NOUN Journal of Physical and Life Sciences
Volume 2(1); 38-48, JUNE, 2018
ISSN: 2645-2480
www.njpls.nou.edu.ng; njpls@noun.edu.ng

THE EFFECT OF BREAST MILK ON PRETERM INFANT IN NEONATAL CARE UNIT OF LAGOS UNIVERSITY TEACHING HOSPITAL

Nwanganga Ihuoma Ubosi[1] & Kolawole Olukunmi Olutayo[2]
[1]Public Health Department, Faculty of Health Sciences, National Open University of Nigeria, Lagos, iubosi@noun.edu.ng
[2]Nutrition and Dietetics Department, Federal University of Agriculture Abeokuta, Abeokuta
kolanitida@yahoo.co.uk

ABSTRACT

This study assessed the effects of breast milk on preterm infant in neonatal care unit of Lagos University Teaching Hospital (LUTH).Breast milk is the first choice in neonates, whether term or preterm because it contains the right nutrient. A total of 46 nursing mothers and their babies were used for this study. Semi-structured questionnaires were used to collect information from them for a period of six months. The infants' weights were measured at the point of admission and growth were monitored and recorded till the time of discharge from the units. Descriptive statistics such as frequency and percentages were used to indicate the socioeconomic characteristics and factors responsible for mothers' inability to breastfeed while inferential statistics such as chi square was used to assess the influence of breast milk on preterm infants. The studied infants were fed with different milk types which affected their health status, growth and development. The study revealed that breast milk enhances 100% adequate growth and development in preterm infants.It was also observed that formula milk caused diarrhea and infant infection. HIV infection and hepatitis B Virus hindered mothers from breastfeeding their children. It was difficult for career and highly engaged mothers to breastfeed their preterm babies.Breast milk was the best for the infant because it is safe from infections while formula milk caused diarrhoea and other infections. Mothers of preterm infants should practice exclusive breastfeeding irrespective of their career. However, WHO marketing code for infant formula should be thoroughly monitored at various medical institutions to prevent unnecessary induction of replacing infant formula with breast milk.

Keywords: Breast milk, preterm infant, mothers, neonatal

INTRODUCTION

Human milk is advocated as the best source of nutrition for preterm infants because, it provides substances not supplied in infant formula (Blum-Kemelor.,2014). The Baby Friendly Hospital Initiative (BFHI) encourages that every baby, including those in the Neonatal Intensive care unit (NICU) to be breast fed (Callen *et al.*, 2005). The Innocenti Declaration (WHO/UNICEF, 1990) recognized that breast feeding is a unique process that provides ideal nutrition for infants and contributes to their healthy growth and development. The amino and fatty acid patterns of human milk confer distinct advantages to preterm infants. The protein content of human milk is suitable for Low birth weight infants because of the nutrient composition. It contains 30% casein and 70% Whey, whereas bovine milk is 82% casein (Koletzo *et al*., 2000). The whey proteins in human milk are more appropriate for preterm infants because they are easily digested and promote more rapid gastric emptying. Whey also contains α-lactalbumin, a nutritional protein more easily digested by preterm infants (Jodi, 2006; Schulzke, 2008). In the Neonatal Intensive Care Unit, further educational efforts are needed to address the specific breastfeeding practice barriers of parents with preterm infants. In most cases, mothers who deliver prematurely have not made a final decision whether to breastfeed their infant and may not have the necessary information to make an informed decision. This study assessed the socio-economic characteristics of the preterm infant mothers attending the hospitals, influence of milk on preterm infants'health status and factors responsible for mothers' inability to breastfeed their children.

Materials and Method

Study Area

This study was conducted at Lagos University Teaching Hospital (LUTH), located in Idi-Araba area of Surulere Lagos, Nigeria. The Neonatal Care Unit has three units with fifteen incubators and various arms that are attached to it. The units have the ability to admit up to 15 preterm babies

per month. LUTH was purposively selected because it has a well-established intensive care unit that can accommodate many preterm babies.

Ethical Clearance

Informed consent was obtained from both the hospital and the respondents.

Sampling Procedure

All the preterm infants admitted in neonatal unit of LUTH were used for the study. A total of 46 nursing mothers and their babies were used at the time of this study. Samples were collected for a period of six months. All the infants admitted within this period were observed from the point of admission till the time of discharge. Their weighs were also measured at the point of admission and growth were monitored and recorded till the time of discharge from the units.

Data collection procedure

Data for the study was collected in the clinic with the use of questionnaire and a profoma. Respondents were interviewed by trained interviewers, while the development of preterm babies from the point of admission to discharge were monitored using a proforma.

Data Analysis

Statistical Package for Social Sciences (SPSS version 17) was used to analyse the data. Descriptive statistics such as frequency and percentages were used to indicate the socioeconomic characteristics and factors responsible for mother's inability to breastfeed while inferential statistics such as chi square was used to assess the influence of breast milk and breast milk substitute on preterm infant.

RESULTS

Table 1 showed that majority of the respondents were between ages 26 and 30 years (41.3%). About 35% were between ages 31 and 35 years, 19.6% were between 21 and 25 years old, while only 4.3% were between 36 and 40 years old. Majority of the respondents were Christians (95.7%) while only (4.3%) practised Islamic religion. Majority of the respondents were married (73.9%) and

(26.1%) were singles. None of the respondents was either divorced or widowed. Exactly 50.0% of them were Yorubas, 47.8% were Igbos while only 2.2% were Hausas. From table 2, majority of the respondents (56.5%) agreed that both HIV infection and hepatitis B Virus hindered mothers from breastfeeding their children. However, some (28.3%) agreed that it was only HIV infection while only 6.5% of the respondents agreed that Hepatitis B Virus prevented mothers from breastfeeding their children. On the conditions that could prevent the mother from successful expression, majority (80.4%) agreed that both the problems of depression, withdrawal and other psychiatric problems could prevent mothers from successful expression. Only 19.6% of the respondents agreed that only the problem of depression and withdrawal that prevented mothers from successful expression.The table also showed that career and highly engaged mothers found it difficult to breastfeed. Approximately 83% of the respondents were in agreement while only 17.6% of the respondents disagreed with the claim that career and highly engaged mothers found it difficult to breastfeed. The table 3 showed that breast milk enhances 100% adequate growth as there was a positive significance between the breast milk and adequate growth of the baby at p -value <0.05. Majority of the respondents also agreed that breast milk is the best milk for preterm infants. Exactly 13.0% of the respondents agreed that the fortified milk was the best, while only 4.3% of the respondents agreed that Formula milk was the best. The responses of the respondents also showed that Formula milk caused diarrhea and infant infection. Majority (67.4%) signified that Formula milk caused diarrhea while 73.9% of the respondents agreed that Formula milk caused infant infection. Approximately 85% of the respondents agreed that adequate growth and development of a preterm baby improves with breast milk.

DISCUSSION

Majority of the respondents were women of child bearing age and Yorubas which is similar to the findings of Omarsdottir*et al*., 2014. Most of the respondents confirmed that breast milk is the best milk for preterm infants andthis finding was in agreement with the study conducted by Carlson *et al*. (2014) where breast milk is preferred for preterm babies than any other form of foods. Similarly, the study conducted by Saunders (2005), revealed that other food like formula milk was not efficient for infant and could cause infection (Schooling *et al*., 2009). Both HIV infection and hepatitisB Virus hindered mothers from breastfeeding their children (Maas *et al*., 2013; Rochow *et al*., 2015). These were some of the challenges that could prevent breastfeeding of preterm babies by their mothers. Similarly, study conducted by Vander *et al*. (2013) exhibited the same challenges noted by this study. Other conditions that can prevent the mother from successsful expression include the problems of depression, withdrawal and other psychiatric problem (Blancowen *et al*., 2013) .

This study showed that almost all the preterm babies weight was between 1500g-17500g, while (10.9%) of the preterm babies were between 1551g-2000g on admission. This has exhibited true picture of the weight of preterm babies from the onset. Study conducted by Vander *et al.* (2013) showed no difference in the weight of the preterm babies to that of this study. The result of this study revealed that, majority (87.0%) of the preterm babies received breast milk, while (8.7%) received Breast milk and Fortified milk, and majority (89.1%) of the preterm babies were between 2001g-2500g at the time of discharge, while (6.5%) were more than 2500g. This showed that preterm babies that were fed with breast milk gained weight before they were discharged from the hospital which was in line with the study conducted by Joseph *et al.* (2002). The study went further to reveal the comparison of health status between children who were fed with breast milk and other feed. It showed that those fed

with breast milk only had the best health status, followed by those that fed with breast milk / fortified milk which is in agreement with Blencowen *et al.*, 2010 that stated that faster growth may be indicative of good health status rather than being causally protective.

CONCLUSION

The study showed that breast milk is the best milk for preterm infants and that it enhances adequate growth and development in preterm infants. It was also observed that formula milk caused diarrhoea and infant infection.

Recommendation

Exclusive breastfeeding should be practised by preterm mothers irrespective of the nature of their career and also World Health Organisation marketing code for infant formula should be thoroughly monitored at various medical institutions to prevent unnecessary induction of replacing infant formula with breast milk especially for preterm babies. However, formula milk should only be used when breastfeeding is totally inaccessible.

***Acknowledgements*:** The author wish to acknowledge the kind support of Ogbuja Chinonyerem Ogenna and Dr. Ezenwayi Chisa Amaechi for their technical and moral support respectively.

Table1: Socio-economic Characteristics of the Respondents

Parameters	Respond	Frequency	Percentage
Age	21-25	9	19.6
	26-30	19	41.3
	31-35	16	34.8
	36-40	2	4.3
Religion	Christianity	44	95.70
	Islamic	2	4.30
Marital Status	Single	12	26.1
	Married	34	73.9
	Divorced	0.0	0.0
	Seperated	0.0	0.0
Ethnicity	Igbo	22	47.80
	Yoruba	23	50.00
	Hausa	1	2.20

Table 2: Factors Responsible for Mothers' Inability to Breastfeed Their Children

Item 1	HIV Infection	**Hepatitis B virus**	**None of the above**	**All of the above**
Health challenges that hinder the mother from breast feeding their children	13(28.3%)	3(6.5%)	4(8.7%)	26(56.5%)
(pvalue)	0.04	0.03	0.05	0.05
Item 2	**Depressed and withdrawn**	**Other psychiatric problem**	**None of the above**	**All of the above**
Conditions that can prevent the mother from successsful expression	9(19.6)	0(0.0)	0(0.0)	37(80.4)
(pvalue)	0.02	0.01	0.04	0.01
Item 3	**Yes**		**No**	
Career and highly engaged mothers find it difficult to breast feed.	**38(82.6)**		**6(17.4)**	
(pvalue)	**0.04**		**0.05**	

NOUN Journal of Physical and Life Sciences
Volume 2(1); 38-48, JUNE, 2018
ISSN: 2645-2480
www.njpls.nou.edu.ng; njpls@noun.edu.ng

Table 3: Influence of Breast milk and Milk substitutes on Preterm Infants HealthStatus (%)

Item	Adequate growth	Stunted growth	Malnutrition
Effect of breast milk on preterm infant	46(100)	0(0.0)	0(0.0)
(pvalue)	0.04	0.07	0.02
	Breast milk	**Formula milk**	**Fortified milk**
Best milk for preterm infant	38(82.6)	2(4.3)	6(13.0)
Feed that causes diarrhea in preterm	4(8.7)	31(67.4)	11(23.9)
The most cause of preterm infant infection is	2(4.3)	34(73.9)	10(21.7)
Adequate growth and development of a preterm baby improves with	39(84.8)	3(6.5)	4(8.7)

Table 4: weight of preterm babies at the point of admission

Weight on admission (g)	Frequency	Percentage (%)
1500 - 1750	41	89.1
1751 – 2000	5	10.9
2001 – 2500	0	0.0
Total	**46**	**100.0**

Table 5: Weight of preterm babies on discharge

Weight on discharge	Frequency	Percentage (%)
1500 – 1750	0	0.0
1751 – 2000	2	4.3
2001 – 2500	41	89.1
>2500	3	6.5
Total	**46**	**100.0**

REFERENCES

1. **Blencowe, H.; Cousens, S.; Oestergaard, M.Z.; Chou, D.; Moller, A.B.; Narwal, R.; Adler, A.; Vera Garcia, C.; Rohde, S.; Say, L.; et al.** National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: A systematic analysis and implications. Lancet **2012**, 379, 2162–2172.

2. **Blencowe, H.; Cousens, S.; Chou, D.; Oestergaard, M.; Say, L.; Moller, A.B.; Kinney, M.; Lawn, J.;** Born Too Soon Preterm Birth Action Group. Born too soon: The global epidemiology of 15 million preterm births. Reprod. Health 2013, 10, S2.

3. **Callen, J. Pinelli, J. Atkinson, S and Saigal, S (2005).** Qualitative analysis of barriers to breastfeeding in very low-birthweight infants in hospital and post discharge Adv Neonatal Care; 5: 93-103.

4. **Carlson, S. E., Cooke, R.J., Rhodes, P.G., and Peeples JM, Werkman S.H (2011).** Long-term feeding of formulas high in linolenic acid and marine oil to very low birth weight infants: phospholipid fatty acids Pediatr Res; 30: 404-412.

5. **Jodi B. (2006).** An Evaluation ofthe Growth of Term Infants Fed Formula Supplemented with Fructo-Oligosaccharide. Int. Journal of Probiotics and Prebiotics 1:19-26.

6. **Joseph, K.S.; Demissie, K.; Kramer, M.S.** Obstetric intervention, stillbirth, and preterm birth. Semin. Perinatol.2002, 26, 250–259.

7. **Keletzko, B., Hernell, O., Michealsen, K. (eds) (2000).** Short and long term effects of breasfeeding on child health advances in experimental med biology. 248: 261-70.

8. **Maas, C.; Wiechers, C.; Bernhard, W.; Poets, C.F.; Franz, A.R.** Early feeding of fortified breast milk and in-hospital-growth in very premature infants: A retrospective cohort analysis. BMC Pediatr. **2013**,13, 178.

9. **Omarsdottir, S.; Adling, A.; Bonamy, A.K.; Legnevall, L.; Tessma, M.K.; Vanpee, M.** Predictors of sustained maternal milk feeds in extremely preterm infants. J. Perinatol.: Off. J. Calif. Perinat. Assoc. **2015**, 35, 367–372.

10. **Rochow, N.; Landau-Crangle, E.; Fusch, C.** Challenges in breastmilk fortification for preterm infants. Curr.Opin. Clin. Nutr. Metab. Care **2015**, 18, 276–284.

11. **Schooling, C.M.; Hui, L.L.; Leung, S.S.; Ho, L.M.; Mak, K.H.; Leung, G.M.** Short- and medium-term outcomes of accelerated infant growth in a Hong Kong Chinese birth cohort. Hong Kong Med. J. **2009**, 15, 17–21.

12. **Saunders,W. B (2005):** Breastfeeding benefits, pretern infants from a nutritional, gastrointestinal, immunological.1043-60.

13. **Schulzke S.M, Patole S.K, Simmer K.(2008).**Long-chain polyunsaturated fatty acid supplementation in preterm infants. Cochrane Database of Syst. Rev.2:CD000375.

14. **VanderVeen DK, Martin CR, Mehendale R, Allred EN, Dammann O, Leviton A. (2013).** Early Nutrition and Weight Gain in Preterm Newborns and the Risk of Retinopathy of Prematurity. PLOSONE 8(5): e64325.

15. **World Health Organization (1990):** Infant feeding and breastfeeding information at patient. Info/ doctor/infant-feeding

NOUN Journal of Physical and Life Sciences
Volume 2(1); 38-48, JUNE, 2018
ISSN: 2645-2480
www.njpls.nou.edu.ng; njpls@noun.edu.ng