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Breastfeeding pattern and nutritional status of children under two years in Oshogbo Local Government Area Osun State Nigeria

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Abstract*: Background:* This study aims to assess breastfeeding pattern among mothers and nutritional status of children under two years.
Methodology: The cross sectional study was carried out in Oshogbo Local Government Area, Osun State. A total of 350 nursing mothers and their children under-two years were randomly selected systematically. A structured questionnaire was used to obtain information on the bio-data and socio-economic characteristics of the mothers. Breast feeding knowledge and pattern was assessed and anthropometric measurements taken. Data was subjected to descriptive and inferential statistics using SPSS version 20.
Results: One-third(32.6%) of the mothers were between 26-30years of age and 40% of the children were between 7-12 months old. Only 2.6% of the mothers earned >$400 per month. Most mothers (85.7%) had adequate knowledge about optimal breastfeeding, 72% initiated breastfeeding more than 1hr after birth and about 72% gave prelacteal meal. About 16.4% breastfed exclusively. Only 16.6% express breast-milk and the median duration for continued breastfeeding in this study was 18months. Complementary foods given to the children are mostly home prepared cereals, solids and semi-solid foods. About 30.4% of the children were stunted, 25.4% were underweight and 15.3% were wasted. However 4.3% mothers were underweight, 29.1% were overweight and 2.6% were obese. Maternal age, family structure, parity and monthly income were significantly related to their knowledge of and the pattern of breastfeeding.
Conclusion: The practice of exclusive breastfeeding and use of expressed breast milk is poor among the mothers. Stunting was also high among the children.

Key words: Breastfeeding, Under-two children, Nutritional Status, Prelacteal foods, Mothers

Introduction

Breast-feeding is considered the most complete nutritional source for infants because breast milk contains the essential fats, carbohydrates, proteins, and immunological factors needed for infants to thrive and resist infection in the formative first two years of life[1]. In an analysis of Child Survival Strategies, exclusive breastfeeding (EBF) in the first 6 months of life and continued breastfeeding from 6 to 24 months was identified as the single most effective preventive intervention in reducing child mortality, with the potential of saving 1.3 million lives annually[1].

However, advocates of breastfeeding have noticed there has been a global decline in the behavior among nursing mothers. This is particularly more pronounced in developing countries[2]. It was also observed that despite all the recommendations by experts as regards infant breastfeeding for the first 6 months of life, a significant percentage of mothers chose not to breastfeed. Going by population studies in developing countries, it has been shown that the greatest risk of nutritional deficiency and growth retardation occurs in children between 3 and 15 months of age, a period noted for suboptimal breastfeeding[1].

Currently, increasing commitment to the Sustainable Development Goals (SDG) offers a new drive to improve breastfeeding practices. In addition to reducing child mortality, improved breastfeeding practices contribute to reduce poverty and malnutrition and improve

maternal health[3]. Malnutrition has been responsible directly or indirectly, for 60% of the 10.9 million deaths annually among under-five children. Well over two-thirds of these deaths, which are often associated with inappropriate feeding practices, occur during the first year of life. It is further estimated that among children living in the 42 countries with 90% of global child deaths, a package of effective nutrition interventions could save 25% of childhood deaths each year[1]. Breast-feeding, the age long practice of feeding the infants seems not to be strictly adhered to, due to the demand of civilization. Some mothers do not actually believe in the positive effect of breastfeeding, and there are social and regional differences in breastfeeding practices regarded as normal and acceptable in different social settings. Definitely many factors influence the pattern of breast-feeding.

Considering the importance of breastfeeding, this study therefore aims to assess breastfeeding pattern among mothers, and the nutritional status of their children.

Methodology

Study design and location

This study is descriptive and cross-sectional in design. It was conducted in Oshogbo Local Government Area (LGA) Osun State.

Sample selection

A multi-stage sampling technique was employed in selecting two communities from two wards out of the 15 wards in Oshogbo. From the list of households in these communities 350 households were selected using systematic random sampling. Household with a mother who has a child under-two years were included and recruited for the study.

Data collection

A structured questionnaire was used to collect information on the bio-data and socio-economic characteristics of the respondents. The questionnaire was also designed to obtain information on the knowledge of exclusive and continued breastfeeding among mothers, and pattern of breastfeeding. From a list of 15 questions to assess knowledge of breastfeeding, an index was created to rate the level of knowledge of the mothers, a score above 70% was rated as adequate knowledge, between 50% and 69% as moderate knowledge and below 50% as poor knowledge[4]. Breastfeeding pattern was also assessed. Anthropometric measurement of the children and the mothers were taken. An infant meter was used to measure the length (children that are not able to stand) and heightometer to measure the height (children that are able to stand) of the children and mothers. A sensitive calibrated bathroom weighing scale was used to measure the weight of the mothers and the children able to stand. The weight of children unable to stand was taken by weighing the mothers carrying the child and subtracting the weight of the mother. The scale was standardized using an object with a known weight. Body Mass Index (BMI) of the mothers was calculated as weight (kg) divided by the square of height in meters.

Data analysis

The WHO anthro software (2005) was used to analyze the anthropometric data. Statistical Package for Social Sciences (SPSS) version 20 was used for data analysis. Descriptive statistics chi square analysis were carried out.

Results

Table 1 shows the bio-data of the respondents. Forty – three percent of the children were male while more than half (56.6%) were female.

Table 1: Bio-data of the Children

Variable	Frequency	Percentage (%)
Gender		
Male	152	43.4
Female	198	56.6
Total	350	100
Age of child		
1-6 months	52	14.9
7-12 months	140	40.0
13-18 months	86	24.5
19-24 months	72	20.6
Total	350	100

Table 2 shows the bio-data of the mothers. Less than one-tenth (6.3%) of the mothers were between the ages of 15 to 20 years. More than half (55.4%) of the mothers were Muslims and 95.4% of them were Yoruba.

Table 2: Bio-data of the Mothers

Variables	Frequency	Percentage (%)
Age of the mothers		
15-20	22	6.3
21-25	93	26.6
26-30	114	32.6
31-35	76	21.7
35 and above	45	12.9
Total	350	100
Religion		
Christianity	154	44.0
Islam	194	55.4
Traditional	2	0.6
Total	350	100
Tribe		
Yoruba	334	95.4
Hausa	9	2.6
Igbo	2	0.6
Others specify	5	1.4
Total	350	100
Marital status		
Single	23	6.6
Married	318	90.9
Widow	4	1.1
Divorced	5	1.4
Total	350	100
Family Structure		
Monogamous	275	78.6
Polygamous	60	17.1
Single parent	15	4.3
Total	350	100
Parity		
1 Child	83	23.7
2 Children	127	36.3
3 Children	89	25.4
4 Children	39	11.1
5 Children	10	2.9
6 and above	2	0.6
Total	350	100

Table 3: Socio-economic characteristics of Mothers

Variable	Frequency	Percentage (%)
Education Qualification of the mother		
First School leaving	54	15.4
SSCE	157	44.9
OND/ NCE	77	22.0
Higher education	47	13.4
No formal education	15	4.3
Total	350	100
Occupation of the mother		
Student	21	6.0
Trading	181	51.7
Farming	4	1.1
Civil Servant	53	15.1
Artisan	82	23.5
Unemployed	2	0.6
Others	7	2.0
Total	350	100
Monthly income of the mother		
#5000 - #14000	146	41.7
#15000 - #24000	111	31.7
#25000 - #39000	46	13.1
#40000 - #69,000	38	10.9
Above # 69,000	9	2.6
Total	350	100
Hours of working per day of mother		
8 hours	132	37.7
10 hours	161	46.0
12 hours	46	13.1
Above 12hours	4	1.1
Less than 8hours	7	2.0
Total	350	100

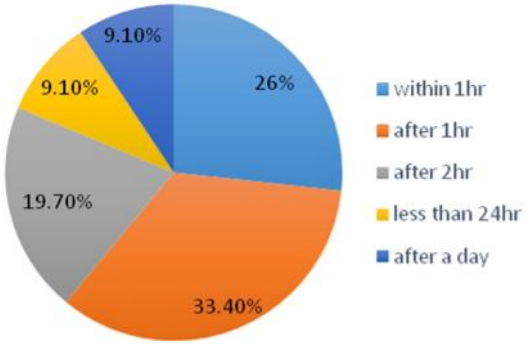
Breastfeeding Knowledge Assessment

Most mothers (85.7%) had adequate knowledge about breastfeeding, 14% had moderate knowledge and 0.3% had poor knowledge. All the mothers interviewed in this study were aware about Exclusive Breastfeeding (EBF). About 70% of mothers got information about EBF from the hospitals and clinic while about 30% of mothers got information through the media. About 96.3% of the mothers agreed that it is necessary to breastfeed exclusively for 6months and 91% stated that breastfeeding should be continued after 6months. About 82% of the mothers believe that breast milk consumption by infants protects against infection.

Breastfeeding initiation

Figure 1 shows the pattern of breastfeeding initiation among the mothers. One-third (33.4%) of the mothers initiated breastfeeding 1hour after delivery.

Fig 1: Breastfeeding initiation



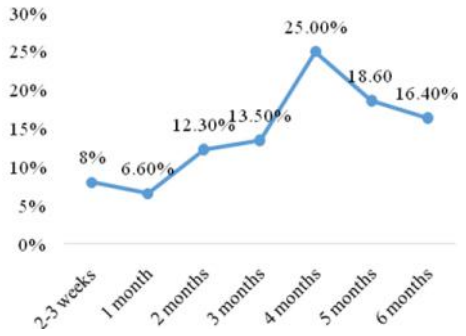
The use of Pre-lacteal meal

WHO recommends that children should be exclusively breastfed for six months without giving water or any other liquid. A total 72.9% of the mothers gave their babies pre-lacteal meal after birth. About 29.1%of mothers gave water, 15.4% mothers gave water, infant formula and herbal concoction, and 4.9% gave numerous other things like water, soft drink, juice, formula milk, cheese and herbal concoction. The main reason given by the respondents for introducing these pre-lacteal meals to their babies was insufficient milk supply. About 21.2% of the mothers said that insufficient milk production was the main reason for introducing pre-lacteal meals, 18.4% had personal reasons such as baby was crying and baby was thirsty. Eleven percent of mothers who gave pre-lacteal meal (herbal concoction) did so in order to prevent the children from infections. About 9% of the mothers who gave pre-lacteal meal said this was done due to ill- health of the mother and their baby.

Exclusive breastfeeding Pattern

Figure 2 shows the pattern of exclusive breastfeeding among mothers. Eight percent of the mothers breastfed their child for two-three weeks and only 16.40% of the mothers practice exclusive breastfeeding.

Fig 2: Duration of exclusive breastfeeding among mothers



Expression of breast milk

The result of this study shows that, only 16.6% of mothers use expressed breast milk to feed their children. About 69.0% of the mothers who expressed breast milk do so manually (hand pressing), 22.4% use pump and 8.6% use both methods. About 53.4% of mothers feed the expressed milk using feeding bottles and 46.6% use spoon and cup as the method of feeding the babies with expressed milk.

Use of complementary foods

About half (55.1%) of mothers introduced complementary food after 6 months, 12.9% after 5 months, and 0.9% introduced it at one month. The kind of complementary food given to babies includes pap (maize gruel), milk and home prepared meals. Five percent of the mothers gave cereals foods like pap alone, 24.6% gave pap and formula milk as complementary food, 3.4% gave pap fortified with fish and crayfish and 14.3% gave legumes (cooked cowpea) and animal foods.

Continued Breastfeeding duration

the findings shows that among the mothers that have stopped breastfeeding 0.7% of the mothers stopped breastfeeding at 24 months, 15.4% at 18 months, 4.0% at 15 months, 12% at 12 months, and 0.3% at 9months. Majority (15.4%) of the mothers stopped breastfeeding at 18 month. About 28.3% of the mothers terminated breastfeeding due to insufficiency of breast milk or perception that breast milk was not enough,8% due to work activities, 14.9% were due to the perception that the baby was old enough and 21% was based on personal decision.

Relationship Between Nutritional status of the Children and the Mothers

Table 5 shows that the prevalence of stunting, underweight and wasting in this study is 30.3%, 25.4% and 15% respectively. About 29.1% of the mothers were overweight, 2.6% were obese. It was also observed that there is co-existence of a dual form of malnutrition (42.1%) in the form of stunted child and Overweight mothers' pairs in this study.

Table 5: Nutritional status of the mothers and children

Variable	Frequency	Percentage
Nutritional Status of Children		
Height for age (stunting)		
Adequate	244	69.7
Moderately stunted	40	11.4
Severely stunted	66	18.9
Total	350	100
Weight for age (underweight)		
Adequate	261	74.6
Moderately underweight	39	11.1
Severely underweight	50	14.3
Total	350	100
Weight for height (wasting)		
Adequate	296	84.6
Moderately wasted	28	8.0
Severely wasted	26	7.4
Total	350	100
Body Mass Index of the mothers		
Underweight	15	4.3
Normal	224	64.0
Overweight	102	29.1
Obese	9	2.6
Total	350	100

Table 6: Relationship between nutritional status of the mothers and children

Variable	Underweight N (%)	Normal N(%)	overweight N (%)	Obese N (%)	Total N (%)	P-value
Weight for height						
Adequate	13(3.7)	194(55.4)	83(23.7)	6(1.7)	296(84.6)	
Moderate	2(0.6)	13(3.7)	11(3.1)	2(0.6)	28(8)	
Severe	0(0.0)	17(4.9)	8(2.3)	1(0.3)	26(7.4)	
Total	15(4.3)	224(64.0)	102(29.1)	9(2.6)	350(100)	0.171
Height for age						
Adequate	12(3.4)	166(47.4)	64(18.2)	2(0.6)	244(69.7)	
Moderate	0(0.0)	25(7.1)	13(3.7)	2(0.6)	40(11.4)	
Severe	3(0.9)	33(9.4)	25(7.1)	5(1.4)	66(18.8)	
Total	15(4.3)	224(64.0)	102(29.1)	9(2.6)	350(100)	0.019
Weight for age						
Adequate	10(2.9)	173(49.4)	75(21.4)	3(0.9)	261(74.5)	
Moderate	1(0.3)	24(6.9)	11(3.1)	3(0.9)	39(11.1)	
Severe	4(1.1)	27(7.7)	16(4.6)	3(0.9)	50(14.2)	
Total	15(4.3)	224(64.0)	102(29.1)	9(2.6)	350(100)	0.224

P<0.05 is considered significant

Factors Associated with Knowledge and Practice of Breastfeeding

Table 7 shows that maternal age, family structure, number of parity, occupation and monthly income of the mothers are factors found to be significantly associated with the knowledge of breastfeeding. Although educational level of the mothers was not significantly associated with the knowledge of breastfeeding, the findings shows that the older the women, the more knowledgeable they are about breastfeeding. Also, the higher the parity among the women the higher the level of knowledge of breastfeeding

Age of the mothers, marital status, religion, family structure, number of parity, educational qualification, occupation and monthly income of the mothers were not significantly associated with practice of exclusive breastfeeding among the mothers.

Table 7: Factors Associated with Knowledge and Practice of Exclusive Breastfeeding

Variable	X^2	P-value
Knowledge of exclusive breastfeeding		
Age of the mothers	2.08	0.003
Religion	1.57	0.054
Marital status	1.97	0.781
Family Structure	1.26	0.005
Number of parity	2.35	0.030
Education Qualification of the mother	2.46	0.280
Occupation of the mother	3.08	0.685
Monthly income of the mother	2.01	0.001
Practice of exclusive breastfeeding		
Age of the mothers	3.08	0.819
Religion	1.57	0.262
Marital status	1.97	0.243
Family Structure	1.26	0.720
Number of parity	2.35	0.178
Education Qualification of the mother	2.46	0.997
Occupation of the mother	3.08	0.711
Monthly income of the mother	2.01	0.812

P<0.05 is considered significant

Discussions

The initiation of baby friendly hospital initiative (BFHI) is one of the interventions to improve the knowledge and practice of breastfeeding among mothers. More than two- third (85.7%) of the mothers had adequate knowledge about breastfeeding. Previous study had also shown that Nigeria mothers have adequate knowledge about breastfeeding [5].However a study carried out in a military barracks in South-Western Nigeria reported that only 19.6 % of mothers have good knowledge on breastfeeding[6]. Previous studies have also confirmed that women are aware of EBF and that hospitals are important channels for disseminating of EBF information[7]. More than half (70%) of the mothers in this study got information on EBF from hospitals and clinics. This shows that the hospital is the primary source of information on EBF.

Infants and young child feeding guidelines recommended that all newborn should start breastfeeding immediately, within the first hour after delivery[8]. Only a quarter (28.6%) of the mothers in this study initiated breastfeeding within the first hour of delivery while 33% initiated breastfeeding after an hour. In Taiwan, it was found out that the rate of breastfeeding initiation within 1hr was l5% [9]. Another study in Lagos Nigeria, found that 59.2% of mothers initiated breastfeeding within one hour after birth[10]. Early breastfeeding initiation has been found to increase mother to child bonding, regulate infant temperature, breathing and enhance breastfeeding longevity[11].

Adequate nutrition during infancy is important for normal growth and development. WHO defined exclusive breastfeeding as the period when an infant receives only breast milk from its mother or a wet nurse or expressed breast milk and no other liquid or solids with the exception of drops of syrups consisting of vitamins, mineral supplements or medicines[12]. About 72.9 % non-adherences were observed. A study in Malawi, reported that 58% of mothers started practicing mixed feeding, including introduction of water, traditional medicine and formula milk to their babies before six months[13].
The 2013 Nigeria Demographic and Health Survey reported that 17% of mothers in Nigeria practiced exclusive breastfeeding[14]. The finding of this study shows that 16.4% of mothers practice exclusive breastfeeding. A prevalence of 82% has however been reported in Lagos Nigeria[10] and 31% in Sokoto, Nigeria, [15]. In East Asia Pacific, it was found that 43% mothers practiced exclusive breastfeeding and 41% in East/South Africa[16]. This implies that practice varies widely across the globe with different culture.

Poor practice of the use of expressed breast milk is observed in this study. In a study conducted in Jos, Nigeria it was reported that, mothers would not use expressed breast milk, because they believed that expressed milk was unsafe[17]. Abosede and Esanbodo noted in their study that the practice of feeding infant with expressed breast milk was culturally unacceptable among Yoruba mothers, because they perceived that breast milk could easily be contaminated, poisoned or bewitched[18]. Again, storage conditions may often not be optimal especially in a developing country like Nigeria where there is continuous fluctuations in electricity supply. Milk stored for long periods is at greater risk of deterioration and bacterial contamination. It has been reported that though human milk has immune protective properties which protects it from contamination, these properties are stable when milk is stored at room temperature for 8hrs, refrigerated at 0-4^{0}C or frozen at -20^{0}C for 12months[19].

Complementary feeding is the introduction of other foods and liquid alongside breast milk when breast milk alone is no more sufficient to meet the nutritional requirement of the infants[20]. The introduction of complementary food at the right time during infancy is necessary for nutritional and developmental reasons and aids the ease of transition from milk feeding to family foods[21]. More than half (55.1%) of mothers introduced complementary food after 6 months. Studies have shown that when complementary foods are introduced early and too frequently, it displaces breast milk as the major source of nutrition[22]. This can lead to diarrhea, growth faltering and mortality in the infant since some of these complementary foods given are not nutritionally adequate and are mostly given in in-sufficient amount.

WHO recommends that from age 6 months nutritional needs (especially energy) of infant cannot be met by breast milk alone and complementary feeding needs to fill the energy and nutrients gap[20]. Dewey and Brown stated the importance of using locally available food items for complementary feeding guided by the principles of acceptability, low price and accessibility of raw materials[23]. It has been stated that feeding infant with pap alone (maize or sorghum gruel) will not meet the energy requirement due to high moisture content of pap[24]. It is important that nutrient dense food from different food groups (like legumes, nuts and animal pro-

tein) should be combined with cereals for infants to meet their requirement.

WHO Global and National Infants and Young Child Feeding Guidelines recommends that breastfeeding on demand should continue with adequate complementary feeding up to 2 years or beyond[20]. The result of this study shows that only 0.7% of the mothers stopped breastfeeding at 24 months and 15.4% of the mothers stopped breastfeeding at 18 months. The NDHS report shows that the median duration of continued breastfeeding is 18 months in Nigeria[15]. Breastfeeding remains a critical source of nutrients for the young infant and child even after introducing complementary foods. It provides about half (½) of an infant's energy needs up to the age of one year, and up to one third (1/3) during the second year of life. Breast milk continues to supply higher quality nutrients than complementary foods, and also has protective factors[24].

In another study it was asserted that an attempt to improve maternal and child health care is often frustrated because normative practices differ quite markedly from recommendations, due to different reasons. For example, perceived milk insufficiency, work activities and lack of social support, often determine maternal intention to initiate and maintain breastfeeding[25].

The prevalence of stunting in South-Asia was reported to be 38%, underweight 32% and wasting 16%[26]. In Nigeria, the NDHS reported that the prevalence of stunting is 37%. Underweight is 29% and wasting 18%[15]. The finding of this study is similar to the NDHS report. The aetiology of stunting has been shown to be complex; inadequate nutrition and infection are among factors that play major role leading to stunting[27]. Similarly, some infant feeding practices are inappropriate and this may be a contributing factor to the increase in prevalence of stunting during the first 18 months of life. This implies that inadequate breastfeeding practices observed in this study may be one reason for the high prevalence of stunting, wasting and underweight among this group.

The prevalence of stunting was high among the children and overweight was also high among mothers. Double burden of malnutrition in form of Stunted Child and Overweight Mothers (SCOWT) pairs exist in this study area and the prevalence is found to be notable and may require intervention. Epidemiological evidence suggest a link between maternal and child nutrition as early as gestation, and that maternal nutrition can influence the risk of child stunting and subsequent obesity in adulthood[28].

As economic development and urbanization precede globally, the coexistence of under-nutrition and over-nutrition within the same household which is often described as the dual burden of malnutrition is increasingly being reported both in low and middle income countries[29]. Nutrition transition which brought about the major change in the nutritional profile of human populations resulted from a shift from traditional diet to the westernized diet[30]. The co-existence of over and under-nutrition has important public health consequences as child under-nutrition severely limits human potential and life expectancy, while obesity is a risk factor for diabetes and heart diseases [31].

Maternal age, family structure, number of parity and monthly income of the mothers were found to be significantly associated with knowledge of the mothers on breastfeeding. Though educational level of the mothers was not significantly associated with knowledge of breastfeeding, the high level of knowledge of breastfeeding among this group of women may be due to the experienced gained from previous birth. It has however been reported that education was significantly related to duration of breastfeeding and that mothers with higher educational level are likely to continue breastfeeding than mothers with low or no formal education in USA[32]. A study in Sagamu, South-West Nigeria reported that educational level, age, occupation, marital status and ethnicity were not significantly related to knowledge of breastfeeding among mothers. It was also reported in the same study that there was no significant association between maternal education, age, ethnicity, marital status and practice of exclusive breastfeeding among mothers[33].

Conclusion

Mothers in this study had adequate knowledge of breastfeeding which can be attributed to information from hospital. However, despite the adequate knowledge of breastfeeding few mothers breastfed exclusively. About a quarter of mothers initiated breastfeeding within 1hr after delivery, while expression of breast milk among mothers in this study seems not to be culturally acceptable. Most mothers terminated breastfeeding completely at 18months. The prevalence of stunting was high among the children and overweight was high among mothers. The hospitals and health officials should not relent to encourage and support mothers on good breastfeeding practices.

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