



Full length Research Article

The Nutritional Status of Mothers Practicing Breast Feeding In Ibadan, Nigeria

***Sanusi, R. A and Falana, O. A.**

Department of Human Nutrition, College of Medicine, University of Ibadan, Nigeria.

ABSTRACT: Exclusive breastfeeding is a globally recommended way of feeding and caring for young infants (0-6 months). Its benefits to both infants and mothers have been established. However, its impact on the maternal nutritional status is still a subject of contention. This study was therefore designed to evaluate the effect of exclusive breastfeeding (EBF) practice on the nutritional status of lactating mothers. A total of 277 lactating mothers recruited from the well baby or immunization clinics at four selected health facilities participated in this descriptive and cross-sectional study. The data collected from the respondents included socioeconomic and demographic data using semi-structured questionnaires, 24-hour dietary recall and weight and height measurements. The nutritional status of lactating mothers practicing exclusive breastfeeding (EBF) and those practicing non-exclusive breastfeeding (NEBF) was compared. The data were analyzed using the *Epi-Info 2000* to determine the nutritional status, adapted Total Diet Analysis (TDA) software to determine the mean nutrient intakes and the statistical package for the social sciences (SPSS version 10) to determine various proportions, means, standard deviations, and test the significance of differences ($p < 0.05$). The mean (SD) age of the nursing mothers was 29.15(4.9) years, parity was 2.12(1.14) children, weight was 63.23(11.6) kg, height was 1.62(0.06) m, body mass index (BMI) was 24.09(3.94) kg/m², daily protein and energy intakes were 124.28(47.08) g and 2827.16(839.34) kcal respectively. The results also showed that half (50.5%) of the respondents were practicing exclusive breastfeeding. The two groups had similar protein intake level, which was significantly higher than recommended intakes. There was no difference in the nutritional status ($p > 0.05$) of mothers practicing exclusive and non-exclusive breastfeeding as measured by anthropometry. In conclusion, the practice of EBF had no observable consequences on the nutritional status of mothers practicing it when compared to mothers practicing non-exclusive breast feeding, except for the higher dietary energy intake. This finding can be used to encourage more mothers to embrace exclusive breast feeding since as of now the practice of EBF is still low, less than 25%.

Key words: *Exclusive, Non-exclusive breastfeeding, Maternal Nutritional status*

INTRODUCTION

Breastfeeding has been reported as an unequalled way of providing ideal food for the healthy growth and development of infants (Zareai et al 2007). Breastfeeding (BF) is associated with decreased risk for many early-life disease conditions in infants and health benefits for women (MMWR 2007). Exclusive breastfeeding (EBF) is defined as an infant receiving only breast milk and no other liquids or solids except

for medicines (Engle and Lhotska, 1999, MMWR 2007). Evidence has linked adequate breastfeeding at childhood with low risk of cancer (Davis, 1999), obesity (Von Kris et al. 1999; Saarinen and Kajosari, 1995) coupled with the elimination of the risk of gastrointestinal illnesses associated with food and utensil contamination, as it needs no preparation.

However, the practice of EBF has been trailed with mixed feelings and cynicism in spite of its benefits. It has been perceived as being non-compatible with working outside of the home, thus creating an economic problem to those working both in the formal and the informal sector (SCN, 1998). Some people believe that since lactation is at the expense of the

*Corresponding Author: email sanusiadegoke2003@yahoo.com
Telephone: +234 8033 299 196

lactating mothers, the practice would thus have a negative impact on maternal nutritional status.

Rasmussen and McGuire (1996) reported that lactation however may have different effect on maternal nutritional status depending on its duration and intensity, while its effects on maternal health would differ with cultural setting and level of development. Winkvist et al (1992) suggested that the biological effect of breastfeeding on the nutritional status of the mother needs to be evaluated in the context of the whole reproductive cycle just because some portions of the reproductive cycle would deplete the mother, and some periods allow the mother to recuperate. Thus, breastfeeding is commonly thought of as a time of depletion but this is probably true only of the period of exclusive breastfeeding (Rasmussen and McGuire, 1996). Previous research works have shown that exclusive breastfeeding placed nutritional demands on maternal body stores of energy (FAO/WHO/UNU, 1985) and more importantly the lactating women were vulnerable to depletion of nutrient stores through their milk (DHHS, 1984).

Globally, only about one-third of infants are fed breast milk exclusively (Frongillo, 2003) while in Nigeria, in a survey from 1995 -2002, only 17% of children were exclusively breastfed (NDHS 2003). It is not clear whether or not there is a difference in the nutritional status of nursing mothers based on the type of breastfeeding. This study was therefore designed to assess the nutritional status of nursing mothers and determine if there is a difference between mothers that practice EBF and those that practice non exclusive breastfeeding (NEBF). This study may provide a premise for nursing mothers to make an informed choice on the type of breastfeeding practice to adopt.

SUBJECTS AND METHODS

Subjects

This descriptive, cross-sectional study was carried out in Ibadan, southwest region of Nigeria. A total of 277 lactating/breastfeeding mothers with infants aged 0-6 months were included in the study. The subjects were selected from a sample-frame of mothers attending well baby/immunization clinics in four selected public hospitals in Ibadan.

Data collection

Data on the socioeconomic and demographic characteristics and breastfeeding practices of the subjects were obtained using interviewer-administered questionnaires. A 24-hour dietary recall was done for

the dietary assessment of the subjects. The weight measurements of the subjects and their infants were taken using a portable Salter bathroom weighing scale and the height of the mothers was taken using a *stadiometer* and length of the infants was measured using the length-board.

Data analysis

Epi-info 2000 was used to determine the anthropometric indices of body mass index (BMI) for the mothers and the *stunting*, *wasting* and *underweight* of the infants (not reported here). Also the adapted Total Dietary Assessment (*TDA*) was used to determine nutrient intakes of the mothers. Statistical Package for the Social Sciences (*SPSS* version 10) was employed for statistical analyses (proportions, means, standard deviations, correlation co-efficient and test the significance of their differences).

Ethical Clearance

The review of study protocol and ethical clearance was obtained from the Institutional Review Committee of the University College Hospital/University of Ibadan. Also informed consent was obtained from the subjects.

Quality Control

The questionnaire for data collection was validated and pre-tested. All the data collectors were trained. The measuring scales were standardized. Data were recorded promptly.

RESULTS

Subjects' characteristics

A total number of 277 breastfeeding mothers participated in the study. The mean age was 29 years, mean parity was 2, mean body weight and height were, 63.23kg and 1.62m respectively. The values for the mean age and parity of the mothers indicate that they were young with average number of two children

Of the 277 respondents, 147(53.1%) were practicing exclusive breastfeeding, while the remaining 130 (46.9%) were practicing non-exclusive breastfeeding. In this study, the exclusively breastfeeding (EBF) mothers were similar in all respects to the non-exclusively breastfeeding (NEBF) mothers as shown in Table 1.

The socio-economic distribution of the respondents showed that about half (53.8%) had a secondary school education while almost a tenth (9.7%) had completed primary school education. The income status of the women showed that majority were low-income earners

(83.7%) with monthly income less than ₦15,000, 89% were in a monogamous family relationship (Table 2). The socioeconomic status of the exclusively breastfeeding mothers was not in any way different from those practicing non-exclusive breastfeeding.

Respondents' nutritional status

Out of the 277 respondents about two-third (59.9%) had a normal nutritional status as measured by the body mass index (BMI), while less than 5% were

underweight and 10% were obese. There was no significant difference in the different categories of BMI amongst mothers based on their type of breastfeeding (Table 3).

The dietary intake of mothers as concerning energy and protein is however higher in mothers practicing exclusive breastfeeding (Table 4) when compared with the RDA. This difference in nutrient intake is significant (p<0.05).

Table 1: Characteristics of Nursing Mothers

	All	EBF mothers	NEBF mothers	* p value
Age (yr)	29.15±4.93	29.37±4.48	28.91±5.41	0.440
Parity	2.12±1.14	2.16±1.14	2.08±1.15	0.603
Weight	63.23±11.60	62.91±10.48	63.58±12.78	0.631
Height (m)	1.62±0.06	1.62±6.14E-02	1.62 ±5.97E-02	0.614
Body mass index (BMI)	24.09±3.94	23.91±3.99	24.18± 4.28	0.587
Daily Protein intake (g)	124.28±47.08	127.56±50.04	123.96±43.68	0.916
Daily Energy intake (kcal)	2827.16±839.34	2888.62±917.22	2757.65±738.87	0.195

Table 2: Socioeconomic characteristics of the subjects

Status	All (n=277)		EBF mothers (n=147)		NEBF mothers (n=130)	
	N	%	N	%	N	%
Education Tertiary	100	36.1	53	36.1	47	36.2
Secondary	149	53.8	78	53.1	71	54.6
Primary	27	9.7	15	10.2	12	9.2
Informal	1	0.4	1	0.7	0	0
Income <₦5000(\$38.46)	117	42.2	61	41.5	56	43.1
₦5000-14,999(\$38.46-115.38)	115	41.5	63	42.9	52	40.0
≥ ₦15000(\$115.38)	45	16.2	23	15.6	22	16.9
Marriage Monogamy	242	87.4	135	91.8	107	82.3
Polygamy	30	10.8	10	6.8	20	15.4
Single	5	1.8	2	1.4	3	2.3
Occupation Trading	136	49.1	70	47.6	66	50.8
Civil service	56	20.2	33	22.4	23	17.7
Artisan	53	19.1	27	18.4	26	20.0
Others	32	11.6	17	11.6	15	11.5

Table 3: Body Mass Index of Breastfeeding Mothers.

Status	All		EBF mothers		NEBF mothers	
	n	%	n	%	n	%
Underweight (<18.5kg/m ²)	13	4.7	6	4.1	7	5.4
Normal (18.5-24.9kg/m ²)	166	59.9	89	60.5	77	59.2
Overweight(25.0-29.9kg/m ²)	74	26.7	41	27.9	33	25.4
Obese(≥30.0kg/m ²)	24	8.7	11	7.5	13	10.0
Total	277	100.0	147	100.0	130	100.0

Chi square test; p value> 0.05

This is not so with energy intake in mothers practicing non-exclusive breastfeeding. Energy and Protein intake of mothers practicing EBF was higher than their counterpart practicing NEBF even when the mothers were underweight or overweight (Table 5 and 6). This difference is however not statistically significant ($p>0.05$). Adequacy of energy and protein

intake is shown in Table 7. Looking at the percentage of RDA achieved for energy intakes, about half (54.5%) of the mothers had energy consumption within the normal range (80-120%) of the RDA, while about two-third (74.4%) had excess protein consumption ($>120\%$ RDA).

Table 4: Energy and Protein intake compared with RDA

Breastfeeding mothers	Calorie(kcal)		Protein (g)	
	X±SD	P value	X±SD	p value
All	2827.16±839.34	0.027	127.28±47.08	0.000
EBF mothers	2888.62±917.22	0.023	124.56±50.04	0.000
NEBF mothers	2757.65±738.87	0.515	123.96±43.68	0.000
Underweight mothers	2628.29±99.75	0.759	118.89±28.38	0.000
Normal mothers	2708.48±754.87	0.907	117.64±45.10	0.000
Overweight mothers	3095.40±930.75	0.001	140.77±51.78	0.000
Obese mothers	2928.63±853.64	0.233	122.26±43.13	0.000

Two-tailed test of significance difference $p<0.05$

Table 5: Dietary Energy intake (Kcal) of Mothers and BMI

Status	EBF mothers (n=147)	NEBF mothers (n=130)	*p value
Underweight	3003±1355.24	2306.27±454.20	0.224
Normal	2668.09±771.24	2755.17±737.43	0.460
Overweight	3237.05±1000.44	2919.41±816.98	0.146
Obese	3311.32±994.02	2604.82±853.64	0.400

*Two-tailed test of significance difference.

Table 6: Dietary protein intake of Mothers and BMI

Status	EBF mothers (n=147)	NEBF mothers (n=130)	*p value
Underweight	127.53±32.14	111.49±24.72	0.331
Normal	113.59±46.62	122.32±43.12	0.215
Overweight	143.86±54.14	136.92±49.24	0.570
Obese	139.73±48.40	107.47±33.12	0.066

*Two-tailed test of significance difference

Table 7. Percentage RDA Energy and Protein intakes of the subjects

% of RDA consumed	Energy (kcal)			Protein (g)		
	All ^a (n=277)	EBF mothers (n=147)	NEBF mothers (n=130)	All ^b (n=277)	EBF mothers (n=147)	NEBF mothers (n=130)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Inadequate (<80%)	58(20.9)	33(22.4)	25(19.2)	14(15.1)	9(6.1)	5(3.8)
Optimal (80-120%)	151(54.5)	74(50.3)	77(59.2)	57(20.6)	28(19.0)	29(22.3)
Excess (>120%)	68(24.5)	40(27.2)	28(21.5)	206(74.4)	110(74.8)	96(73.8)

^aChi-square= 56.455,df=2, $p<0.05$, ^bChi-square= 219.906, df = 2, $p<0.05$

DISCUSSION

The intent and purpose of this study was to determine the effect of exclusive breastfeeding on the nutritional status of the exclusively breastfeeding mothers by comparing them with the non-exclusively breastfeeding mothers. In this study, most of the lactating women had a normal nutritional status as measured by their dietary intake and body mass index. Although their mean BMI tends more on the overweight side, this is consistent with earlier findings by Lano-Maduagu and Adekoya (2005) and it is slightly higher than the mean BMI of Nigerian women (22.3kg/m^3). This BMI pattern is similar to that obtained in the NDHS (2003), where about two third (64.6%) of Nigerian women had a BMI within the normal range (NPC/ ORC Macro, 2004).

Furthermore, the level of EBF practice (50.54%) in this study is relatively higher than the level (38.33%) reported by Ezeofor and Okeke (2005) among mothers of infants (0-24 weeks) and the 17.2% reported by the NDHS (2003) for Nigeria. Could this be due to the locality, or the hospital-based sampling? Looking at the socio-economic status of the lactating mothers, the prevalent lower socio-economic status among them is consistent with the findings of Lano-Maduagu and Adekoya (2005), even though there was no significant difference between the socioeconomic statuses of the two groups. Findings from a similar study reported that mothers who exclusively breastfed their children were more educated, just having their first child, with no significance difference in their socioeconomic status and with some indication that they were less likely to belong to the lowest socioeconomic group (AED, FANTA, USAID (2002). Nearly all the women in this study were educated, with a similar socioeconomic status and parity, yet about half were practicing EBF while others were not. We can therefore conclude from this study that choice and practice of EBF might not be totally due to socioeconomic status as suggested by the AED/FANTA/USAID (2002) study. Furthermore the suggestion of Davies-Adetugbo (1997) that exclusive breastfeeding totally lacked credibility among the locals, with even health workers not believing that it was possible or feasible, is no more valid. The promotion of optimal breastfeeding practices, including exclusive breastfeeding has achieved a modest success despite the cultural barrier and it would appear as if other factors still exist restricting universal adoption and practice of EBF.

More importantly, the results of this study have shown that the nutritional status of the lactating mothers in the two groups (EBF and NEBF) were not significantly different ($p>0.587$). On the contrary, Dewy (2004) in a review, claimed that the degree of breastfeeding affects the rate of maternal weight loss,

while Adair and Popkin, (1992) were of the opinion that the negative effects of lactation increased with the intensity and duration of breastfeeding. The intensity and duration of breast feeding was not compared in these two groups. Although, Dewey et al. (2001) found that maternal weight loss between 4 and 6 months was significantly greater in the exclusive breastfeeding group than in the NEBF group, their results still showed that the additional weight loss in the EBF group was unlikely to have been detrimental. Their results thus indicated that the advantages of exclusive breastfeeding during this interval appeared to outweigh any potential disadvantages in this setting. Similarly, Rasmussen and McGuire (1996) were of the opinion that lactation helps lactating mothers to regain and maintain a healthy body weight during the period.

Adair and Popkin (1992), had reported that the weight loss in urban women practising full breastfeeding for the first 6 months was significantly greater than that of partial breastfeeding ($p=0.01$). Kac et al. (2004) had also suggested that encouraging prolonged breastfeeding might contribute to decreases in postpartum weight retention. Although this study did not aim at investigating the effect of EBF on weight retention or loss, however, the results still showed that the mean weight of the EBF group was not significantly different from those of the NEBF group, with majority in both groups still maintained optimal weights. Rasmussen and McGuire (1996) had pointed out that while lactation influences maternal and infant health in a number of positive ways, the effects would vary with circumstances in which women live. Positive effects being present at all levels of development, are most likely to occur when biological, political and socio-cultural environments interact in ways that support both the initiation and the continuation of breastfeeding.

The level of energy consumption noticed among the EBF mothers was significantly higher than the recommended energy intake for lactating mothers ($p<0.05$) and this could explain why there was no significant difference in this study as expected in consonance with the findings of Adair and Popkin (1992). It is also reasonable to infer that the effects of lactation on maternal energy reserves could be mitigated substantially by increasing maternal dietary energy intake. Also the interplay between energy intake and lactation strongly affect maternal weight and weight loss. Also similar to the findings of Lano-Maduagu and Adekoya, (2005), was the positive association existing between the energy-intake and the body mass index (BMI) of the lactating mother ($p<0.05$), although it was a very weak association.

CONCLUSION

Exclusive breastfeeding is essentially a key child survival strategy, with benefits for both mother and infant. However, in spite of its widely acclaimed benefits, the level of adoption and the practice world wide and even in Nigeria is not commensurate with the said benefits. One of the reasons suggested for the poor practice was that EBF was more nutritionally draining than NEBF. It is hereby concluded that in spite of the low socioeconomic status of the respondents, the practice of EBF by lactating mothers had no significantly negative effect on their nutritional status, although it was accompanied by a higher protein and energy consumption, which was not statistically different to those practicing NEBF.

REFERENCES

- Adair LS and Popkin BM (1992).** Prolonged lactation contributes to depletion of maternal energy reserves in Filipino women. *J Nutr.* 1992 Aug; 122(8): 1643-55.
- AED, FANTA, USAID (2002).** A Multiple-Method Approach to Studying Childcare in an urban environment: The Case of Accra, Ghana.
- Allen, L.H (1994).** Maternal micronutrient malnutrition: Effect on breast milk and infant nutrition, and priorities for intervention. *SCN News* 11:21-27.
- Dewey KG (2004).** Impact of breastfeeding on maternal nutritional status. *Adv Exp Med Biol.* 2004: 554: 91-100.
- Davies-Adetugbo AA (1997).** Socio-cultural factors and the promotion of exclusive breastfeeding in rural Yoruba communities of Osun State, Nigeria. *Social Science and Medicine* 45(1): 113-125.
- Davis M.K. (1999).** Review of the evidence of an association between infant feeding and childhood cancer. *International Journal of Cancer* 78 (S 11): 29-33. In: 5th Report on the World Nutrition Situation. Geneva: SCN. 2004
- Demographic and Health Surveys. ORC Macro, (2003).** MEASURE DHS+STAT compiler. Online: <http://www.measuredhs.com>.
- Dewey KG, Cohen RJ, Brown KH, and Rivera LL. (2001).** Effects of exclusive breastfeeding for four versus six months on maternal nutritional status and infant motor development: results of two randomized trials in Honduras. *J Nutr.* 2001 Feb; 131 (2): 262-7.
- Engle PL and L. Lhotska (1999).** The role of care in programmatic actions for nutrition: Designing programmes involving care. *Food and Nutrition Bulletin* 20 (1): 121-135.
- Food and Agricultural Organization (1990).** Human energy requirements: a manual for planners and nutritionist. Oxford, UK, Oxford University Press.
- Frongillo EA (2003).** Undertaking the Challenge of Improving Complementary Feeding of Infants and Young Children. In: *SCN News*, Number 27, December, 2003.
- Kac G, Benico MH., Valasquez-Melendez G., Valente JG. and Struchner CJ. (2004).** *Am J Clin Nutr*: 2004 Mar; 79(3): 487-93.
- MMWR (2007).** Breastfeeding trend and updated national health objectives for exclusive breastfeeding- United States, birth years 2000-2004. *Morb Mort Wkly Rep* (2007) Aug 3; 56(30):760-3
- National Population Commission (NPC) [Nigeria] and ORC Macro. (2004).** Nigeria Demographic and Health Survey 2003. Calverton, Maryland: National Population Commission and ORC Macro.
- Rasmussen KM. and McGuire KM. (1996).** Effects of breastfeeding on maternal health and well-being. *Food and Nutrition Bulletin*, Volume 17, Number 4, 1996 (UNU; 1996)
- Saarinen UM and Kajosaari M. 1995.** Breastfeeding as prophylaxis against atopic disease: a prospective follow –up study until 17 years old. *Lancet* 346: 1065-1069.
- Smith and Ojofeitimi (2001)** Nutrition and Diet Therapy for Health Care Professionals in Africa.
- Specker BL (1994).** Nutritional Blindness: Xerophthalmia and Keratomalacia. Oxford University press, New York. pp292.
- UNICEF (2004)** The State of the World's Children 2004: Girls, Education and Development. New York.
- Von Kris R, Koletzko B, Sauerwald T, Von Mutius E, Banert D, Grunert V, Von Voss H (1999).** Breastfeeding and obesity: Cross Sectional Study. *British Medical Journal* 319: 147-150. In 5th Report on the World Nutrition Situation. Geneva: SCN.
- Winkvist A, Rasmussen KM, Habicht J-P. (1992).** A new definition of maternal depletion syndrome. *Am J Pub Health* 1992; 82:6914.
- Zareai M, O'Brien ML, Fallon AB (2007).** Creating a breastfeeding culture: a comparison of breastfeeding practices in Australia and Iran. *Breastfeed Rev* 15(2): 15-20