Breastfeeding Techniques, Practices, and Patterns of Malnutrition among Under-two Children in State Hospital, Abeokuta South Local Government Area, Ogun State, Nigeria

***Akinbule O.O.[1], Agboola E.C.[2, 3], Salaudeen O.A.[1], and Olaogun A.A.[1]**

[1]*Department of Nutrition and Dietetics, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria.*
[2]*State Hospital, Ijaiye, Abeokuta, Ogun State, Nigeria.*
[3]*Department of Public Health Science, National Open University of Nigeria.*

***Corresponding author:** olufunkeakinbule@gmail.com **Phone number:** +2348061241115

ABSTRACT

Background: *Breastfeeding is crucial for infant health and survival, offering optimal nourishment and immune protection. Despite its widely recognized benefits and high rates of exclusive breastfeeding in Nigeria, suboptimal practices and malnutrition persist among children under two.*

Objective: *This study assessed breastfeeding techniques, practices, and patterns of malnutrition among children under two years old in State Hospital, Abeokuta, Ogun State, Nigeria.*

Methodology: *A cross-sectional survey was conducted among 385 mother-child pairs, using a simple random sampling. Data on breastfeeding practices were collected using a validated questionnaire. Breastfeeding techniques (positioning, attachment, and suckling) were assessed via observation using the National guideline. Child anthropometry was measured and analyzed using the WHO-Anthro software. Chi-square tests ($p<0.05$) assessed associations between variables.*

Results: *About 98.4% children were ever-breastfed, and 25.1% were exclusively breastfed (EBF), with prevalent pre-lacteal (69.1%) and mixed milk feeding (39.7%). Good breastfeeding positioning (68.8%), attachment (51.9%), and effective suckling (50.4%) were prevalent. Also, 46.6, 18.2, and 50.4% children were stunted, wasted, and overweight, respectively. EBF ($\chi^2 = 17.33$, $p = 0.00$), and EBF in the first 2 days of birth ($\chi^2 = 13.31$, $p = 0.00$) were associated with wasting. Maternal age ($\chi^2=12.56$, $p=0.02$), occupation ($\chi^2=13.55$, $p=0.04$), family type ($\chi^2 =9.72$, $p=0.02$), family size ($\chi^2=4.66$, $p=0.03$), and birth weight ($\chi^2=6.57$, $p=0.03$) influenced breastfeeding positioning ($p<0.00$), while number of antenatal contact ($\chi^2=7.99$, $p=0.02$) and birth weight ($\chi^2=6.02$, $p=.001$) influenced breastfeeding attachment.*

Conclusion: *Suboptimal breastfeeding practices are prevalent and influenced by socio-demographic factors, leading to increased wasting. Targeted interventions focusing on practical breastfeeding education, providing support, are crucial to improve nutritional outcomes.*

Keywords: breastfeeding, positioning, attachment, suckling, malnutrition

Doi: https://dx.doi.org/10.4314/njns.v47i1.7

INTRODUCTION

Breastfeeding is the natural way to feed an infant and is considered the most adequate way to feed an infant immediately after birth, to six months of age, and extended to two years of age (1). Breastmilk is the ideal food for infants as it provides the ideal nourishment for the infant and contains all the essential nutrients needed by the infant for the first six months of life to grow and achieve optimal nutrition (1,2). Breastfeeding an infant with breastmilk provides essential nutrients, enhances immune protection, promotes healthy brain development, prevents the triple burden of malnutrition, infectious diseases, and mortality, fosters a strong mother-child bond, reduces the risk of obesity, protects mothers from chronic diseases, and supports birth spacing (3). The

National Guideline, in line with the World Health Organization, recommends that all infants should be put to the breast within one hour of birth and breastfed exclusively for 6 months of life, while introducing complementary food at six months and continuing breastfeeding up to two years or beyond (2). Breastfeeding practices play a crucial role in promoting infant and child health, and their impact on maternal and child well-being is widely recognized both in Nigeria, Africa, and globally. Exclusive breastfeeding practices have emerged as the key to the survival of infants and have been reported to avert up to 13% of under-two deaths in developing countries such as Nigeria (4). Exclusive breastfeeding is defined as feeding with breast milk "only" with no other liquid, solids, or vitamin drops (1). In Nigeria, 35.5% infants were put to the breast within the first hour of birth, 28.8% were exclusively breastfed (5). Maternal breastfeeding practices are influenced by several factors, which include sociocultural influence (including traditional beliefs, social norms, and familial influences), economic constraint/factors, health-related factors, etc. (6,7).

The effective strategies to promote breastfeeding practices among mothers include educational intervention (such as antenatal and postnatal breastfeeding educational programs and counselling), breastfeeding support group (such as community health workers' support and partners' involvement), distribution of educational materials, etc. (8–10). This breastfeeding education intervention has been shown to improve maternal breastfeeding knowledge, positive attitude towards breastfeeding, and breastfeeding techniques to be used during breastfeeding, breastfeeding confidence, increased self-efficacy, and the ability to overcome breastfeeding challenges. It also increased the rate of exclusive breastfeeding and promoted longer breastfeeding duration (11,12). Breastfeeding attachment, positioning, and anthropometric status are major key factors that play a critical role in achieving good nutritional status and preventing malnutrition in children under five (2).

Malnutrition is a global problem, and the burden is high, especially in children under five who depend on their parents or caregivers for their nutrition. Currently, the prevalence of stunting, wasting, underweight, and overweight in Nigeria is 40, 8, 27, and 1%, respectively. Previous findings have shown that nutrition assessment is a major approach for identifying malnutrition in children under five (13). Anthropometric indicators are widely used to determine the level of malnutrition in children under five. Anthropometric indices include the measurement of weight-for-age, height-for-age, weight-for-height and measurement of mid-upper arm circumference (MUAC) (13,14). According to WHO (15) malnutrition is the main cause of morbidity and mortality in children under five, and the most effective way to reduce this morbidity and mortality in children under five is through adequate breastfeeding practices, which include effective positioning and attachment of the baby to the breast, and a healthy nutritional status.

METHODS

This study adopted a cross-sectional research design. The study was conducted in the State Government Hospital located in Ijaiye, Abeokuta South Local Government Area of Ogun State, Nigeria. The study population was nursing mothers and their under-two children attending the postnatal clinic in State Hospital, Ijaye, Abeokuta, between the months of August and October, 2023.

A simple random sampling technique was used to select the mother-child pairs at every post-natal clinic during the period of data collection. Mothers who gave their consent to participate in the study were recruited. Eligible mothers who attended the postnatal clinic on the days of data collection were asked to pick a ballot of 0 or 1. Only mothers who picked the ballot with 1 participated in the study. A total of 385 mother-child pairs were selected.

Inclusion criteria

The study included breastfeeding mother and child pairs who were apparently healthy, whose children were below the age of two years, and the dyad was receiving care at the State Hospital, Ijaiye, Abeokuta, Ogun State, Nigeria. Participation was restricted to mothers who gave verbal or written consent to participate in the study.

Exclusion criteria

Breastfeeding mothers whose children were 24 months and above, and mothers and/child who were sick or had complications were excluded from the study.

Socio-economic characteristics of the mothers and their children

A semi-structured self-administered questionnaire was used to obtain data on the socio-economic and demographic characteristics of mothers and children

Measurement of Variables

Breastfeeding Practices

A semi-structured interviewer-administered questionnaire on indicators for assessing infant and young child feeding practices (16) practices was used to assess the infant breastfeeding practices. Breastfeeding indicators assessed included: Ever breastfed, early initiation of breastfeeding, exclusive breastfeeding, exclusive breastfeeding for the first two days of birth, exclusive breastfeeding under six months, mixed milk feeding under 6 months, continued breastfeeding, bottle feeding, feeding with expressed milk, cup feeding, and breastfeeding on demand.

Mothers Awareness of Breastfeeding Positioning and Attachment

Mothers' awareness of breastfeeding positioning and attachment was assessed using structured questionnaires.

Assessment of Breastfeeding positioning, attachment, suckling, and mothers' breast conditions

Breastfeeding positioning and attachment were assessed using the breastfeeding observation form in the National guideline and training manual on maternal, infant, and young child nutrition (Federal Ministry of Health, 2022; Federal Ministry of Health and Social Welfare of Nigeria, 2023). The form has four domains, which include: Breast conditions, baby's positioning, baby's attachment, and suckling. Each of these domains contains four criteria, except the breast conditions, which contain three criteria. The criteria for breast conditions include: 1. Breast looks healthy, not swollen or sore; 2. Presence/absence of pain or discomfort; 3. breast well supported with fingers away from nipple or held with fingers on the areola. The criteria for good positioning are: 1. Baby's head and body in line; 2. Baby held close to mother's body; 3. baby's whole body supported and; 4. baby approaches breast, nose to nipple. The criteria for good attachment include: 1. baby's mouth open wide; 2. lower lip turned outwards; 3. baby's chin touches breast; and 4. more areola seen above baby's upper lip. While the criteria for suckling are: 1. slow, deep with pauses; 2. cheeks round when suckling; 3. baby releases breast when finished; and mother notices signs of oxytocin reflex. Mothers who achieved at least three criteria were categorized as having good positioning, or attachment, while mothers who achieved two out of the three breast conditions or suckling criteria were categorized as having good breast conditions and suckling.

Patterns of malnutrition

The anthropometry (body weight, and length/height) of the child was assessed following standard procedures (18). The weight of the child was taken using an infant weighing scale in the recumbent position. The weighing scale is placed on a hard, flat surface and tarred. The child was weighed naked to ensure accurate measurement. The child's weight is recorded to the nearest 0.01kg. Also, the child's recumbent length was measured using a length board, which was placed on a flat table, after requesting the mother to remove the child's shoes, wet diaper, and socks. The child's mother assisted in the measurement of the length by holding the child's head in place, while the child's legs were held straight on a length board by the researcher, and also the child's arms were held in place to ensure accurate length measurement. The child's length was measured to the nearest 0.01cm. The child's anthropometry was analysed using the WHO Anthro software and was classified using the WHO standard procedures (19). Nutritional anthropometry was used to assess the patterns of malnutrition among the children.

Ethical Consideration

Ethical approval was obtained from the State Hospital Abeokuta Health Research Ethics Committee (SHAHREC) with Ref. number: SHA/338/REC/Vol1/10. Informed consent of the study participants was taken verbally before data collection. Only respondents who consented participated in the study, and the data obtained were used only for the purpose of research.

Statistical Analysis

Data were analysed using frequency, percentage, mean, and standard deviation. Pearson Chi-square was used to test for association among variables at $p \leq 0.05$.

RESULTS

Socio-demographic Characteristics of the Mothers

Table 1: Almost half (45.5%) of the mothers were 18-30 years and had a tertiary education. Less than one-third (29.4%) were traders, 20% were civil servants, and 19% were private workers,

respectively. The majority (82.1%) attended antenatal clinic 1 to 5 times, and 16.9% attended 6-10 times during pregnancy. Also, the majority (82.3%) had vaginal delivery, while 17.7% had caesarean section. More than half (67.8%) were delivered at public hospitals, 24.9% delivered at private hospitals, 2.3% delivered at home, and traditional home (4.2%), and religious home (0.8%). About half (54.3%) of them were female and born at gestational weeks 39- 43. only 1.8% were pre-term, and 10.1% had low birth weight.

Also, more than half (56.9%) of the children were within the age-range of 0-6 months, 37.1% were 7-12 months, and 6% were 13-23 months.

Table 1: Socio-demographic and Socioeconomic Characteristics of the Mothers

Variables	Frequency (385)	Percentage (%)
Mothers Age (years)		
18-30	175	45.5
31-40	170	44.2
$\geq$ 41	40	10.4
Total	385	100.0
Mean age (SD)	32.49 $\pm$ 4.9	
Educational Level		
No Formal Education	14	3.6
Primary	53	13.8
Secondary	143	37.1
Tertiary	175	45.5
Total	385	100.0
Occupation		
Civil servant	79	20.5
Private workers	73	19.0
Self employed	226	58.8
Housewife and students	7	0.5
Total	385	100.0
Parity		
1-4 children	352	91.4
5-8 children	33	8.6
Total	385	100.0
Mean parity$\pm$SD	2.89$\pm$1.27	
Number of antenatal clinics attended		
1-5 times	316	82.1
6-10 times	65	16.9
> 10 times	4	1.0
Total	385	100.0
Mean number of antenatal visits$\pm$SD	8.39$\pm$3.74	
Mode of delivery		
Vaginal delivery	317	82.3
Caesarean section	68	17.7
Total	385	100
Place of delivery		
Public hospital	261	67.8
Private hospital	96	24.9
Home	9	2.3
Traditional home	16	4.2
Religious home	3	0.8
Total	385	100
Family Size		
2-6	354	91.9
7-12	31	6.1
Total	385	100
Mean family size$\pm$SD	4.72$\pm$1.45	

Table 1 contd.

Variables	Frequency (385)	Percentage (%)
Childs age (month)		
0-6	219	56.9
7-12	143	37.1
13-24	23	6.0
Total	385	100
Mean child age (SD)	6.62±4.11	
Childs gender		
Male	176	45.7
Female	209	54.3
Gestational age (week)		
32-36	170	44.2
37-42	201	52.2
≥ 42	14	3.6
Total	385	100
Mean Gestational age±SD	38.63±2.78	
Birth Weight classification		
Low birth weight (<2.5kg)	39	10.1
Normal birth weight (>2.5kg)	346	89.9
Total	385	100.0
Mean birth weight ±SD	3.41±3.63	

Percentage distribution of Breastfeeding techniques among the respondents

More than one-third (40.5%) of the respondents had their breast well supported with fingers away from the nipple, 61.6% mothers held their babies close to themselves, about half of them had their baby's mouth open wide (51.4%) and baby's chin touched the mothers' breast (51.4%) while about three-quarter of the babies suckles slow, deep with pauses (Table 2).

Table 2: Percentage distribution of Breastfeeding techniques among the respondents

Breast condition (n=385)	F	%
1. Breast look healthy, not swollen or no sore	300	77.9
2. Absence of pain or discomfort	298	77.4
3. Breast well supported with fingers away from nipple or held with fingers on areola	126	40.5
Good Positioning		0.0
1. Baby's head and body in line	276	71.7
2. Baby held close to mother's body	237	61.6
3. baby's whole body supported	137	35.6
4. baby approaches breast, nose to nipple	312	81.0
Good Attachment		0.0
1. baby's mouth open wide	198	51.4
2. lower lip turned outwards	324	84.2
3. baby's chin touches breast	198	51.4
4. more areola seen above baby's upper lip	203	52.7
Suckling		0.0
1. slow, deep with pauses	286	74.3
2. cheeks round when suckling	208	54.0
3. baby releases the breast when finished, and the mother notices signs of oxytocin reflex	279	72.5

Prevalence of Breastfeeding Positioning, Attachment, and Patterns of Malnutrition

The prevalence of good breastfeeding positioning, attachment, and effective suckling was 68.8, 51.9, and 60.3%, respectively (Fig. 1). About one-third (32.7%) of mothers had poor breast conditions. The prevalence of stunting, wasting, and underweight among the children was 46.6, 18.2, and 50.4%. (Fig. 2).

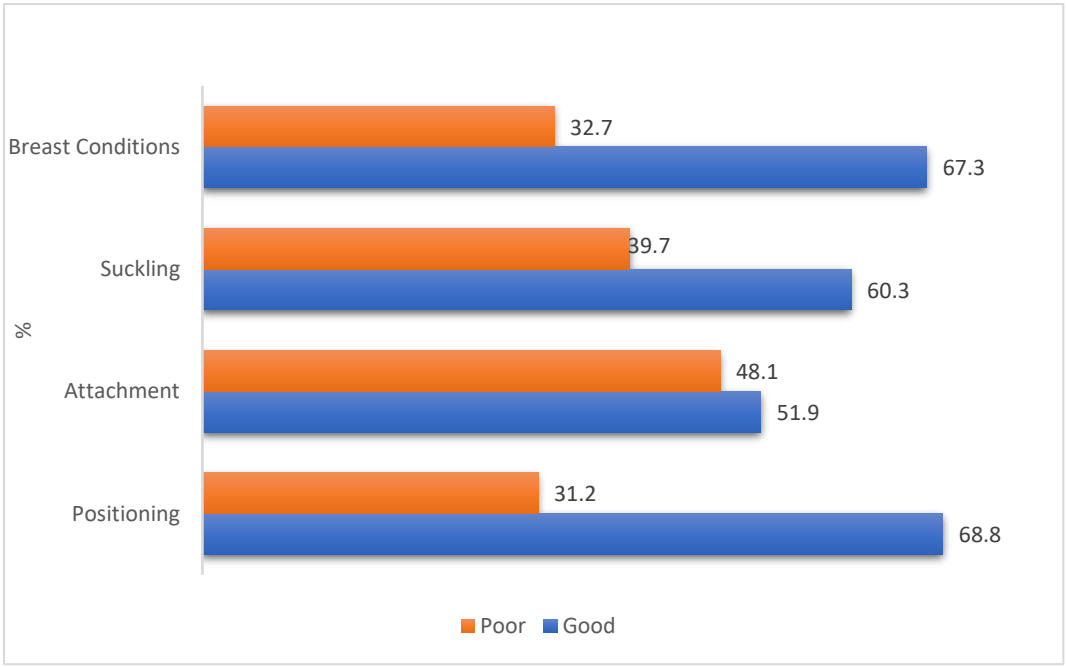

Fig. 1: Prevalence of breastfeeding positioning, attachment, effective suckling, and breast conditions

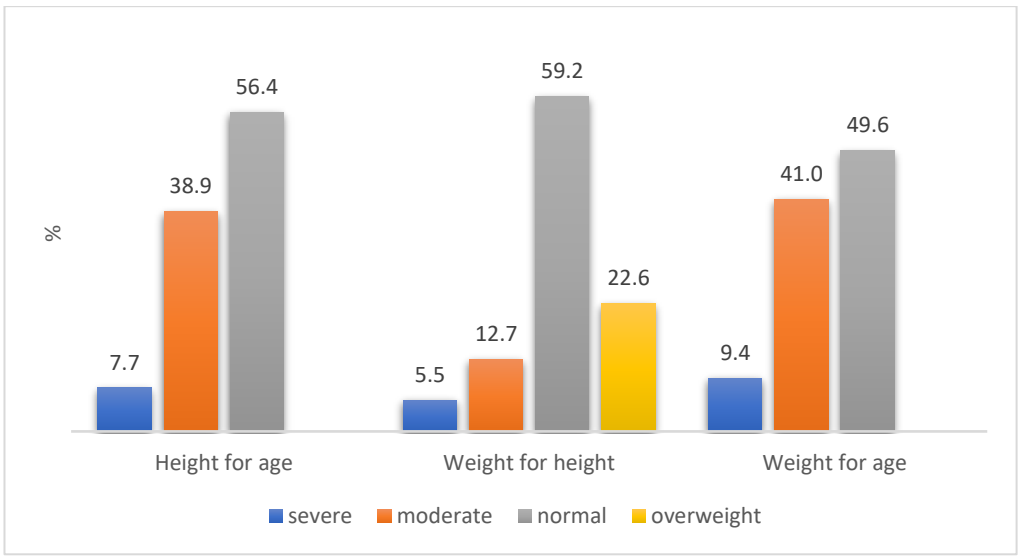

Fig. 2: Patterns of malnutrition

Mothers' awareness of breastfeeding positioning and attachment, and Breastfeeding Practices

About half (51.7%) of the mothers were aware of proper attachment, 45.5% were aware of proper positioning and breastfeeding duration, while only 47.8% were aware of the care for the breast before breastfeeding (Table 3).

Almost all (98.4%) of the children were ever breastfed. The prevalence of early initiation of breastfeeding and exclusive breastfeeding were 91.4% and 25.1%, respectively. More than two-thirds (69.1%) practiced pre-lacteal feeding in the first two days of life, 39.7% practiced mixed-milk feeding, only 43.5% continued breastfeeding in the second year, and 31.7% practiced bottle feeding. About 82.6% breastfed on-demand. Also, 62.3% mothers expressed milk; however, only 4.2% practiced cup feeding according to the recommended standards (Table 3).

Barriers and facilitators to exclusive breastfeeding practices

Barriers for breastfeeding among mothers include stress (35.8%), breastmilk not satisfying baby's hunger (25.2%), maternal health issues (24.7%), fear of infant becoming addicted to breastmilk (24.4%), breast pain (23.9%), pressure from mother-in-law to give other foods (25.5%), not making enough milk (20.3%), need to return to work (30.1%), and lack of support from spouse (21.3%). More than three-quarters of the mothers were encouraged to breastfeed due to social norms (85.7%), increased child growth (98.4%), increased immunity in breastmilk (95.8%), promotion of birth spacing (84.9%), being inexpensive (95.8%), and support from spouse (88.3%) (Table 3).

Table 3: Awareness of breastfeeding positioning and attachment, breastfeeding practices, barriers, and facilitators

Breastfeeding Practices (n=385)	Age (months)	Frequency	Percentage
Awareness of breastfeeding positioning			
Yes		175	45.5
No		210	54.55
Total		385	100.0
Awareness of breastfeeding attachment			
Yes		199	51.7
No		186	48.3
Total		385	100.0
Ever breastfed	0 – 23	379	98.4
Early initiation of breastfeeding within one hour of birth	0 – 23	352	91.4
Exclusive breastfeeding for the first 2 days after birth	0 – 23	119	30.9
Exclusive breastfeeding under 6 months (n=219)	0 – 5	55	25.1
Mixed Milk Feeding under 6 months (n=219)	0 – 5	87	39.7
Continued breastfeeding in the second year (n=23)	12 – 23	10	43.5
Bottle feeding	0 – 23	122	31.7
Expressing breast milk	0 – 23	240	62.3
Recommended cup feeding practice	0 – 23	16	4.2
Breastfeeding on demand	0 – 23	318	82.6
Barriers			
Exclusive breastfeeding is stressful	0 – 23	138	35.8
Breastmilk not satisfying the baby's hunger	0 – 23	97	25.2
Maternal health issues	0 – 23	95	24.7
Fear of infant becoming addicted to breastmilk	0 – 23	94	24.4
Pressure from mother-in-law to give other foods	0 – 23	98	25.5
need to return to work	0 – 23	116	30.1
Breast pain	0 – 23	92	23.9
Lack of support from spouse	0 – 23	82	21.3
Facilitators			
Encouraged to breastfeed exclusively due to social norm	0 – 23	330	85.7
Exclusive breastfeeding increased child growth	0 – 23	379	98.4
Thers is increased immunity in breastmilk	0 – 23	369	95.8
Exclusive breastfeeding promote birth spacing	0 – 23	327	84.9
Exclusive breastfeeding is inexpensive	0 – 23	369	95.8
Support from spouse encouraged to breastfeeding exclusively	0 – 23	340	88.3

Socio-Demographic Factors Associated with Mothers Breastfeeding Positioning and Attachment

Table 4 shows the cross-tabulation of maternal characteristics and breastfeeding positioning and attachment. Maternal age (p=0.02), marital status (p=0.04), occupation (p=0.04), family type (p=0.02), family size (p=0.03), and birth weight (p=0.03) were associated with breastfeeding positioning. While mothers of 18-30 years (48.7%) and mothers in nuclear families (58.1%) showed higher good positioning compared to others. Also, the number of antenatal clinic contacts (p=0.02), place of delivery (p=0.05), and birth weight (p=0.01) were significantly associated with breastfeeding attachment. Mothers who attended 1-5 times showed a higher percentage of poor attachment (87.0%) compared to good attachment (77.5%).

Table 4: Maternal characteristics associated with breastfeeding positioning and attachment

Variables	Good positioning	Poor Positioning	χ^2 (P-value)	Good Attachment	Poor attachment	χ^2 (P-value)
	F (%)	F (%)		F (%)	F (%)	
Age(years)						
18-30 years	129(48.7)	46(38.3)*	12.56 (0.02)	90(45)	85(45.9)	(0.51 (0.78)
31-40 years	118(44.5)	52(43.3)		91(45.5)	79(42.7)	
41 above	18(6.8)	22(18.3)		19(9.5)	21(11.4)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Marital status						
Single	0(0.0)	3(2.5)*	8.46 (0.04)	2(1.0)	1(0.5)	4.01 (0.26)
Married	257(97.0)	116(96.7)		196(98.0)	177(95.7)	
Engaged	6(2.2)	1(0.8)		2(10)	5(2.7)	
Widowed	2(0.8)	0 (0.0)		0(0.0)	2(0.5)	
Total	265(100.0)	120(100.0)		200(100.0)	185(100.0)	
Education Level						
No formal education	10(3.8)	4(3.3)	2.34 (0.51)	7(3.5)	7(3.8)	1.96 (0.58)
Primary education	35(13.2)	18(15.0)		24(1)	29(15.7)	
Secondary education	93(35.1)	50(41.7)		72(36)	71(38.4)	
Tertiary education	127(47.9)	48(40.0)		97(48/5)	78(42.2)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Occupation						
Civil servant	56(21.1)	23(19.2)*	13.55 (0.04)	43(21.5)	36(19.5)	8.61 (0.20)
Private employed	49(18.5)	24(20.0)		45(22.5)	28(15.1)	
Self employed	155(58.5)	71(59.2)		108(54)	118(63.8)	
Housewife and students	5(1.9)	2(1.7)		4(2)	3(1.6)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Family type						
Monogamy	80(30.2)	29(24.2)*	9.72 (0.02)	56(28)	53(28.6)	6.43 (0.09)
Polygamy	23(8.7)	7(5.8)		11(5.5)	19(10.3)	
Nuclear family	154(58.1)	72(60.0)		126(63)	100(54.1)	
Extended family	8(3)	12(10.0)		7(3.5)	13(7.0)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Parity						
1-4 Children	242(91.3)	110(91.7)	0.01 (0.91)	181(90.5)	171(92.4)	0.46 (0.49)
5-8 Children	23(8.7)	10(8.3)		19(9.5)	14(7.6)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Family size						
2-6	249(94)	105(87.5)*	4.66 (0.03)	188(94)	166(89.7)	2.37 (0.13)
7-12	16(6)	15(12.5)		12(6)	19(10.3)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	

Table 2 contd.

Variables	Good positioning	Poor Positioning	χ^2 (P-value)	Good Attachment	Poor attachment	χ^2 (P-value)
No. of antenatal contact						
1-5	223(84.2)	93(77.5)	5.03 (0.08)	155(77.5)	161(87.0)*	7.99 (0.02)
6-10	41(15.5)	24(20.0)		41(20.5)	24(13.0)	
>10	1(0.4)	3(2.5)		4(2)	0(0.0)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Mode of delivery						
Vaginal	214(80.8)	103(85.8)	1.47 (0.23)	171(85.5)	146(78.9)	2.86 (0.09)
Caesarean section	51(19.2)	17(14.2)		29(14.5)	39(21.1)	
Total	265(100)	120(100.0)		200(100)	185(100.0)	
Place of delivery						
Public hospital	182(68.7)	79(65.8)	7.06 (0.13)	136(68)	125(67.6)*	9.39 (0.05)
Private hospital	68(25.7)	28(23.3)		46(23)	50(27.0)	
Home	7(2.6)	2(1.7)		9(4.5)	0(0.0)	
Traditional home	7(2.6)	9(7.5)		8(4)	8(4.3)	
Church	1(0.4)	2(1.7)		1(0.5)	2(1.1)	
Total	265(100)	240(200.0)		200(100)	305(164.9)	
Birth term						
Pre-term	60(30)	110(91.7)	3.23 (0.07)	110(29.8)	60(32.4)	0.07 (0.78)
Full term	120(60)	81(67.5)		81(22.0)	120(64.9)	
> 42	9(4.5)	5(4.2)		5(1.4)	9(4.9)	
Total	200(94.5)	185(154.2)		369(100)	16(8.6)	
Birth weight						
<2.5kg	13(6.5)	26(21.7)*	6.57 (0.03)	38(10.3)	1(0.5)*	6.02 (0.01)
≥2.5kg	187(93.5)	159(132.5)		318	(89.7)	
Total	200(100)	185(154.2)		369(100)	16(8.6)	

Factors associated with Breastfeeding practices, and patterns of malnutrition

Awareness of breastfeeding positioning was associated with breastfeeding positioning and effective suckling ($p<0.005$). Awareness of breastfeeding attachment was associated with breastfeeding attachment and effective suckling ($p<0.005$). In addition, awareness of breastfeeding duration is associated with effective suckling ($p=0.001$). Single motherhood is associated with underweight ($p = 0.00$) and stunting ($p = 0.00$). Mixed feeding is associated with underweight ($p = 0.05$), while Exclusive breastfeeding in the first 2 days of birth ($p = 0.00$), exclusive breastfeeding for the first 6 months of life ($p = 0.00$) were significantly associated with wasting (Table 5).

Table 5: Factors associated with patterns of malnutrition and Breastfeeding practices

Variables	N (%)	Underweight			Stunting			Wasting		
		Yes F (%)	No F (%)	χ^2 (p-value)	Yes F (%)	No F (%)	χ^2 (p-value)	Yes F (%)	No F (%)	χ^2 (p-value)
Single	3(0.8)	1(0.5)	2(1.1)*	47.81 (0.00)	0 (0.0)	3(2.68)*	42.57 (0.00)	1 (1.1)	2(0.7)	12.78 (0.28)
Married	372(96.6)	190 (97.9)	183(95.8)		266 (97.4)	106 (94.6)		91 (96.8)	281(96.6)	
Engaged	7(1.8)	2 (1)	5 (2.6)		5 (1.8)	2 (1.8)		1 (1.1)	6(2.1)	
Widowed	2(0.5)	1 (0.5)	1 (0.5)		2 (0.7)	0 (0.0)		1 (1.1)	1(0.3)	
Ever Breastfed	379 (98.4%)	35 (9.1)	1 (0.3)	0.79 (0.67)	166 (43.1)	2 (0.5)	0.33 (0.85)	20 (5.2)	1 (0.3)	1.71 (0.64)
Early initiation of Breastfeeding	352(91.4)	32 (8.9)	320 (89.4)	2.33 (0.68)	167(46.6)	346 (96.6)	6.28 (0.18)	21 (5.5)	178(61.2)	7.17 (0.31)

Table 5 contd.

Variables		Breastfeeding positioning			Breastfeeding Attachment			Suckling		
	N (%)	Yes F (%)	No F (%)	χ2 (p-value)	Yes F (%)	No F (%)	χ2 (p-value)	Yes F (%)	No F (%)	χ2 (p-value)
Exclusive breastfeeding in the first 2 days of life	119(30.9)	12 (3.1)	24 (6.2)	1.24 (0.54)	46 (11.9)	122 (31.7)	0.10 (0.23)	14 (3.6)	7 (1.8)*	13.32 (0.00)
Exclusive breastfeeding (0-6 months)	55 (25.1)	13 (3.4)	23 (6.0)	1.01 (0.60)	73 (18.9)	95 (24.7)	2.54 (0.28)	11 (2.9)	10 (2.6)*	17.33 (0.00)
Mixed feeding (0-5 months)	87(22.6)	56 (59.6)	31(24.8)*	10.93 (0.05)	154 (74.8)	52 (23.7)	5.64 (0.34)	115 (96.6)	4 (1.7)	10.47 (0.06)
Continued Breastfeeding	10 (2.6)	4 (28.6)	6 (66.7)	5.34 (0.38)	1(4.3)	22(95.7)	5.34 (0.38)	22 (95.7)	10 (43.5)	10.39 (0.06)
Bottle Feeding	122(31.7)	98 (25.5)	61(17.0)	3.11 (0.68)	181 (47.0)	92(23.9)	6.87 (0.23)	255 (71.2)	130 (33.8)	7.63 (0.07)
Awareness on Breastfeeding positioning	175 (45.5)	110 (62.9)	11 (6.3)*	14.12 (0.00)				174 (87.4)	25 (12.6)*	17.88 (0.00)
Awareness on Breastfeeding Attachment	199 (51.7)				176 (45.7)	23 (6.0)*	17.88 (0.00)	176 (88.4)	23 (11.6)*	13.05 (0.00)
Awareness on breastfeeding duration	75 (19.5)							65 (86.7)	10 (13.3)*	10.75 (0.01)

DISCUSSION

This study assessed breastfeeding techniques, practices, and patterns of malnutrition among children under two years old in the State Hospital, Abeokuta, Ogun State. The findings revealed that nearly half of the mothers who participated in this study were aged 18-30 years, and nearly half of them had attained a tertiary education. Occupationally, more than twenty percent were traders, twenty percent were civil servants, half were self-employed, and almost all had one to four children. In addition, the majority of the mothers attended antenatal clinic one to five times, one-tenth attended > 10 times, the majority had vaginal delivery, and most of them delivered at a public hospital. These demographic findings align with previous studies (7,20). Among breastfeeding mothers, similar findings were reported for age, educational background, occupation, and number of children.

However, half of the under-two children in this study were within the age range of 0-6 months, one-third were within 7-12 months, and half of them were female. Also, the majority of the under-two children were delivered via vaginal delivery, half were born within 39-43 gestational weeks, almost half had 32-38 gestational weeks, and almost all had full-term births, and very few were pre-term. These findings were also consistent with previous research (7,8,21) conducted among children under two years old, which reported similar findings for age, gender, parity, mode of delivery, and birth weight.

In this study, almost all infants and young children were ever breastfed, and the majority were initiated with breastfeeding (EIBF) within 1 hour of birth. This exceeds the national and Ogun state prevalence of EIBF. The high prevalence may be attributed to the study's location, where mothers receive counselling on infant feeding practices during antenatal visits. The EIBF provides colostrum (rich in nutrients) and immunoglobulins required to fight infection, strengthen the bond between mother and child (22), and prevent 33% of neonatal deaths (23). This suggests that most infants in this study might be protected against infection and neonatal death due to the high prevalence of EIBF. Approximately one-third of the infants were exclusively breastfed in the first two days of birth, implying that many received pre-lacteal feeding, which contradicts the WHO recommendation (1,24). Furthermore, only one-quarter were exclusively breastfed for six months – a rate lower than national and state averages. Given that exclusive breastfeeding is linked to reduced infant mortality (4,23), This low prevalence suggests that these children are at higher risk of morbidity.

Also, about one-third of the mothers with children under six months practiced mixed milk feeding, and less than half of the children above 12 months old continued breastfeeding, significantly lower than the two-thirds reported by Mekonen (25) across 21 sub-Saharan countries. Nearly one-third of the children (0-23 months) were bottle-fed. While this is lower than rates

found in Northern Thailand (26), it still poses risks of infection and malnutrition. Mixed milk feeding, bottle feeding, and discontinuing breastfeeding in the second year of birth are associated with reduced risk of child morbidity and mortality. This suggests that infants and young children who were bottle-fed and mixed-fed might be at risk of child mortality and morbidity.

This study found that most mothers practiced good breastfeeding positioning, half of them demonstrated good breastfeeding attachment, and nearly two-thirds of the infants suckled effectively. These findings support previous researches (21,27) highlighting that proper breastfeeding techniques prevent nipple pain, soreness, and ensure effective breastmilk transfer, promoting infant growth, emotional bond between mother and child, and maternal comfort. However, this finding underscored a need for skill-based counselling during postnatal visits to correct poor breastfeeding techniques and promote successful infant feeding and maternal health.

Reported barriers to exclusive breastfeeding included the need to return to work, pressure from mother-in-law, fear of the infant becoming addicted to breastmilk, and the general stress of breastfeeding. These findings are similar to previous findings (28–30), suggesting a need for workplace policies that support exclusive breastfeeding practices, especially for working mothers in both private and public workplaces. In addition, there is a need for greater involvement of men and mothers-in-law in breastfeeding advocacy.

Anthropometric assessment revealed a high burden of malnutrition. Above one-tenth of the children were wasted, nearly half were stunted and underweight. This likely reflects sub-optimal breastfeeding practices. However, other factors, including inappropriate complementary feeding practices, large family size, polygamy, parent occupation, low income, and poor environmental sanitation, have been associated with child malnutrition (31). Also, the prevalence of malnutrition in this study is higher compared to the findings of other authors (14–16). However, some studies reported similar findings (20,32) in children aged 12 months to 23 months.

In this study, marital status, occupation, family type, and size were associated with good breastfeeding positioning while the number of antenatal contacts and place of delivery were associated with breastfeeding attachment. Also, awareness of breastfeeding positioning was associated with breastfeeding positioning and effective suckling. Similarly, awareness on breastfeeding attachment was associated with breastfeeding attachment and effective suckling, while awareness on breastfeeding duration was associated with effective suckling. This finding is similar to previous finding where antenatal care follow-up, awareness on breastfeeding techniques were associated with breastfeeding positioning and attachment (33). However, infant birth weight was associated with both breastfeeding positioning and attachment, while exclusive breastfeeding for the first two days of birth, and in the first six months were significantly associated with a reduction in wasting. This is similar to previous findings (22,34). These underscore the critical roles of appropriate breastfeeding techniques in preventing wasting, which is a form of acute malnutrition in children.

CONCLUSION

This study underscores a significant gap between breastfeeding knowledge and practice among mothers in Abeokuta. While early initiation of breastfeeding (EIBF) and breastfeeding positioning were high—likely due to antenatal education—the prevalence of exclusive breastfeeding for six months remains critically low. The high rates of stunting, underweight, and wasting observed among these children are closely linked to these suboptimal breastfeeding practices, alongside socio-economic barriers. Ultimately, improving child nutritional outcomes in this region requires shifting focus from general awareness to skill-based counseling and addressing the socio-cultural and workplace barriers that hinder exclusive breastfeeding.

REFERENCES

1. World Health Organization. (2025). *Breastfeeding*. https://www.who.int/health-topics/breastfeeding#tab=tab_1
2. Federal Ministry of Health and Social Welfare of Nigeria. (2023). Module 4: Breastfeeding. In *Maternal, infant, and young child nutrition training course manuals* (pp. 1–181). USAID.
3. Pérez-Escamilla, R., Tomori, C., Hernández-Cordero, S., Baker, P., Barros, A. J. D., Bégin, F., ... & Roll, G. P. (2023). Breastfeeding: Crucially important, but increasingly challenged in a market-driven world. *The Lancet*, *401*(10375), 472–485. https://doi.org/10.1016/S0140-6736(22)01932-8

4. Joseph, F. I., & Earland, J. (2019). A qualitative exploration of the sociocultural determinants of exclusive breastfeeding practices among rural mothers, North West Nigeria. *International Breastfeeding Journal*, *14*(1), Article 38. https://doi.org/10.1186/s13006-019-0231-z
5. National Population Commission & ICF. (2024). *Nigeria demographic and health survey 2023–24: Key indicators report* (pp. 1–88). NPC and ICF.
6. Akadri, A., & Odelola, O. (2020). Breastfeeding practices among mothers in Southwest Nigeria. *Ethiopian Journal of Health Sciences*, *30*(5). https://doi.org/10.4314/ejhs.v30i5.10
7. Agunbiade, O. M., & Ogunleye, O. V. (2012). Constraints to exclusive breastfeeding practice among breastfeeding mothers in Southwest Nigeria: Implications for scaling up. *International Breastfeeding Journal*, *7*(1), Article 5. https://doi.org/10.1186/1746-4358-7-5
8. Rai, R., Khatun, R., Inamdar, P., & Patil, R. (2023). Impact of educational intervention on breastfeeding practices of mothers undergoing institutional delivery. *International Journal of Contemporary Pediatrics*, *10*(10), 1550–1557. https://dx.doi.org/10.18203/2349-3291.ijcp20232881
9. Basrowi, R. W., Darus, F., Partiwi, I. G. A. N., Sutanto, L. B., Sulistomo, A., Soemarko, D. S., ... & Vandenplas, Y. (2024). The strategic effort to ensure successful breastfeeding practice in the workplace: An Indonesian expert opinion. *The Open Public Health Journal*, *17*(1), Article e18749445291278. https://doi.org/10.2174/0118749445291278240212055615
10. McFadden, A., Siebelt, L., Marshall, J. L., Gavine, A., Girard, L. C., Symon, A., ... & Entwistle, F. (2019). Counselling interventions to enable women to initiate and continue breastfeeding: A systematic review and meta-analysis. *International Breastfeeding Journal*, *14*(1), Article 42. https://doi.org/10.1186/s13006-019-0235-8
11. Golnam, M., Hassani, L., Goodarzi, R. S., & Ghanbarnejad, A. (2025). The effectiveness of a theory-based health education program on self-efficacy and breastfeeding behaviors continuity of working mothers in Iran. *Scientific Reports*, *15*(1), Article 5625. https://doi.org/10.1038/s41598-025-89943-9
12. Piro, S. S., & Ahmed, H. M. (2020). Impacts of antenatal nursing interventions on mothers' breastfeeding self-efficacy: An experimental study. *BMC Pregnancy and Childbirth*, *20*(1), Article 19. https://doi.org/10.1186/s12884-019-2701-0
13. Dao, M. C., Subar, A. F., Warthon-Medina, M., Cade, J. E., Burrows, T., Golley, R. K., ... & Holmes, B. A. (2019). Dietary assessment toolkits: An overview. *Public Health Nutrition*, *22*(3), 404–418. https://doi.org/10.1017/S1368980018002951
14. Grellety, E., & Golden, M. H. (2016). Weight-for-height and mid-upper-arm circumference should be used independently to diagnose acute malnutrition: Policy implications. *BMC Nutrition*, *2*(1), Article 10. https://doi.org/10.1186/s40795-016-0049-7
15. World Health Organization. (2025). *Malnutrition*. https://www.who.int/news-room/fact-sheets/detail/malnutrition
16. World Health Organization and the United Nations Children's Fund. (2021). *Indicators for assessing infant and young child feeding practices: Definitions and measurement methods* (pp. 1–122). World Health Organization. https://www.who.int/publications/i/item/9789240018389
17. Federal Ministry of Health. (2022). *National guidelines on maternal, infant and young child nutrition guideline*. Department of Family Health. (pp. 1–129).
18. Cashin, J., & Oot, L. (2018). *Guide to anthropometry: A practical tool for program planners, managers, and implementers* (pp. 1–231). Food and Nutrition Technical Assistance III Project (FANTA). https://www.fantaproject.org/sites/default/files/resources/FANTA-Anthropometry-Guide-May2018.pdf
19. World Health Organization. (2025). *Child growth standards*. https://www.who.int/tools/child-growth-standards/software
20. Prasetyo, Y. B., Permatasari, P., & Susanti, H. D. (2023). The effect of mothers' nutritional education and knowledge on children's nutritional status: A systematic review. *International Journal of Child Care and Education Policy*, *17*(1), Article 11. https://doi.org/10.1186/s40723-023-00114-7
21. Kar, S., Singh, S., & Kar, A. (2023). Knowledge-practice gap in breastfeeding and the factors influencing it among the urban mothers attending the immunization clinic

under a tertiary care hospital in eastern India. *International Journal of Community Medicine and Public Health*, *10*(9), 3264–3270. https://dx.doi.org/10.18203/2394-6040.ijcmph20232681

22. Hashim, M., Rizk, R., Abbas, N., Abdelrahim, D. N., Hasan, H., Obaid, R. S., ... & Al Dhaheri, A. S. (2025). Infant and young child feeding practice status and its determinants in UAE: Results from the MISC cohort. *International Breastfeeding Journal*, *20*(1), Article 6. https://doi.org/10.1186/s13006-024-00685-2
23. Zewdu, F., Mekonnen, S., & Atenafu, A. (2025). Early initiation of breastfeeding and exclusive breastfeeding practices and associated factors among first-time mothers attending governmental maternal and child health clinics in Gondar town, Northwest Ethiopia: A mixed method study. *International Breastfeeding Journal*, *20*(1), Article 27. https://doi.org/10.1186/s13006-025-00718-4
24. Degefa, N., Tariku, B., Bancha, T., Amana, G., Hajo, A., Kusse, Y., ... & Tadesse, M. (2019). Breast feeding practice: Positioning and attachment during breast feeding among lactating mothers visiting health facility in Areka Town, Southern Ethiopia. *International Journal of Pediatrics*, *2019*, Article 8969432. https://doi.org/10.1155/2019/8969432
25. Mekonen, E. G. (2025). Variation of continued breastfeeding by age of the child among children aged 12–23 months: Evidence from 21 sub-Saharan African countries. *Nutrition & Metabolism*, *22*(1), Article 31. https://doi.org/10.1186/s12986-025-00919-y
26. Ongprasert, K., Chawachat, J., Kiratipaisarl, W., & Siviroj, P. (2025). Breast milk feeding practices and frequencies among complementary-fed children: A cross-sectional study in Northern Thailand. *International Breastfeeding Journal*, *20*(1), Article 28. https://doi.org/10.1186/s13006-025-00719-3
27. Safayi, B. L., Assimamaw, N. T., & Kassie, D. G. (2021). Breastfeeding technique and associated factors among lactating mothers visiting Gondar town health facilities, Northwest Ethiopia: Observational method. *Italian Journal of Pediatrics*, *47*(1), Article 206. https://doi.org/10.1186/s13052-021-01158-6
28. Quebu, S. R., Murray, D., & Okafor, U. B. (2023). Barriers to exclusive breastfeeding for mothers in Tswelopele Municipality, Free State Province, South Africa: A qualitative study. *Children*, *10*(8), 1380. https://doi.org/10.3390/children10081380
29. Grattan, R. E., London, S. M., & Bueno, G. E. (2024). Perceived pressure to breastfeed negatively impacts postpartum mental health outcomes over time. *Frontiers in Public Health*, *12*, Article 1357965. https://doi.org/10.3389/fpubh.2024.1357965
30. Kayode, O. O., Oyedeji, A. S., & Alabi, Q. K. (2023). Factors affecting exclusive breastfeeding practices among working-class women in Osun State, Nigeria. *Journal of Public Health in Africa*, *14*(6). https://doi.org/10.4081/jphia.2023.2514
31. Gebretsadik, M. T., Sisay, A. L., Tamiru, D., & Belachew, T. (2024). Anthropometric failure and associated factors among children aged 6–23 months in Ethiopia. *Food Science & Nutrition*, *12*(3), 1581–1591. https://doi.org/10.1002/fsn3.3821
32. Alarape, K., Yusuf, O. B., Akinyemi, J. O., Samuel, F. O., Morhason-Bello, I. O., Salami, K. K., ... & Ejide, I. F. (2022). Prevalence and patterns of anthropometric failure among under-five children in Nigeria: Evidence from the National Nutrition and Health Survey, 2018. *African Journal of Reproductive Health*, *26*(11), 54–61.
33. Tesfaye Oyato, B., Golo Gutema, B., Feyisa, M., Regea, T., Alemu, A., Zakir Abasimel, H., ... & Teshome, M. (2024). Effective breastfeeding techniques and associated factors among lactating mothers: A community-based cross-sectional study in Dugda district, central Ethiopia. *Journal of Pediatrics & Neonatal Care*, *14*(1), 33–39. https://doi.org/10.15406/jpnc.2024.14.00534
34. Hoteit, M., Ibrahim, C., Saadeh, D., Al-Jaafari, M., Atwi, M., Alasmar, S., ... & Al-Hajje, A. (2022). Correlates of sub-optimal feeding practices among under-5 children amid escalating crises in Lebanon: A national representative cross-sectional study. *Children*, *9*(6), 817. https://doi.org/10.3390/children9060817