. These were *selected through purposive sampling technique from two government hospitals in Ado-Ekiti. Self-developed questionnaire was used for collecting data and analysis was carried out using frequency counts, percentages, and multiple linear regressions. All inferences were made at P<0.05. The most commonly consumed foods among children include: breast milk (Mean=3.91), infant formula (Mean=1.84), and ready-made instant cereal (Mean=1.83). The least commonly consumed food was solid foods (Mean=1.68). It was revealed that complementary foods were introduced into the diet of majority of the children after 6 months. Majority of the children, 66.5%, 78.4% and 51.9% had normal weight- for- height/length, normal weight- for -age and normal height- for- age respectively. Period of initiation of solid foods (beta=-.367, t = -3.273, P < 0.05) and period of initiation of cereals (beta=.309, t=2.637, P < 0.05) all had significant influence on weight- for- height/length of children. Period of initiation of solid foods (beta=-.371, t= 3.27, P<0.05) and period of initiation of cereals (beta=-.332, t =-2.793, P<0.05) also had significant influence on height/length- for- age of children. Nutrition education for better children feeding is required among nursing mothers.*

Keywords: Children, Child feeding, Complementary feeding, Under-nutrition

Introduction
Over the years, malnutrition has continued to contribute to the occurrence of morbidity and mortality among children in the developing countries. World Health Organisation (WHO), (2021) reported that in the developing countries, an appreciable percentage of death among children that are less than five years of age are associated with malnutrition. Also, millions of children in Nigeria suffer from severe malnutrition but only very few of the affected children have received treatment (WHO, 2021).
Malnutrition is referred to as the deficiencies or excesses in nutrient intake or imbalance in a child's energy and/or nutrients or impaired nutrient utilization (WHO, 2022). One of the types of malnutrition that is common among children between 0 and two years is under-nutrition. This is a type of malnutrition where a child does not obtain enough nutrients in his or her daily diet and could occur either as wasting, stunting, under-weight, or micronutrient deficiencies (WHO, 2022). Any of the four forms of under-nutrition increases the severity and frequency of infections, delays the recovery from such infections and increases the risk of death among the children (United Nations Children's Emergency Fund (UNICEF, 2021).

Wasting (low weight-for-height), a form of under-nutrition, indicates recent, and severe weight loss as a result of inadequate quality and quantity of food and/or infection (WHO, 2022). It is referred to as acute malnutrition and defined as weight-for-height Z score that is below 2 standard deviation (SD) of the standard median score for children that are less than five years. According to WHO (2022), wasting, if not treated properly, puts children at a higher risk of mortality.

Stunting (low height-for-age), another form of under-nutrition, is defined as height-for-age z score that is below-2 SD of the standard median score for children less than five years. Stunting occurs when a child does not obtain adequate quantity and quality of food for a long time. This is associated with poor socio-economic status, frequent sickness, inappropriate feeding and

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

inadequate care (WHO, 2020). According to UNICEF (2022), the occurrence of stunting among children in Nigeria is high and this is a risk factor for childhood mortality, poor cognitive development, poor academic performance and low productivity in adulthood.

Underweight (low weight- for- age) is another form of under-nutrition. It is a combination of both acute and chronic under-nutrition and it is defined as weight-for- age z score that is less than -2 SD of the standard median score for children that are less than five years and can occur in addition to the other two forms of under-nutrition in a single child (WHO, 2022).

One way by which under-nutrition can be prevented among children is to ensure appropriate feeding practices. These include: Initiating breastfeeding within one hour after delivery, breastfeeding babies exclusively for the first 6 months of life (WHO, 2020), not introducing water, infant formula, tea, juices or semisolids to the baby's diet until after 6months (UNICEF, 2020). Other recommendations include initiating nutrient dense solid foods in the child's diet after 6months and breastfeeding the child frequently and on-demand till after two years of age (WHO, 2020). The above listed feeding practices furnishes the children with the necessary nutrients, boost children's immunity against childhood diseases and reduce their susceptibility to morbidity and mortality (Kalanda, Vehoeff, & Brabin 2006; WHO, 2008).

The childhood period is a very crucial one. It is a period of vulnerability due to immature immune system, at the same time, it is a period for laying the foundations for a healthy, lifelong growth and cognitive development, (UNICEF, 2022). The childhood period also provides the opportunity of preventing under-nutrition and its consequences among children (UNICEF, 2022). Hence all efforts must be made to ensure appropriate feeding of these children so as to lay a good foundation for a healthy growth.

Based on the submission of nutrition experts (Arimond & Ruel, 2004), that improper feeding practices have a direct link with the occurrence of infection and childhood under-nutrition, and the report of the UNICEF (2022), that feeding practices of children have not improved significantly in Nigeria, it is important to constantly assess the feeding practices adopted by the mothers of these children so as to determine any lapses in practices which may warrant nutrition-related intervention.

This study was, therefore, conducted to assess the child's feeding practices adopted by mothers having children between the age of 0 and 2 years in Ado-Ekiti, Ekiti State, Nigeria with the aim of determining how these feeding practices influence the occurrence of under-nutrition among the children.

Purpose of the Study

1. To determine the percentage occurrence of under-nutrition (in the form of wasting, underweight and stunting) among children.
2. To determine the percentage of children having good nutritional status
3. To investigate the commonly consumed foods among children
4. To find out the percentage of mothers that introduced complementary feeding after 6 months
5. To determine the child feeding frequency commonly adopted by nursing mothers.
6. To determine the influence of child feeding on the occurrence of under-nutrition using weight-for-height, weight-for-age and height-for-age measures of the children.

Research Questions

1. What is the percentage occurrence of wasting, underweight and stunting among children?
2. What is the percentage of children with good nutritional status?
3. What are the commonly consumed foods among children?
4. What percentage of mothers introduced complementary feeding after 6 months?
5. What is the child feeding frequency commonly adopted by nursing mothers?

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

Hypotheses

1. There is no significant influence of child feeding on the weight-for-height measurement of children between 0 and 2 years
2. There is no significant influence of child feeding on the weight-for-age measurement of children between 0 and 2 years
3. There is no significant influence of child feeding on the height-for-age measurement of children between 0 and 2 years

Methodology

Research design

Descriptive research design was adopted in this study.

Sample and sampling technique

One hundred and eighty five (185) nursing mothers having children between the ages of 0 and 2 years constituted the samples for this study. These were selected from two health facilities (one tertiary and one primary) in Ado-Ekiti Nigeria using purposive sampling technique. Prior to commencement of the study, ethical approval was sought from the Ethical Review Board of the Ekiti State University Teaching Hospital, Ado-Ekiti. However, only the nursing mothers who agreed to participate in the study constituted the sample for this study.

Data collection

The instrument for data collection was a self-developed questionnaire consisting of three sections. The first section of the questionnaire was used to obtain information on the weight, height/length and other demographic attributes of the respondents. Section B consists of 7 items having a 4-point rating scale of "Never, "sometimes", "often" "always", to assess the frequency of commonly adopted feeding practices among children. Section C of the instrument consists of 4 items to assess the period of initiation of complementary feeding. Section D of the instrument consists of 5 items having a 6-point rating scale of 'Never', 'Occasionally', 'once in a day',' two times a day', 'three times a day' and 'above three times in a day', to measure the child's feeding practices adopted by mothers of under five children. The feeding practices assessed in this study include: the period of initiation of complementary feeding and frequency of feeding the child with breast milk, home-made cereals (e.g. pap), artificial cereals (e.g. cerelac), solid foods and general feeding. The questionnaire was administered to the mothers by one research assistant and the nursing staff in the two selected health facilities. On-the-spot collection of instrument was adopted.

Statistical analysis

Data analysis was done using SPSS version 23.0 and WHO Anthro 3.2 software. Descriptive statistics of frequency counts and percentages were used to analyze the feeding practices and demographic attributes of the children. The anthropometric data of the children were analysed using the anthropometric calculator in the WHO Anthro 3.2 software. Based on the calculation, children were categorized as either wasted (having weight-for-height <-2SD), underweight (having weight-for-age <-2SD) or stunted (having height-for-age <-2SD). Multiple Linear Regression was used to determine the influence of child's feeding practices on the occurrence of under-nutrition among children. Statistical significance was set at $P < 0.05$.

Results

Table 1: Demographic Characteristics of Children (n=185)

Variable		Freq	%
Sex	Male	85	45.9
	Female	100	54.1
Age	< 1 month	16	8.6
1-6 months		90	48.7
>6months		79	42.7

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

Table 1 shows that majority (48.7%) of the children assessed in this study were between one and 6 months old

Research Question 1: What is the percentage occurrence of wasting, underweight and stunting among children 0-2 years?

Table 2: Percentage Occurrence of Wasting, Underweight and Stunting among Children 0-2 years (n=185)

Variable	Frequency	%
Wasting (weight-for-height <-2SD)	21	11.4
Underweight (weight-for-age <-2SD)	34	18.4
Stunting (height-for-age <-2SD)	66	35.7

The percentage occurrence of wasting, underweight and stunting as revealed in Table 2 is 11.4%, 18.4% and 35.7% respectively.

Research Question2: What percentage of children has good nutritional status?

Table 3: Classification of Children's Nutritional Status Based on the Combined Assessment of Weight for Height, Weight for Age and Height for Age (n=185)

Category	Freq	%	Category	Freq	%	Category	Freq	%
LWH,LWA,LHA	5	2.7	NWH,NWA,NHA	66	35.7	HWH,HWA,HHA	1	0.5
LWH,LWA,NHA	5	2.7	NWH,HWA,HHA	2	1.1	HWH,HWA,LHA	1	0.5
LWH,NWA,HHA	7	3.8	NWH,LWA,LHA	19	10.3	HWH,HWA,NHA	3	1.6
LWH,NWA,NHA	8	4.3	NWH,LWA,NHA	3	1.6	HWH,LWA,LHA	3	1.6
			NWH,NWA,HHA	12	6.5	HWH,NWA,LHA	21	11.4
			NWH,NWA,LHA	17	9.2	HWH,NWA,NHA	12	6.5

Note: LWH=low weight for height/length, LWA= low weight for age, LHA= low height/length for age, NWH=normal weight for height/length, NWA = normal weight for age, NHA= Normal Height/length for age HWH= high weight for height/length, HWA=high weight for age, HHA=high height/length for age

Table 3 shows that only 35.7% of the children assessed had good nutritional status based on the combined assessment of weight for height, weight for age, and height for age.

Research Question 3: What are the commonly consumed foods among children?

Table 4: Commonly Consumed Foods among Children (n=185)

S/N	How often do you feed your children with the following?	Never (%)	Sometimes (%)	Often (%)	Always (%)	Mean
1	Breast milk	-	7 (3.8)	3 (1.6)	175 (94.6)	3.91
2	Infant formula	119 (64.3)	11 (5.9)	21 (11.4)	34 (18.4)	1.84
3	Home- made cereals	122 (65.9)	20 (10.8)	12 (6.5)	31 (16.8)	1.74
4	Ready-made instant cereals	118 (63.8)	16 (8.6)	15 (8.1)	36 (19.5)	1.83
5	Solid foods	121 (65.4)	22 (11.9)	24 (13.0)	18 (9.7)	1.68
6	Animal protein foods	115 (62.1)	9 (4.9)	27 (14.6)	34 (18.4)	1.89
7	Plant protein foods	118 (63.8)	18 (9.7)	24 (13.0)	25 (13.5)	1.76

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

Table 4 shows that breast milk (Mean=3.91) is the most commonly consumed foods followed by infant formula (Mean=1.84) and ready-made instant cereal (Mean= 1.83). The least commonly consumed food is solid (staple) foods (Mean= 1.68)

Research Question 4: What percentage of mothers initiated complementary feeding after 6 months?

Table 5: Period of Initiation of Complementary Food Items

		Before 6 months		After 6 months	
Food items	N	Freq	%	Freq	%
Water	92	43	46.7	49	53.3
Infant formula	63	24	34.9	41	65.1
Cereals	71	19	26.8	52	73.2
Solid foods	67	6	9.0	61	91.0

The data presented in Table 5 shows that 53.3%, 65.1%, 73.2% and 91% of the mothers introduced water, infant formula, cereals and solid foods respectively into their babies' diet after 6 months.

Research Question 5: What are the commonly adopted child feeding frequencies by mothers of children between 0 and 2 years?

Table 6: Child Feeding frequency (n=185)

How often do you do the following in a day?	Never (%)	Occasionally (%)	Once (%)	2ce daily (%)	3ce daily (%)	>3ce daily (%)
General child feeding	-	-	-	-	16 (8.6)	169 (91.4)
Feeding the baby with breast-milk	-	-	4 (2.2)	3 (1.6)	1 (0.5)	177 (95.7)
Feeding the baby with home-made cereals	49 (26.5)	2 (1.1)	21 (11.1)	8 (4.3)	5 (2.7)	100 (54.1)
Feeding the baby with solid foods	49 (26.5)	6 (3.2)	23 (12.4)	15 (8.1)	9 (4.9)	83 (44.9)
Feeding the baby with artificial cereals (e.g cerelac)	51 (27.6)	2 (1.1)	16 (18.6)	6 (3.2)	9 (4.9)	101 (54.6)

The data displayed in Table 6 above shows that many of the mothers feed their babies frequently (more than three times a day) with the various food items assessed.

Hypothesis 1: There is no significant influence of child feeding on the weight-for -height status of children

Table 7: Multiple Linear Regression Analysis of the Influence of Child Feeding on the Weight- for-Height/Length Status of Children

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-2.250	2.045		-1.100	.273
Initiation of cereals into baby's diet	.800	.304	.309	2.637	.009
Initiation of solid foods into baby's diet	-.903	.276	-.367	-3.273	.001
Frequency of child feeding	.612	.580	.075	1.055	.293
Frequency of breast feeding	.269	.233	.083	1.157	.249
Frequency of feeding with home-made cereals	.079	.075	.103	1.051	.295
Frequency of solid food intake	-.075	.076	-.094	-.985	.326
Frequency of feeding with artificial cereals	-2.250	2.045	- 2.255	-1.100	.273
R=.351, R^2=.123, Adjusted R^2=.089, F=3.550, P=.001, SEE=2.200					

Table 7 shows that child feeding has a significant influence (F=3.550, P<0.05) on the weight-for-height status of children. Therefore, hypothesis 1 is rejected. Periods of initiation of cereals (Beta=-.309, P<.05) and the period of initiation of solid foods (Beta= -.367, P<.05) both have significant contribution to the weight-for-height status of children. The period of initiation of solid foods had the highest influence.

Hypothesis 2: There is no significant influence of Child feeding on the weight-for- age status of children

Table 8: Multiple Linear Regression Analysis of the Influence of Child Feeding on the Weight- for- Age Status of Children

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-1.679	1.889		-.889	.375
Initiation of cereals into baby's diet	.032	.280	.014	.114	.910
Initiation of solid foods into baby's diet	-.082	.255	-.038	-.321	.749
Frequency of child feeding	.557	.536	.077	1.039	.300
Frequency of breast feeding	.020	.215	.007	.092	.927
Frequency of feeding with home-made cereals	.171	.069	.251	2.465	.015
Frequency of solid food intake	-.109	.070	-.155	-1.551	.123
Frequency of feeding with artificial cereals	-.087	.066	-.129	-1.326	.186
R=.215, R^2=.048, Adjusted R^2=.008, F=1.224, P=.292, SEE=2.032					

Table 8 shows that child feeding practices do not have a significant influence (F=.927, P>0.05) on the weight-for-age status of children. Therefore, hypothesis 2 is not rejected.

Hypothesis 3: There is no significant influence of child feeding on the height- for-age status of children

Table 9: Multiple Linear Regression Analysis of the Influence of Child Feeding on the Height/Length-for- Age Status of Children

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-1.658	2.840		-.584	.560
Initiation of cereals into baby's diet	-1.178	.422	-.332	-2.793	.006
Initiation of solid foods into baby's diet	1.248	.383	.371	3.257	.001
Frequency of child feeding	.084	.806	.008	.105	.917
Frequency of breast feeding	-.045	.323	-.010	-.139	.890
Frequency of feeding with home-made cereals	.179	.104	.171	1.718	.088
Frequency of solid food intake	-.012	.106	-.011	-.116	.908
Frequency of feeding with artificial cereals	.053	.099	.051	.535	.593
$R=.311$, $R^2=.097$, Adjusted $R^2=.081$, $F=2.709$, $P=.01$, $SEE=3.056$					

Table 9 shows that child feeding have a significant influence ($F=2.709$, $P<0.05$) on the height-for-age status of children. Therefore, hypothesis 3 is rejected. The period of initiation of cereals into the baby's diet (Beta=-.332, $P< 0.05$) and the period of initiation of solid foods (Beta= .371, $P<.05$) had significant contribution on the height/length- for- age status of children.

Discussion of findings

This study determined the influence of child feeding on the occurrence of under-nutrition among children between 0 and 2 years. The findings of this study on the percentage occurrence of the three forms of under-nutrition: wasting, stunting, and underweight, seem to indicate a reduction in the occurrence of under-nutrition among the children which is an indication of improved nutritional health. When compared with the report of UNICEF (2022b), there seems to be a reduction in the prevalence of wasting (18% vs. 11.4%), stunting (37% vs 35.7%) and underweight 29% vs 18.4%). The reasons for this improvement might be as a result of improved child feeding practices.

The findings presented in this study also showed that less than 40% of the children had a combination of adequate weight-for-height, adequate height-for-age and adequate weight-for-age which is one of the parameters that indicate a very good state of nutritional health. Many of the children assessed in this study had one form of under-nutrition or the other. This is similar to the findings of Kinyoki, Kandala, Manda et al (2016) who reported that 29% of the children in their study had a combination of stunting, wasting and underweight experience. Only few of the children assessed in this study had completely good nutritional status and it is just an indication that more still needs to be done to improve the nutritional status of the children and to boost the immunity of the children against childhood diseases.

With regard to the feeding practices adopted by mothers, this study revealed that breast milk is the most common food given to babies, many of the mothers introduced complementary foods after 6 months. This is likely to be the reason behind the reduction in the prevalence of under-nutrition observed in this study. According to Kalanda et al (2006) & WHO (2008), appropriate child feeding practices is associated with reduced morbidity and mortality in children under five years.

The findings of this study further revealed that child feeding has significant influence on the wasting and stunting experience of the children. This is somewhat similar to the findings of Roche, Gyorkos, Blovin, Marquis, et al (2017) who also reported that child feeding practices significantly influenced the stunting experience of children. Stunting, a form of chronic malnutrition which occurs as a result of a long term deprivation of nutrients often characterizes the experience of children who are not well nourished.

Conclusion

The conclusion that can be drawn from the

ISSN: 2714-2965 (Print)
ISSN: 2714-3449 (Online)

findings of this study is that child feeding has significant influence on the occurrence of under-nutrition among children.

Recommendations

1. Nursing mothers should be given nutrition education from time to time to keep them updated with the knowledge of proper child feeding practices
2. Nursing mothers should be encouraged to practice exclusive breastfeeding for 6 months and continue to breastfeed until the baby is 2 years
3. Nursing mothers should be encouraged to give less of instant cereals (e.g. cerelac) but more of homemade cereals so as to reduce the occurrence of under-nutrition among their children
4. Children less than 2years should be introduced to solid foods not later than 6 months of birth

References

Arimond, M. & Ruel, M.T. (2004). Dietary diversity is associated with child nutritional status: evidence from 11 demographic and health surveys. *Journal of Nutrition*, 134; 2579-2585.

Kalanda, B.F., Verhoeff, F.H.& Brabin, B.J. (2006). Breast and complementary feeding practices in relation to morbidity and growth in Malawian Infants. *European Journal of Clinical Nutrition*. 60; 401-407.

Kinyoki, D.K., Kandala, N.B., Manda, S.O. et al (2016). Assessing comorbidity and correlates of wasting and stunting among children in Somalia using cross-sectional household surveys; 2007to 2010.*BMJ Open,* 6:e009854

Roche, M.L., Gyorkos, T.W., Blovin, B., Marquis, G.S. et al (2022). Infant and Young child feeding practices and stunting in 2 highland provinces in Ecuador. *Maternal & Child Nutrition*, 13(2) e12324- e12339.

UNICEF (2020).Feeding your baby when to start with solid foods. Retrieved from. 27/3/2020.

UNICEF (2021). Malnutrition. https://data.unicef.org/topic/nutrition/malnutition/ 27/02/2022

UNICEF (2022). Nutrition. https://www.unicef.org/nigeria/nutrition 14/02/2022

UNICEF (2022b). Malnutrition rates in children under -five years. https://www.unicef.org/nigeria/media/1646/file/%20Nigeria-equity-profile-nutrition.pdf.pdf 27/2/2022

World Health Organization (2008). Indicators for assessing infant and young child feeding practices. https://www.who.int/publications-detail-redirect/9789240018389 16/2/2022

WHO (2009).The importance of infant and young child feeding and recommended practices.Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK148967/ 05/05/2020.

WHO (2021).Malnutrition. Retrieved from htpps://www.who.int/new-room/fact-sheets/detail/malnutrition 29/7/2020

WHO (2022). Malnutrition. https://www.who.int/health-topics/malnutrition#tab=tab_1 25/2/2022