Original Article

Knowledge and Perception of Mothers toward Donor Milk and Human Milk Banking: Experience from Two Centers in Southwest, Nigeria

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Abstract

Background: Breast milk is essential for the optimal growth and development of every child. When the mothers' milk is unavailable, the World Health Organization recommends donated human milk as the best alternative. However, the use of donated human milk has not been introduced in any part of this country. Therefore, this study aimed to assess the knowledge and perception of mothers on breast milk donation and human milk banking in Nigeria. **Methodology:** A structured, pretested self-administered questionnaire was used for data collection. Mothers attending child welfare clinics and the mothers in the newborn unit of two hospitals in Southwest Nigeria were recruited into the study. Data were analyzed using the SPSS version 22.0. **Result:** A total of 402 mothers were included in the study. The mean age was 29.8 ± 5.6 years. Forty-ix percent of the women were aware of human milk banking, and the majority (56.8%) heard about this from a health professional. 39.8% were willing to feed their babies with milk from human milk bank (HMB), and 62.1% were ready to donate their milk. Most of the mothers who were unwilling to feed their babies with milk from HMB reported personal reasons as responsible (40.3%). Factors associated with willingness to feed babies with milk from HMB include occupation ($P < 0.001$), education ($P < 0.001$), marital status ($P < 0.001$), and religion of the mothers ($P < 0.005$). **Conclusion:** The knowledge of women in Southwest Nigeria on breast milk donation and HMB is suboptimal. There is a need to educate the populace for effective implementation

Keywords: Donor human milk, human milk bank, Nigeria

Introduction

Breast milk is essential for the growth and development of a child, especially in the 1st six months of life.[1] It is of great benefit to the babies and their mothers. Breast milk is naturally constituted to provide adequate nutrition, immunological protection, and adequate hydration for babies. These factors reduce morbidity and mortality among newborn babies.[2] Therefore, the World Health Organization (WHO) recommended exclusive breastfeeding as the best nutrition in the first 6 months of life as a global public health priority.[3,4] The majority of women in this part of the world breastfeed their babies. However, there are so many instances when mother's breast milk is not available. Reasons may include mothers' demise, sick mothers, career women who do not have time, and women who do not lactate even when they are ready to breastfeed their babies. Surprisingly, some women may decide not to breastfeed for reasons known to them. The WHO recommends donated human breast milk as the best alternative when a mother's breast milk is unavailable.[5-7] Donor human breast milk is defined as breast milk donated by another woman who is not the mother of the child and processed by a milk bank to be used for a baby whose mother's milk is not available.[8,9]

Donor human breast milk is not the same as the mother's freshly expressed milk. Some micronutrient and immunological factors are lost due to pasteurization and decomposition over

Access this article online

Quick Response Code:

Website: www.njgp.org

DOI: 10.4103/njgp.njgp_18_21

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How to cite this article: Ogundele T, Ogundele OA, Bello EO. Knowledge and perception of mothers toward donor milk and human milk banking: Experience from two centers in Southwest, Nigeria. Niger J Gen Pract 2022;20:1-5.

Submitted: 05-Dec-2021 **Revised:** 12-Feb-2022
Accepted: 16-Feb-2022 **Published:** 12-Nov-2022

time due to banking. However, studies have shown that there are enough bioactivity and immunological factors in donor human breast milk in spite of these problems, especially when the receiver of the donor milk's gestational age is very close to the baby of the mother donating the milk.[10,11] Hence, donor human breast milk is preferred to infant formula when mother's milk is not available. In addition, donor human breast milk provides cost-efficiency in reducing many problems such as necrotizing enterocolitis, late-onset sepsis, and food intolerance. It also shortens hospital stays.[12,13]

For these reasons, many countries have established human milk banks (HMBs) to collect, pasteurize and provide safe donor human milk to babies whose mother's milk is not available. However, the use of donor human breast milk is limited to industrialized countries and few developing countries.[14] At present, pasteurized donor human breast milk is not available in Nigeria. In addition, there are controversial opinions about breast milk banking and very few studies on mothers' knowledge and attitude in Nigeria, especially in the southwest. Therefore, this study aimed to assess the knowledge and perception of mothers on breast milk donation and breast milk banking in Nigeria.

Methodology

Study area

The study was conducted in two tertiary hospitals in Southwest Nigeria. The hospitals were the University of Medical Sciences Teaching Hospital Complex, Ondo City, Ondo State and the Wesley Guild Unit of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State Nigeria. The selected hospitals offer a wide range of specialized care, including neonatal and other pediatrics care services.

Study design and participants

The study was a health facility-based, cross-sectional study design. We used nonprobability convenience sampling method in recruiting the study participants. The sample size was estimated using the Leslie Kish formula, which gave a sample size of 402 using a prevalence of 50%, an error margin of 5%, and a 95% confidence interval.[15]

The study enrolled 402 mothers aged 18 years and above attending child welfare clinics and the mothers in the newborn unit of the selected hospitals. Mothers of children 0–24 months of age were included in the study, while nonconsenting mothers and those with severely ill children were excluded from the study at the time of data collection.

Data collection instrument

A structured, pretested self-administered questionnaire was used for data collection. The questionnaire was designed to meet the objective of the study and went through several drafts and reviews. The questionnaire collected data on the participants' sociodemographic characteristics, knowledge of donor breast milk bank, exclusive breastfeeding among mothers, and knowledge and attitude of mothers toward donor breast milk. The questionnaire was administered in English or Yoruba, depending on the respondents' preference.

Data analysis

Data entry and analysis were done using the Statistical Package for the Social Sciences (SPSS) version 22.0 (SPSS Inc., Chicago, IL, USA). Frequency and percentage distribution were used for expressing the sociodemographic variables of mothers. The mean was used for continuous variables. In addition, Chi-square test was used to examine the relationship between the variables. A $P \leq 0.05$ was considered statistically significant in the study.

Ethical consideration

Ethical approval was obtained from the ethics and research committee of the University of Medical Sciences Teaching Hospitals Complex. Written or verbal consent was obtained from all participants after the purpose of the study was explained to study participants.

Results

Sociodemographic characteristics

A total of 402 mothers were included in the study. The mean age of the mothers was 29.8 ± 5.6 years. Of the mothers, 66.7% were higher school graduates, 87.8% were Christian, 86.1% were married, whereas 61.7% were self-employed [Table 1].

Knowledge and attitude of the mothers toward human milk banking

Among mothers, 46.0% were aware of human milk banking, and the majority (56.8%) heard about this from a health

Table 1: Sociodemographic characteristics of mothers

	n (%)
Age group (years)	
≤20	20 (5.0)
21-30	228 (56.7)
31-40	140 (34.8)
≥41	14 (3.5)
Education	
Uneducated	3 (7.0)
Primary	17 (4.2)
Secondary	114 (28.4)
Higher education	268 (66.7)
Religion	
Christianity	353 (87.8)
Islam	49 (12.2)
Marital status	
Single	37 (9.2)
Married	346 (86.1)
Divorced	12 (3.0)
Widowed	7 (1.7)
Occupation	
Housewife	46 (11.4)
Self-employed	248 (61.7)
Government employed	73 (18.2)
Private employed	35 (8.7)

professional. 39.8% are willing to feed the baby with milk from HMB, and 62.1% stated that they could donate their milk. Majority of the mothers who were unwilling to feed the baby with milk from HMB reported personal reasons and dislike (40.3) as responsible, 39.2% stated the risk of disease transfer as a reason, and 7.7% said that it was not appropriate in their religion or culture. Regarding breast milk donation, most mothers who were not willing to donate breast milk, 45.3% believe it will not be enough for their babies, and 34.7% dislike it. Most respondents cited financial support as a possible motivation to volunteer to be a human milk banking association member [Table 2].

Factors associated with willingness to feed babies with milk from human milk bank

Table 3 shows the bivariate analysis to determine the factors associated with willingness to feed babies with milk from HMB revealed a significant association with occupation ($P < 0.001$) and education ($P = 0.001$). In addition, mothers who had problems breastfeeding were more willing to feed their babies with milk from HMB ($P = 0.002$). However, marital status ($P = 0.093$) and religion of mothers ($P = 0.019$) showed no significant association.

Table 2: Knowledge and attitude of the mothers toward human milk banking

	n (%)
Have you ever heard about HMB	
Yes	185 (46.0)
No	217 (54.0)
Source of knowledge of HMB	
Health professional	105 (56.8)
News	8 (4.3)
Family and friends	72 (38.9)
Willingness to feed the baby with milk from HMB	
Yes	160 (39.8)
No	242 (60.2)
If not what are your reasons for not willing to use milk from HMB (*n*=273)*	
Fear of disease transfer	107 (39.2)
Your culture or religion prohibit you	21 (7.7)
Breast milk from other women nutritionally less	35 (12.8)
Others (personal/dislike)	110 (40.3)
Will you volunteer to donate your breast milk to HMB	
Yes	246 (61.2)
No	156 (38.8)
If your answer is no, what is your concern for not donating (*n*=170)*	
May create health problems for you	9 (5.3)
Affect your physical appearance	15 (8.8)
Your baby needs more	77 (45.3)
Your religion or culture prohibit you	10 (5.9)
Dislike	59 (34.7)
Will you volunteer to be a member of human milk banking association?*	
Financial support	60 (28.6)
Advocacy	57 (27.1)
Leader	7 (3.3)
Professional support	47 (22.4)
Others	39 (18.6)

*Multiple responses. HMB: Human milk bank

Discussion

Our study assessed the knowledge and attitude of mothers toward breast milk donation and human milk banking. More than two-fifths of mothers have ever heard of human milk donation in the study, similar to findings reported by Iloh *et al*. in Southeast Nigeria, but higher than the 9.4% reported by Gürol *et al*. and a study in south-south Nigeria.[16-18] The higher percentage in this study might be because most of the respondents are mothers in the newborn unit of the centers who have babies taking expressed breast milk. They may have heard about breast milk donation and banking from the doctors and nurses in the ward. In addition, the study also found that more than half (56%) of the mothers received information about donor breast milk from health professionals in keeping with Iloh *et al*. (46%) and 46.1% reported in another study in south-south Nigeria but contrary to findings from a study in Izmir, which reported that 87% of participants received information from the media.[13,16,17,19] The disparity may be because women in Turkey have better access to the Internet than women in Nigeria.[20,21] Furthermore, we found that 6 in 10 mothers in this study were unwilling to use milk from HMB for their babies, similar to the findings from studies in Benin and Izmir.[17,19] It is not surprising to have this high rate in this study because most Nigerian women, especially from the southwest, believe that every woman should breastfeed their baby. This study found the fear of transmission of the disease as one of the main reasons mothers were unwilling to accept milk from HMB for their babies, similar to studies in Enugu and Benin in Nigeria and the study in Turkey.[16,17,19] It has been reported that more mothers were willing to utilize milk from HMB when told that the milk would be screened and tested for infectious diseases before being stored or used.[16] Other reasons for being unwilling to use HMB were religion and culture, in agreement with a previous study in the country and the Turkey study that reported religion as a leading barrier to acceptance of HMB among mothers.[16,19]

There should be enlightenment of the religious leaders on breast milk donation to strengthen the awareness creation in their different congregations. Other reasons why mothers in our study were not willing to utilize milk from HMB include the belief that breast milk from another woman is nutritionally less and a general dislike for it. There is a need to educate mothers on the benefits of HMB. In our study, two-thirds of the mothers were willing to donate their milk if a milk bank is made available. This is comparable to findings by Gürol *et al*., but at variance with Can and Ünülü study.[18,22] Furthermore, Azema and Callahan observed that the mothers willing to donate their milk; believe that they had an excess amount of milk and would like to help others by donating; this can be a plausible explanation for this finding.[23] In addition,

Table 3: Factors associated with willingness of mothers to feed babies with milk from human milk bank

Variable	Willingness to feed baby with milk from HMB (*n*=160), *n*(%)	Unwillingness to feed baby with milk from HMB (*n*=242), *n*(%)	Total, *n* (%)	*P*
Age (years)				
≤20	9 (5.6)	11 (4.5)	20 (5.0)	0.192
21-30	92 (57.5)	136 (56.2)	228 (56.7)	
31-40	50 (31.3)	90 (37.2)	140 (34.8)	
≥41	9 (5.6)	5 (2.1)	14 (3.5)	
Occupation				
Unemployed	46 (28.8)	0	46 (11.4)	<0.001*
Employed	114 (71.3)	242 (99.8)	356 (88.6)	
Education status				
Below Secondary	15 (9.4)	5 (2.1)	20 (4.9)	0.001
Secondary and higher	145 (90.6)	237 (97.9)	382 (95.1)	
Marital status				
Married	132 (82.5)	214 (88.4)	346 (86.1)	0.093
Unmarried	28 (17.5)	28 (11.6)	56 (13.9)	
Religion				
Christianity	148 (92.5)	205 (84.7)	353 (87.8)	0.019
Islam	12 (7.5)	37 (15.3)	49 (12.2)	
Baby has problem				
Yes	24 (15.0)	52 (21.5)	76 (18.9)	0.104
No	136 (85.0)	190 (78.5)	326 (81.1)	
Mother has problem breastfeeding				
Yes	64 (40.0)	62 (25.6)	126 (31.3)	0.002
No	96 (60.0)	180 (74.4)	276 (68.7)	

*Fishers $P<0.001$. HMB: Human milk bank

mothers who were unwilling to donate their milk believe that it may create health problems for them, affect their physical appearance and that the milk may not be enough for their babies. Some mothers also reported religious and cultural reasons, in agreement with Gürol *et al*.[18] Poor knowledge of the importance of breast milk against infant formula may be responsible for this finding. Therefore, there is a need to create awareness and educate people, especially mothers, on donor human breast milk and human milk banking. The use of donor milk is essential; the WHO recommends donated breast milk as the best alternative when the milk from the mother is not available.[7] It is preferred to infant formula. However, some studies recommend that donor breastmilk should only be used for preterm and low birth weight babies in the neonatal intensive care unit when the breastmilk from their mothers is not available. Every mother should be willing and encouraged to breastfeed their babies. In this study, mother's level of education and occupation were associated with willingness to feed babies with milk from HMB. Equally, mothers who had problems breastfeeding were more willing to feed their babies with milk from HMB. This is in keeping with existing studies that have shown similar results.[16,19]

The strength of this study is that it gives insight into mothers' perceptions of donor breast milk, human milk banking, and the possible barriers to effective implementation when launched in the country. Another strength is the multicenter design that draws experience from two different centers in the region. However, the study has some limitations, such as the cross-sectional nature of the data, which limits inferring causal relationships between variables.

Conclusion

This study shows that the number of women who have heard about milk donation and milk banking is suboptimal, with almost half interested in donating their breast milk. The findings are encouraging; however, concerns like religion and disease transfer and other barriers to human milk banking should be addressed. Therefore, it is imperative to educate mothers, religious, community leaders, and the general populace on the value of donor human breast milk and human milk banking.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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