



ORIGINAL ARTICLE

Breastfeeding Knowledge and Practices among Mothers of Children under 2 Years of Age Living in a Military Barrack in Southwest Nigeria

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ABSTRACT

Background: Human milk is uniquely superior as a source of nutrition for infants, and breastfeeding has many benefits. This study determined the breastfeeding knowledge and practices of women who have children aged 0-2 years living in a Naval Barracks.

Methods: This descriptive cross sectional study was carried out among 220 women in a Naval Barracks selected using systematic random sampling method. Pre tested questionnaires were administered by trained interviewers, and data was analyzed using Epi info 2000 and Statistical Package for Social Sciences version 19.

Results: There was generally fair knowledge about breastfeeding among the women. Most of the respondents (97.3%) had ever breastfed their babies, 56.5% of them initiated breastfeeding within an hour of delivery, 24.1% admitted that they gave pre lacteal feeds, 74.1% practiced exclusive breastfeeding for a mean period of 4.98 months and 30.7% engaged in bottle-feeding. Several factors were significantly associated with breastfeeding practices.

Conclusions: Breastfeeding practices varied among the respondents despite the fair knowledge.

Global Health Implications: This study reveals the need to educate women and communities worldwide particularly in low-income countries about good breastfeeding practices. Targeting these women will help to improve maternal and child health.

Key words: Breastfeeding Practices • Military Barracks • Breastfeeding Knowledge • Nigeria

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Introduction

Breastfeeding practices include the timing and initiation of breastfeeding, exclusive breastfeeding,

giving of pre lacteal feeds, breastfeeding on demand, giving of supplementary feeds, and whether or not a feeding bottle is used.^[1,2] To derive maximum benefits from breastfeeding, the World Health Organization

(WHO) recommends exclusive breastfeeding for the first six months of life.^[3,4] Thereafter, nutritious and safe complementary foods are to be added while the mother continues to breastfeed the infant till the age of two years or beyond.^[5]

Despite WHO's recommendations on breastfeeding, the global picture falls short of these standards, as only 35% of infants worldwide are exclusively breastfed.^[5,6] The 2013 Nigeria Demographic and Health Survey (NDHS) reported an exclusive breastfeeding rate of 17% for the first 6 months of life.^[7] Only 38% of mothers initiate breastfeeding early, and low socioeconomic status was found to be associated with a decrease in the exclusive breastfeeding rates.^[8,9]

The Health For All initiative (HFA) sought to increase by 2015, the percentage of all infants being exclusively breastfed to 80%.^[10] The United Nations Children's Fund (UNICEF) recommends that 90% of infants less than 6 months of age in developing countries should be exclusively breastfed.^[8] For Nigeria to meet these recommendations, an understanding of the factors associated with reduced exclusive breastfeeding rates is important for solutions addressing these factors to be proffered. The United Nations Millennium Development Goal (MDG) 4 aims to reduce infant mortality from about 100 deaths per 1000 live births to a target of 35 deaths per 1000 live births by the year 2015.^[8] Studies have shown an inverse relationship between exclusive breastfeeding and infant mortality rates in developing countries.^[11,12] Appropriate infant feeding practices are required if Nigeria is to achieve this goal.^[8]

Within Nigeria, breastfeeding rates vary widely with a very high rate reported in a study conducted in Sokoto state where the exclusive breastfeeding rate for the first 6 months of life was found to be 78.7%, but only 8% of mothers initiated breastfeeding within the first hour after delivery.^[13] In Calabar, Southern Nigeria, an exclusive breastfeeding rate of 22.9% was reported in infants less than 6 months old.^[14] A study conducted in Edo State, Nigeria, reported that although 82% of the women were breastfeeding their babies, only 20% did so exclusively for 6 months.^[15] Another study in Edo State revealed that 16% of the

mothers introduced bottle feeding to their infants when they were just 3 weeks old.^[16] In Ile-Ife, Oyo State, Nigeria, a relatively high rate of exclusive breastfeeding of 61% was reported.^[17] However, in Igbo- Ora, Oyo State, 99.8% of the mothers sampled in a study gave plain water to their infants at birth.^[18] Less than half of these women had heard about exclusive breastfeeding, and only 7.5% of them knew any mother who was practicing exclusive breastfeeding.^[18] This great variability in breastfeeding practices and reported decline in exclusive breastfeeding rates in Nigeria is worrisome, as an estimated 13% reduction of infant mortality rates can be achieved with exclusive breastfeeding.^[8]

There is however a paucity of published works conducted in Military Barracks which houses a unique community with a rich multi-ethnic and cultural diversity in an urban area.^[19] A study within this community is therefore very important as it would reveal the areas where challenges are being faced. It would also provide information about how early breastfeeding is initiated, exclusive breastfeeding rates, and identify undesirable practices, adding to the body of knowledge on breastfeeding practices in the community. The information gathered will help policy makers and health facility managers to design and implement interventions that would enable more infants and nursing mothers have access to the unequalled benefits of breastfeeding. Families and the society as a whole would also benefit from the economic and environmental benefits of breastfeeding such as reduced costs from childhood illnesses and infant mortality, reduced environmental burden for the disposal of bottles and formula cans, reduced energy demands for the production and transportation of artificial feeding products.^[20]

This study therefore set out to assess the breastfeeding knowledge and practices, as well as the factors influencing breastfeeding practices among the women.

Methodology

Description of study area

The study site was Navy Town, the largest of the three Nigerian Navy Barracks in Lagos State. Lagos

State is located in South-Western Nigeria, on the Atlantic coast in the Gulf of Guinea.^[21] Lagos lies on longitude 3° 24' E and latitude 6° 27' N.^[21] The city of Lagos is currently the second most populous city in Africa and has an estimated population of about 7,937,932 people.^[21] Lagos has a tropical climate with distinct wet and dry seasons.

In Navy Town, there are 689 habitable houses for Officers in the Officer's Quarters and 3,347 for Ratings in the Ratings Quarters. Navy Town has an estimated population of about 18,000 residents. Medical care is provided for the residents at the Nigerian Navy Reference Hospital within the Barracks. Navy Town has 3 Primary and 2 Secondary Schools. The Barracks also has a Mammy Market, a Golf Club and a Sailing Club for recreation. The Barrack was purposively chosen because of its unique multi-ethnic diversity. Despite this cultural diversity, there is a paucity of published works on breastfeeding practices among mothers resident in Military Barracks in Nigeria.

The study population consisted of the women who live in Navy Town and have children aged 0-2 years. The study was cross sectional and descriptive in design and the sample size of 198 was determined using the appropriate formula. The minimum sample size calculated was increased by 10%, giving a total of 220. The sampling technique was systematic random sampling. All houses that had children aged 0-2 years were identified in both Officers and Ratings Quarters. These were 1,424 and served as the sampling frame which was divided by the calculated sample size 220 ($1424/220 = 6.5$), yielding a sampling interval of 7. Therefore, every 7th house among these identified houses was selected. The first house was selected by a ballot (simple random sampling) from among the first 7 identified houses in the Ratings Quarters. All consenting women who met the inclusion criteria (18 years and above with a child between 0 and 2 years) were recruited for the study and interviewed until the sample size was attained.

An interviewer-administered, pre-tested questionnaire (Appendix 1) was used to collect data, and it consisted of questions on socio-demographic information, knowledge about correct breastfeeding

practices, and the actual practice of correct breastfeeding practices. The interviewers were made up of the researcher and 8 research assistants who had undergone training for 2 days prior to data collection. House-to-house data collection was done from the 18 – 22, June 2011. A total of 220 questionnaires were administered.

Data were analyzed using Epi 2000 and the Statistical Package for Social Sciences (SPSS) version 19. The right answers to the questions in the knowledge section were selected by the researcher and the answers provided by the respondents were evaluated against these standard answers. Each correct answer was awarded a score of one, while a wrong answer was awarded a score of zero. The total score was calculated by summing up all the awarded scores, and these were converted to percentages. A knowledge grade was assigned to each respondent based on their total percentage score. This knowledge grade was a scale of performance based on standards previously used by knowledge, attitude and practice studies carried out in Lagos, Nigeria, and is as follows:^[22,23] poor knowledge rated as percentages from 0-49%; fair knowledge rated as 50-74%; and good knowledge rated as 75-100%.

Univariate, and bivariate analyses were conducted with level of significance set at 0.05 and a 95% confidence interval used.

The nature of the study was explained to the participants and written informed consent was obtained from the subjects prior to participation in the study. Permission was obtained from the Commanding Officer of the Nigerian Naval Ship (NNS) Wey, the authority in charge of the Barracks. Ethical approval was obtained from the Lagos University Teaching Hospital (LUTH) ethics committee.

Results

Socio-demographics

The mean age of the respondents was 30.1 ± 5.0 years, (SE ± 0.3371) although a larger proportion of them were aged 25-34 years (72.7%). Majority (91.8%) of the respondents were married, mainly in a monogamous relationship, with a larger proportion

being of Hausa origin (27.3%), Yoruba (24.1%), Igbo (23.6%), others (25%) included Bini, Ijaw, Efik, Idoma and Fulani. Over three quarters (76.8%) of the respondents were Christians (Table 1).

The majority of the respondents (58.2%) had at least a secondary school education, with about 3.6% (SE± 0.053) not having any formal education. Housewives made up about 36.4% of the respondents, while 15.5% of them were students and 13.6% of them were professionals. Almost half of the respondents (45.9%) did not report any monthly income. Among those who reported an income,

most of them (22.3% of all respondents) reported an income in the range of ₦6000 - ₦20,000 per month (currently about \$28-\$95 US dollars). About 78.2% of the respondents were wives of military personnel.

Over a third of the respondents had 2 children, and the mean number of children per respondent was 2.25 ± 1.12 . (SE± 0.075) Almost a third (32.2%) of the children were aged 0-6 months, and there were slightly more males (51.4%) than females. Over three quarters (82.3%) of the respondents claimed to have heard of exclusive breastfeeding and among these, the major source of this information was a health facility (76.8%).

Table 1: Socio-demographic characteristics of mothers in the study

Socio-demographic variables	Frequency	Percentage
Age of mother (years)	n=220	
15-24	24	10.9
25-34	160	72.7
35-44	31	14.1
45-54	5	2.3
Marital status	n=220	
Single	4	1.8
Married	202	91.8
Divorced/separated	3	1.4
Widow	3	1.4
Unmarried but cohabiting with partner	8	3.6
Type of marriage	n=202	
Monogamous	196	97.0
Polygamous	6	3.0
Ethnic group	n=220	
Hausa	60	27.3
Igbo	52	23.6
Yoruba	53	24.1
Others	55	25.0
Religion	n=220	
Christian	169	76.8
Muslim	51	23.2
Educational level		
No school	8	3.6
Primary	4	1.8
Secondary	128	58.2
Tertiary	64	29.1
Post graduate	16	7.3

Timing and benefits of breastfeeding

Table 2 shows that 9.5% of respondents correctly identified the protection of the mother from some diseases as an advantage of breastfeeding. Less than half of the respondents (41.4%) were aware that breastfeeding should commence within an hour of delivery. A majority (88.6%) knew that a baby should not receive pre lacteal feeds. About 88.2% of the respondents correctly acknowledged that colostrums should be fed to a baby. About 12.3% of them were aware that breastfeeding should continue for up to 2 years or more. One hundred and thirty-four (60.9%) of the respondents were aware that breast milk could be preserved, and 97% of these ones correctly identified a method of preservation as refrigeration. The least known disadvantage of feeding bottle use among the respondents was that it could result in feeds that were too hot, too cold, too thick or watery, (only 25% of them correctly identified it as a disadvantage of bottle-feeding).

Knowledge of breastfeeding

The mean knowledge score of the respondents was $56.67 \pm 17.57\%$, and 33.6% of respondents had poor knowledge, 46.8% fair knowledge, while 19.5% had good knowledge about breastfeeding.

Prevalence of breastfeeding practices

Majority (97.3%) of the women had practiced breastfeeding at one time or the other. The prevalence of timely breastfeeding initiation was 56.5%, and 53 (24.1%) of the respondents gave their babies pre lacteal feeds, among whom only 51 mothers gave

Table 2: Distribution of mothers according to knowledge of breastfeeding

Knowledge about breastfeeding	Correct responses		SE
	Frequency (n=220)	Percentage	
Advantages of breastfeeding			
Breast milk contains all the nutrients a baby needs	190	86.4	0.023
Protects baby from certain diseases	163	74.1	0.030
It is cheaper to breastfeed	97	44.1	0.034
It is convenient	92	41.8	0.033
Can help with child spacing	78	35.5	0.032
Protects mother from some diseases	21	9.5	0.020
Promotes infant- mother bonding	91	41.4	0.033
Breastfeeding practices			
Breastfeeding initiation within an hour of delivery	91	41.4	0.045
Baby should not receive other feeds before breast milk	195	88.6	0.021
Baby should receive colostrums	194	88.2	0.017
Correct meaning of exclusive breastfeeding	172	78.2	0.033
Duration of exclusive breastfeeding as 4-6 months	100	45.5	0.045
Breastfeeding should continue for 24 months or more	27	12.3	0.062
Expressed breast milk can be preserved	134	60.9	0.033
Refrigeration can preserve expressed breast milk	130 (n=134)	97.1	0.015
Disadvantages of bottle feeding (n=220)			
Baby may pass frequent watery stools with the use of unsterilized feeding bottles	162	73.6	0.030
Baby may not want to suckle at breast anymore	86	39.0	0.033
Baby may pass frequent watery stools when hands are not well washed	119	54.1	0.034
Feeds may be too hot, cold, watery or too thick	55	25.0	0.029
Cannot make baby take more feeds	182	82.7	0.026

*SE=Standard error of measurements

more information about the practice. Among these 51 mothers, the commonest fluid given was water with the commonest reason being that the breast milk was not flowing. Among the respondents, the prevalence of exclusive breastfeeding was 74.1%, while 55.8% had practiced exclusive breastfeeding for 6 months (Table 3).

Among the 57 women who did not breastfeed their babies exclusively, only 45 of them gave a reason for not breastfeeding exclusively, the commonest reason being that they felt the babies were not satisfied with their milk (28.9%). About 30.9% of respondents admitted to engaging in bottle-feeding of their infants.

The knowledge score of the respondents was significantly associated with the use of pre lacteal

feeds, the practice of exclusive breastfeeding, and the use of a feeding bottle. A larger proportion of those who gave pre lacteal feeds and those using feeding bottles had fair breastfeeding knowledge and only 5.9% of those using feeding bottles had good knowledge of breastfeeding (Table 4). The mother's education, marital status, and the type of marriage were significantly associated with knowledge about breastfeeding ($p < 0.05$). However, none of the socioeconomic factors was significantly associated with early initiation of breastfeeding.

Discussion

Majority of the respondents in this study had at least a secondary education (58.2%), and 3.6% had undergone no formal schooling. This is similar to the findings in the study conducted in Ekiti State

Table 3: Breastfeeding practices of the mothers in the study

Breastfeeding practices	Frequency (n=220)	Percentage	SE
Baby ever breastfed	214	97.3	0.011
Breastfeeding initiated within an hour of delivery	121 (n=214)	56.5	0.075
Practiced exclusive breastfeeding at all	163	74.1	0.030
Practiced exclusive breastfeeding for 6 months	91	41.4	0.141
Use of pre lacteal feeds	53	24.1	0.031
Specific fluids/feeds given as pre lacteal feeds (n=53)			
Plain water	25	47.2	0.169
Glucose	21	39.6	
Infant formula	2	3.8	
Others	3	5.7	
No response	2	3.8	
Reasons for giving the feed/fluid (n=53)			
Breast milk did not flow	30	56.6	0.133
It is a tradition	10	18.9	
Baby was hungry	8	15.1	
Others	3	5.7	
No response	2	3.8	

*SE=Standard error of measurements

Table 4: Association between level of knowledge about breastfeeding and breastfeeding practices among mothers in the study

Breastfeeding practice	Level of knowledge			Test of significance	p- value
	Poor knowledge (%)	Fair knowledge (%)	Good knowledge (%)		
Ever breastfed (n=214)	70 (32.7)	102 (47.7)	42 (19.6)	Fishers exact=3.001	0.212
Timely breastfeeding Initiation (n=121)	38 (31.4)	61 (50.4)	22 (18.2)	Fishers exact=5.905	0.662
Use of pre lacteal feeds (n=53)	22 (41.5)	29 (54.7)	2 (3.8)	Fishers exact=20.055	0.000
EBF (n=163)	43 (26.4)	78 (47.9)	42 (97.7)	$\chi^2=22.450$, df=2	0.000
Use of a feeding bottle (n=68)	26 (38.2)	38 (55.9)	4 (5.9)	$\chi^2=11.746$, df=2	0.003

where 5% of respondents had not gone to school, although it differed in that the majority in that study had a tertiary education.^[20] Majority of the respondents were housewives (36.4%) and almost half of the respondents reported no income (45.9%). Among those that reported an income, the majority had an income in the range, ₦6000 – ₦20,000 (US \$40 - \$133) per month. These reveal a very low-income rate among these women in the barracks, and is similar to the reported income in the study in Ekiti State where 58% of respondents' monthly income was in a similar range.^[20] The

situation was, however, very different in a study in Edo State where 40% of respondents had no formal education and 61% earned less than ₦5000 per month.^[15] The generally little or no income is however constant and indicative of the general low economic status of women in the country, a common finding in low income countries.

About 82.3% of the respondents in this study had ever heard about exclusive breastfeeding. This proportion is considerably higher than the report from a study conducted in Igbo-Ora, Oyo State, where less than half of the respondents had ever

heard about exclusive breastfeeding.^[18] This must be because Igbo Ora is a rural area compared to the urban Military Barracks. A majority of respondents in this study (88.6%) were aware that a baby should not receive any other feeds before breast milk, unlike a study conducted in Tanzania in which 86% of mothers in rural areas and 65% of those in urban areas believed that water should be given to an infant just after delivery.^[24] This may have been a cultural practice in these regions in Tanzania which was not prominent in the culturally diverse and urban Navy Town where respondents may have been exposed to repeated health education on the subject at the Hospital located in the area. These may account for the better knowledge among respondents in this study when compared to that conducted in Tanzania although both were conducted in urban areas.

In this study, only 56.5% of respondents reported a timely initiation of breastfeeding (within an hour of delivery). The timely initiation rates are higher in other countries such as United States where 73% achieved this and in Turkey where 62% achieved this.^[10,25] This may be as a result of better and more efficient health facilities in these regions. A study conducted in Sokoto State, Nigeria, reported that only 8% of the respondents initiated breastfeeding within an hour of delivery.^[13] The situation reported from Southwestern Nigeria (Sagamu) was just a little better with 17%, and Ilesha, Oyo State, with 37.4% of mothers initiating breastfeeding within the first hour of birth as reported by studies conducted in these parts of the country.^[26,27] The timely breastfeeding initiation rates from this study are even higher than the figure of 38% of mothers practicing early initiation of breastfeeding reported by the United Nations Children's Fund (UNICEF).^[9] Our findings indicate that breastfeeding initiation rates can be improved with further research and understanding of the factors responsible for the better rates found in this study when compared with other studies in Nigeria.

Among the respondents in this study, 24.1% gave their infants pre lacteal feeds or fluids, the commonest of which was plain water. A study conducted in India reported that 15% of respondents gave pre

lacteal feeds.^[28] This lower value may be as a result of cultural differences in the two populations. The prevalence of giving pre lacteal feeds was, however, reported to be higher in the study conducted in Tanzania where most of the mothers gave pre lacteal feeds.^[24] In Nigeria, a study conducted in Ilesha reported that 36.6% of the infants received pre lacteal feeds.^[17] This is higher than the finding from this study and may also be due to different cultural practices within the country.

According to the 2013 NDHS, exclusive breastfeeding rate for the first 6 months of life in Nigeria was 17%.^[7] This figure is lower than the prevalence of exclusive breastfeeding from this study which was 74.1%, but closer to the 41.4% who had breastfed exclusively for the recommended 6 months. In other parts of Nigeria and the world, the rates vary considerably with rates as high as 78.7% as reported from a study conducted in Sokoto State of Nigeria, 91% in Ekiti State, 61% in Ile-Ife, 21.4% in Ilesha, 22.9% in Calabar, Southern Nigeria, and 20% in Edo State.^[13-15,17,20,27]

The disparity in the prevalence is probably because of differing cultures and access to health education in these communities within the same country. In Africa, a study conducted in Kenya reported an exclusive breastfeeding rate of 34%, and in Mozambique 37%.^[1,29] Exclusive breastfeeding rates of 53.4%, 43.1% and 23.5% have been reported from neighboring countries in Africa, namely Ghana, Benin and Cameroun.^[8] In the Northern part of Africa, exclusive breastfeeding rates in Egypt and Eritrea have been reported to be 78% and 76% respectively.^[30] These are similar to the rates reported in this study. In a community based study in Turkey, 50.6% of the respondents were exclusively breastfeeding their babies.^[31] Another study in Turkey however reported an exclusive breastfeeding rate of 22.4%.^[10] This shows that the large disparities in exclusive breastfeeding rates are not limited to Nigeria. The findings also show that it is possible to attain those desired high exclusive breastfeeding rates and are a call to action for countries like Nigeria to ensure there is widespread dissemination of appropriate health education and provision of support structures such as crèches to encourage

women to exclusively breastfeed their infants for the first six months of life.

The prevalence of bottle feeding in this study was 30.9%, yet knowledge about the disadvantages of bottle feeding was poor. This is worrisome as it shows that these women were engaged in a practice about which they had little knowledge. A prevalence of 43.7% bottle feeding was reported in a survey conducted in Italy among families from the Mahgreb in Northern Africa.^[32] Even higher rates of bottle feeding have been reported in Edo State of Nigeria where 70.4% of the rural women combined bottle feeding with breastfeeding.^[16] In Igbo Ora, Southwest Nigeria, however, about 30.2% of the infants were bottle-fed which is in tandem with the findings of this study.^[27]

Concerning factors associated with knowledge about breastfeeding practices, the mother's level of education, marital status, type of marriage, occupation, and child's age were found to be significantly associated with knowledge about breastfeeding practices. Knowledge was significantly associated with some breastfeeding practices in that a larger proportion of those who gave pre lacteal feeds and those using feeding bottles had only fair breastfeeding knowledge and only 5.9% of those using feeding bottles had good knowledge about breastfeeding which is a source of concern and may be the tip of an iceberg of breastfeeding-related issues in the general community.

In a study conducted in Edo State, maternal age, education, marital status, income, proximity to the baby and spousal influence were factors reported to influence the practice of breastfeeding among the mothers sampled.^[15] Some of these are in agreement with the findings of this study but factors such as income was not significant, while proximity to baby and spousal influence were not elicited. Income may not have been significant on account of the generally little or no income of the respondents in this study, although this helps to make the study easier to relate with those from other low income countries.

Limitations

A limitation of this study was recall bias as the mothers had to recall their breastfeeding practices,

therefore further research is required to measure practice by direct observation via home visits. In addition, this study was a cross-sectional and can therefore not demonstrate causality.

Conclusion and Global Health Implications

In conclusion, this study has demonstrated the knowledge gap that exists among mothers of infants in a Naval Military Barrack about breastfeeding and breastfeeding practices. Findings of the study underscore the need for health education of mothers and prospective mothers at every opportunity to improve their knowledge about breastfeeding and eventually their breastfeeding practices. This is very important for all health workers particularly clinicians (Obstetricians and Gynecologists, and Pediatricians) with whom the women usually come in contact during the course of pregnancy, delivery and in the post partum period to educate the women about breastfeeding at every contact and avoid missed opportunities. Community vigilance about the education of the girl child is advocated, given that girl-children will eventually become mothers. The community and the government should work together to ensure that every girl-child is educated, and that workplace support for breastfeeding mothers are provided and improved upon.

This study demonstrates the need to educate women and communities in low-income countries, and worldwide, about good breastfeeding practices such as early commencement of breastfeeding, the dangers of giving pre lacteal feeds and bottle feeding of infants. Targeting these women will potentially help improve maternal and child health. In addition, interventions to improve breastfeeding knowledge and practice among women living in Military barracks will help to close the identified gaps and improve the wellbeing of both mothers and babies living in such environments.

Conflict of Interest: *The authors declare no conflicts of interests relevant to this study.*

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Key Messages

- There is a need to educate women particularly in low-income countries about good breastfeeding practices such as early commencement of breastfeeding.
- More women with poor knowledge of breastfeeding were engaging in potentially harmful practices such as giving pre lacteal feeds and bottle-feeding of infants underscoring the need for interventions to improve their knowledge in order to reduce such practices.

References

1. Muchina EN, Waithaka PM. Relationship between breastfeeding practices and nutritional status of children aged 0-24 months in Nairobi, Kenya. *African Journal of Food Agriculture Nutrition and Development* 2010 April; 10(4): 2358-2378.
2. Hussein AK. Breastfeeding and complementary feeding practices in Tanzania. *East African Journal of Public Health* 2005 April; 2 (1):27-31.
3. Hannula L, Kaunonen M, Tarkka MT. A systematic review of professional support interventions for breastfeeding. *Journal of Clinical Nursing* 2008;17: 1132-1143.
4. Graffy J, Taylor J. What information, advice and support do women want with breastfeeding? *Birth* 2005 Sept; 32(3): 175-186.
5. WHO, UNICEF. Global strategy for infant and young child feeding. World Health Organization 2003. Available from <http://whqlibdoc.who.int/publications/2003/> Accessed on 22nd April 2011.
6. Dykes F, Flacking R. Encouraging breastfeeding: A relational perspective. *Early Human Development* 2010 Nov; 86(11): 733-736.
7. National Population Commission (NPC) [Nigeria] and ICF International. 2014. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. Pages 175-192
8. Agho KE, Dibley MJ, Odiase JI, Ogbomwa SM. Determinants of exclusive breastfeeding in Nigeria. *Biomed Central Pregnancy and childbirth* 2011; 11:2. doi:10.1186/1471-2393-11-2.
9. United Nations Children's Fund. At a glance: Nigeria statistics 2011. Available from www.unicef.org/infobycountry/nigeria_statistics.html Accessed on 7th May 2011.
10. Yesildal N, Aytar G, Kocabay K, Mayda AS, Dagli SC, Bahcebasi T. Breastfeeding practices in Duzce, Turkey. *Journal of Human Lactation*. 2008; 24(4): 393-400.
11. Mani K, Dwivedi SN, Pandey RM. Determinants of Under-Five Mortality in Rural Empowered Action Group States in India: An Application of Cox Frailty Model. *International Journal of MCH and AIDS* 2012;1(1):60-72.
12. Azuine RE, Murray J, Alsafi N, Singh GK. Exclusive Breastfeeding and Under-Five Mortality, 2006-2014: A Cross-National Analysis of 57 Low- and-Middle Income Countries. *International Journal of MCH and AIDS* 2015;4(1):13-21.
13. Oche MO, Umar AS. Breastfeeding practices of mothers in rural a rural community of Sokoto, Nigeria. *Nigerian Postgraduate Medical Journal* 2008 June;15(2):101-104.
14. Ekure EN, Antia-Obong OE, Udo JJ, Edet EE. Maternal exclusive breastfeeding practice in Calabar, Nigeria: Some related social characteristics. *Nigerian Journal of Clinical Practice* 2003;6(2):92-94.
15. Salami LI. Factors influencing breastfeeding practices in Edo State, Nigeria. *African Journal of Food and Agriculture, Nutrition and Development online* 2006;6(2).
16. Alutu ANG, Orubu AO. Barriers to successful exclusive breastfeeding practices among rural and urban nursing mothers in Edo State of Nigeria: Implication for education and counseling. *Research Review NS* 2005; 21(2):27-35.
17. Ojofeitimi EO, Esimai OA, Owolabi OO, Oluwabusi, Olaobaju OF, Olanuga TO. Breastfeeding practices in urban and rural health centers: Impact of Baby Friendly Hospital Initiative in Ile-Ife, Nigeria. *Nutrition and Health* 2000; 14(2):119-125.
18. Nwankwo BO, Brieger WR. Exclusive breastfeeding is undermined by the use of other liquids in rural Southwestern Nigeria. *Journal of Tropical Pediatrics* 2002 April; 48:109-112.
19. Alabere ID. Comparative assessment of nutritional status of under- five children in Navy Town and Nigerian Army cantonment, Ojo, Lagos State. Dissertation for the award of a Fellowship of the National Medical College of Public Health 2009.

20. Ijarotimi OS. Assessing exclusive breastfeeding, dietary intakes and body mass index (BMI) of nursing mothers on Ekiti State of Nigeria. *Nutrition Research and Practice* 2010 June;4(3):222-228.
21. Wikipedia. Lagos. Available from <http://en.wikipedia.org/wiki/lagos>_ Accessed on 19th May 2015
22. Odusanya OO, Tayo OO. Breast cancer knowledge, attitudes and practice among nurses in Lagos, Nigeria. *Acta Oncologica*. 2001;40(7):844-8.
23. Odusanya OO. Breast cancer: Knowledge attitudes and practices of female school teachers in Lagos, Nigeria. *The Breast Journal* 2001;7(3):171-5.
24. Shirima R, Gebre-Medhin M, Greiner T. Information and socioeconomic factors associated with early breastfeeding practices in rural and urban Morogoro, Tanzania. *Acta Paediatrica* 2001;90:936-949.
25. Murray EK, Ricketts S, Dellaport J. Hospital practices that increase breastfeeding duration: Results from a population – based study. *Birth* 2007 Sept; 34(3): 202-211.
26. Dada OA, Akesode FA, Olanrewaju DM, Olowu OA, Sule- Odu O, Fakoya TA et al. Infant feeding and lactational amenorrhea in Sagamu, Nigeria. *African Journal of Reproductive Health* 2002; 6(2): 39-50.
27. Ogunlesi TA, Dedeke OO, Okeniyi JA, Oyedeji GA. Infant and toddler feeding practices in the Baby Friendly Initiative (BFI) era in Ilesa, Nigeria. *The Internet Journal of Nutrition and Wellness* 2005; vol 1, no 2.
28. Chudasama RK, Patel PC, Kavishwar AB. Breastfeeding initiation practice and factors affecting breastfeeding in South Gujaral region of India. *The internet Journal of Family Practice* 2009, vol 7, no 2.
29. Arts M, Geelhoed D, DeSchacht C, Prosser W, Alons C, Pedro A. Knowledge, beliefs and practices regarding exclusive breastfeeding of infants younger than 6 months in Mozambique: A qualitative study. *Journal of Human Lactation* 2011 Feb; 27(1):25-32.
30. Oweis A, Tayem A, Froelicher ES. Breastfeeding practices among Jordanian women. *International Journal of Nursing Practice* 2009;15:32-40.
31. Karacam Z. Factors affecting exclusive breastfeeding of healthy babies aged 0-4 months: A community based study of Turkish women. *Journal of Clinical Nursing* 2008 Feb;17(3):341-9.
32. Venuta A, Vaienti F. Children's feeding practices in families from Mahgreb living in Italy. *The Internet Journal of Nutrition and Wellness* 2006; vol 2, no 2..

APPENDIX I

STUDY QUESTIONNAIRE

BREASTFEEDING PRACTICES AMONG WOMEN WHO HAVE CHILDREN AGED 0-2 YEARS IN NAVY TOWN, LAGOS, NIGERIA.

Introduction

- My name is Modupe Akinyinka, and I am conducting this study in partial fulfillment of the requirements for the award of a Masters degree in Public Health. The aim of the study is to assess breastfeeding practices among the women living in Navy Town who have children aged 0-2 years. Please answer the questions truthfully and freely. All the information provided will be kept strictly confidential, and will be used for research purposes only. Your names are not required and multiple answers are allowed where applicable. Thank you.

Instruction

Please circle the selected answers or write them out in the spaces provided.

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

1. Age as at last birthday? -----

2. **Highest educational level attained:** a) No formal schooling b) Primary
c) secondary d) tertiary e) Post graduate
3. **Marital status:** a) Single b) Married c) Divorced/separated
d) widow/widower e) unmarried but cohabiting with partner
f) Others _____ (please specify)
4. **If married, type of marriage** a) monogamy b) polygamy
5. **Ethnic group:** a) Hausa b) Igbo c) Yoruba
d) Others _____ (please specify)
6. **Religion:** a) Christian b) Muslim c) Traditional religion
d) Others _____ (please specify)
7. **Occupation:** _____ a) Housewife b) Student
c) Unskilled worker (Petty trader, etc) d) Skilled worker (Clerks, Tailors, Hairdressers)
e) Professional (Teacher, Lawyer, Nurse, etc) f) Unemployed
g) Others _____ (please specify)
8. **Nature of work:**
a) Self employed b) Employed by the government c) Employed by a private company
d) Unemployed e) Others _____ (please specify)
9. **Income:** a) Less than or equal to N5000 per month b) From N6000 – N20,000 per month
c) From N21,000 – N50,000 per month d) From N51,000 – N100,000 per month
e) From N101,000 – N200,000 per month f) N201,000 and above
10. **Status:** a) Military personnel b) Wife of a military personnel c) Civilian
11. **Number of children:**
a) 1 b) 2 c) 3 d) 4 e) 5 or more
12. **Age (in months) of child:** _____ a) 0- 6 b) 7- 12 c) 13- 18
d) 19- 24
13. **Gender of the child:** a) Female b) Male
14. **Place of delivery of the child:** a) Navy Hospital b) Other Government Hospital or Health
centre c) Private Hospital d) Home e) Traditional Birth Attendant
f) Others _____ (please specify)
15. **Type of delivery:**
a) Normal delivery b) Caesarian Section c) Assisted vaginal delivery (such as forceps, vacuum)

SECTION B: KNOWLEDGE AND ATTITUDE ABOUT BREASTFEEDING

16. **Which of these is the best food for a newborn baby?** a) Breast milk b) Infant formula
c) Glucose water d) Herbal concoction d) Clean water e) Others _____ (please specify)
17. **What are the advantages of breastfeeding a baby? (Multiple responses allowed)**
a) It contains all the nutrients the baby needs b) It protects the baby from certain diseases
c) It is cheaper d) It is convenient
e) It can help the mother space her children f) It protects the mother from some diseases
g) It promotes infant- mother bonding h) I don't know
18. **When should the breastfeeding of a baby commence once a baby is born? (Only one option)**
a) Within 30 minutes to 1 hour of delivery b) At any time during baby's first day of life
c) 24 hours after delivery or more. d) Once baby has passed first stool e) I don't know
19. **Should a baby be given any other feeds before commencing breastfeeding?** a) Yes b) No
20. **If yes, why should a baby receive other feeds before commencing breastfeeding?** _____
21. **If yes, what feed should the baby be given?** _____
22. **Should a baby be given the first milk that comes from the breasts (colostrums)?**
a) Yes b) No c) I don't know
23. **Have you ever heard of exclusive breastfeeding (EBF)?** a) Yes b) No c) I don't know
24. **If yes, where did you first learn about Exclusive Breastfeeding?**
a) Mass media (radio, Television, newspapers) b) Health facility
c) Friends or family d) Others _____ (please specify)
25. **What is the meaning of exclusive breastfeeding?**
a) Giving the baby breast milk and infant formula b) Giving the baby breast milk and clean water
c) Giving the baby breast milk alone d) Giving the baby breast milk and vitamins
26. **For how long should a baby be exclusively breastfed?**
a) 1- 3 months b) 4- 6 months c) 7- 9 months

27. **Up to what age should a mother continue to breastfeed her baby after starting other foods?**
 a) 4 -6 months b) 7-9 months c) 12- 18 months d) 24 months or more
28. **Do you feel that a mother can give only breast milk to her baby for the first 6 months?** a) Yes b) No
29. **Do you feel that breast milk alone is adequate for a baby for the first 6 months of life?** a) Yes b) No
30. **If no, why?**
 a) It is not enough for the baby b) It can make the baby ill
 c) It doesn't contain enough nutrients d) Baby will remain thirsty
 e) Others _____ (please specify)
31. **Do you feel it is important for every mother to breastfeed her baby exclusively?** a) Yes b) No
32. **Do you feel a working mother breastfeed her baby while at work?** a) Yes b) No
33. **Can expressed breast milk be preserved for later use?**
 a) Yes b) No c) I don't know
34. **If yes, how can expressed breast milk be preserved?**
 a) By frying it b) By cooking it
 c) By placing in a refrigerator d) By placing on a shelf for over 6 hours

SECTION C: BREASTFEEDING PRACTICES

35. **Did you ever breastfeed or are you currently breastfeeding this child?** a) Yes b) No
36. **If no, why?**
 a) I didn't think it was very important b) It was not convenient
 c) My partner was not in support of it d) Baby refused the breast
 e) Wanted to prevent HIV infection f) I was ill
 g) Others _____ (please specify)
37. **If yes, how long after delivery did you start breastfeeding?**
 a) less than 1 hour b) 2- 6 hours c) 7- 23 hours d) 24- 48 hours e) over 48 hours
38. **Did your child receive any other feed or fluids before you started breastfeeding?**
 a) Yes b) No c) I don't know
39. **If yes, what did you give?**
 a) Plain water b) Glucose water c) Infant formula
 d) Juice e) Herbs f) Others _____ (please specify)
40. **If yes, why did you give any fluids or feeds before you started breastfeeding?**
 a) Breast milk did not flow b) It is our tradition
 c) The baby was hungry d) Others _____ (please specify)
41. **Are you practicing, or did you practice Exclusive Breastfeeding (giving breast milk alone) at all with this child?**
 a) Yes b) No
42. **If yes, for how long do you practice EBF?** _____
43. **If no, why not?**
 a) The baby refused to take the breast milk b) I resumed at work
 c) It was not convenient d) The baby was not satisfied
 e) Others _____ (please specify)
44. **For how long have you breastfed your child?** _____
45. **Did you stop breastfeeding before your child was 6 months old?** a) Yes b) No
46. **If yes, why?**
 a) The baby refused to take the breast milk b) I resumed at work
 c) It was not convenient d) The baby was not satisfied
 e) Others _____ (please specify)
47. **When did you decide to breastfeed your baby?**
 a) Before becoming pregnant b) During pregnancy c) After birth
48. **If you are breastfeeding, how many times do you feed your baby per day?**
 a) <6-8 times b) =6-8 times c) >6-8 times
49. **What is the estimated length of time for each breastfeeding?**
 a) <Half an hour b) Half an hour c) >Half an hour
50. **Do you use a feeding bottle to feed your baby?** a) Yes b) No
51. **What can happen if a baby is bottle fed? (Multiple responses allowed)**
 a) Baby may start passing frequent watery stools if the bottle is not well sterilized
 b) Baby may not want to suckle at the breast anymore
 c) Baby may start passing frequent watery stools if the hands of the one preparing the feeds are not well washed
 d) Feeds may be too hot, too cold, too watery or too thick for the baby
 e) Can make the baby take more feeds
52. **When do you feed your baby?**
 a) When baby seems to be hungry
 b) At scheduled regular intervals whether baby seems hungry or not
 c) Others _____ (please specify)

53. If you have stopped Exclusive Breastfeeding, what else did you give your baby when you stopped?

- a) Pap alone b) Soya milk c) Adult food d) Infant formula
e) Pap with milk or crayfish f) Others _____ (please specify)

**Thank you
Akinyinka MR.**