

Practice of Breast milk Expression and Its Influence on Exclusive Breastfeeding among Working Mothers in Kano; North-West, Nigeria

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ABSTRACT

Background: Many studies have shown that working mothers face challenges in achieving exclusive breastfeeding (EBF). The practice of breast milk expression (BME) is an important strategy to achieve EBF. **Aim:** To assess the practice and influence of BME on EBF among working mothers with infants up to six months of age attending the immunization clinic of Aminu Kano Teaching Hospital (AKTH), Kano. **Methods:** This was across-sectional study among working breastfeeding mothers attending the immunization clinic of AKTH. A structured interviewer-administered questionnaire was used to obtain data on knowledge and practice of BME. Data collected were analysed using SPSS windows version 21. A χ^2 test was used to compare variables where appropriate. **Result:** Three hundred and ten breast feeding mothers participated in the survey. The mean age \pm SD of respondents were (30.68 \pm 5.6). Their median parity was 3. Only 103(33.2%) practiced BME. Reason given by half (54.8%) of respondents who practiced BME was to achieve six months of EBF which was found to be statistically significant (p-value =0.001). **Conclusion:** Although most working mothers have fair knowledge on expression and storage of breast milk, only a minority put that into practice, and the main reason for practicing BME was to achieve six months of EBF. Age of mother, ethnicity and reason for BME were found to be statistically significant ($\chi^2 = 52.7, P= 0.01$), ($\chi^2 =7.99, P = 0.046$), ($\chi^2 = 305.5, P = 0.001$).

Key words: Breast milk Expression, Exclusive Breast Feeding, Influence, Practice.

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Introduction

Nigeria is the most populous country in Africa,¹ with a birth rate of about 37/1000.² each year, at least 7 million babies are born. The current total for children under the age of five stands at nearly 31 million.² Up to 96% of deaths among children under 12 months of age in developing countries result from suboptimal breastfeeding.³ Therefore adequate

breastfeeding is invaluable in preventing infant mortality.

The current exclusive breastfeeding rate in Nigeria is 29% indicating that only a mere percentage of infants aged 0-6 months are exclusively breastfed leaving a whopping 71% of infants not enjoying the benefits of breast milk in their formative year.⁴ It is worth noting that there is a great challenge concerning exclusive breast feeding as mothers and caregivers are neither fully aware of its importance nor receive adequate support from the environment, spouse, family members, place of work among others to optimally breastfeed their babies.^{3,4}

Exclusive breastfeeding means that the infant receives only breast milk in the first six months of life.⁵ other liquids or solids are not given, with the exception of oral rehydration solution, drops/syrups of vitamins, minerals or medicines. World Health Organization (WHO) recommends that Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.⁶

Breastfeeding has many health and socioeconomic benefits to babies, mothers, families and the society, particularly if practiced exclusively for the first 6 months of life.⁶⁻⁸ Breast milk contains all the

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nutrients an infant need in the first six months of life. It protects against common childhood illnesses such as respiratory tract infections and diarrheal diseases.⁹ It may also have longer-term health benefits for the mother and child, such as reducing the risk of overweight and obesity in childhood and adolescence. Among other benefits, mothers who breastfeed their infants experience lower risk of breast cancer.⁶

Globally, about 40% of infants were exclusively breastfed and this is expected to rise to 50% by 2025.⁷ Although the rates of exclusive breast feeding for the past two decades have been increasing, it is still a long road to achieve the World Health Assembly's global target of at least 50% exclusive breastfeeding by 2025.¹⁰ The reason for difficulty in achieving this was partly due to the increasing participation of working mothers in full term employment and the inadequate support of breastfeeding at the workplace.¹¹ WHO have faulted the rate of exclusive breastfeeding in Nigeria, which the 2018 report put at 29%.¹² This was corroborated by studies conducted in three regions of Nigeria, which revealed the rate of EBF to be 16%, 10% and 2% in Ibadan, Abakaliki, and Zaria respectively.¹³

Breast milk expression means squeezing milk out of the breast so it can be used to feed the baby immediately or stored for the purpose of feeding the baby later. Various methods used for breast milk expression include; the hand, and breasts pump (manual/electrical). Mothers may need to express breast milk for a variety of reasons. These include: breast milk as the main feed or 'top-up feed,' poor latching, returning back to work, mother's preference, and to reduce breast engorgement.^{14,15}

Expression and storage of breastmilk is a strategy that ensures continued breast milk consumption in the event of temporary separation of an infant from the mother.¹⁶ It is believed to be a feasible intervention to ensure high-level coverage of exclusive breastfeeding.

Breastmilk expression is an important means to overcome the various hurdles hindering the practice of EBF by mothers, such as returning to work early, maternal health problems,¹⁷ flexible time, employer's support, and social attitudes toward breastfeeding among others.¹⁸

A multifaceted approach is required to improve the practice of EBF and to overcome the various hurdles hindering its practice. This could be achieved

through global efforts such as the Baby-friendly Hospital Initiative,¹⁹ guidelines to ensure a working environment that is compatible with breastfeeding, including paid parental leave with longer maternity leave, safe places for breastfeeding and breastfeeding breaks at work.

Methods

This was a cross-sectional study conducted at the immunization clinic of Aminu Kano Teaching Hospital, from 22/10/2021 to 02/02/2022. The study population comprised working mothers with infants up to six months of age attending immunization clinic AKTH. Ethical approval was obtained from the Ethical Review Committee of the Aminu Kano Teaching Hospital (NHREC/28/01/2020/AKTH/EC/3203). Informed written consent was obtained from each study participant. The confidentiality of the participants was strictly maintained throughout the study according to the Helsinki declaration 2013. For those who met the inclusion criteria, an interviewer-based questionnaire was used to obtain their bio-data, knowledge, and practice of breastmilk expression.

Sample size determination

Sample size was determined using the Fischer's formula.²⁰

$$n = \frac{Z^2pq}{d^2}$$

n = minimum sample size

z = normal standard deviate set at 95% confidence limit = 1.96

q = 1-p (complementary probability)

d = margin of error = 5% = 0.05

p = the prevalence of expressed breastmilk feeding 33.7% (0.34) from a study conducted in Sokoto.²¹

Therefore, the minimum sample size calculated was 345

Study Population: comprised of working mothers with infants up to six months of age attending immunization clinic AKTH

Selection of subjects: The immunization clinic run for eight hours every day from 8 am to 4 pm daily and an average of 10-15 women were interviewed on different days. The study focused on working



mothers presenting their children for immunization. The recruitment was done based on the consent and acceptance of the women, those that were willing to answer the questionnaire were included in the study. A Minimum of 20 women participated in the study every week.

Procedure: A pretested, structured, interviewer-administered questionnaire was developed after a thorough review of the literature and used to obtain information on the participants. The questionnaire was used to ascertain socio-demographic characteristics of the respondents, their practice on breastmilk expression and its influence on exclusive breastfeeding.

Data analysis: Data were entered into a computer system for analysis. Statistical Package for Social Sciences (SPSS version 21) software was used. χ^2 was used for categorical data, and the P values ≤ 0.05 was considered to be statistically significant.

Results

The survey was conducted from 22nd October 2021 to 2nd February 2022. Among the 345 respondents, only 310 fully participated in the survey, giving a response rate of 90%. The mean age of mothers was 30.68 ± 5.6 years, and that of the infants was 3.05 ± 1.8 months as shown in table 1.

Table 1: Sociodemographic Characteristics of Respondents

| Variable | Frequency | Percentage (%) |
|------------------------------------|-----------|----------------|
| Age group (mothers)(years) | | |
| 16-21 | 19 | 6 |
| 22-27 | 77 | 30.3 |
| 28-33 | 118 | 38.1 |
| 34-39 | 72 | 23.2 |
| 40-45 | 24 | 7.7 |
| Mean = 30.68 ± 5.6 | | |
| Age group (infants)(months) | | |
| 0-3 | 201 | 64.8 |
| 4-6 | 109 | 35.2 |
| Mean = 3.05 ± 1.8 | | |
| Ethnicity | | |
| Hausa | 207 | 66.8 |
| Yoruba | 37 | 11.9 |
| Igbo | 17 | 5.5 |
| Others* | 49 | 15.8 |
| Parity | | |
| Primipara | 80 | 25.8 |
| Multipara | 184 | 59.4 |



| | | |
|--------------------------------|-----|------|
| Grandmultipara | 46 | 14.7 |
| Educational status | | |
| Primary | 29 | 9.4 |
| Secondary | 31 | 10 |
| Tertiary | 232 | 74.8 |
| No formal education | 18 | 5.8 |
| Exclusive breastfeeding | | |
| Yes | 103 | 33.2 |
| No | 207 | 66.8 |

*Other ethnic groups include Ebira, Igala, Edo, Kanuri, Birom

Two hundred and eighty-five (91.9%) of the mothers were married, while 10 (3.2%) were divorced, 3 (1.5%) were separated, and 11 (3.5%) were widowed. Hausas were the largest ethnic group with a figure of 207 (66.8%); 37 (11.9%) were Yoruba, 17 (5.5%) were Igbo, while other tribes (Kanuri, Ebira, Edo, Igala, Birom, Babur, Idoma) constituted 49 (15.8%) of the subjects studied.

Majority of the mothers were multiparous making 184 (59.4%), while 80 (25.8%) of the mothers were primiparous, and 46 (14.7%) were grand multiparous.

Two hundred and thirty-two (74.8%) of the mothers attained tertiary level of education, 31 (10%) attained secondary education, 29 (9.4%) had primary education, while 18 (5.8%) had no formal education. Among the 310 respondents, only 103 (33.2%) practiced exclusive breastfeeding.

Almost all the women, 297 (96%), had knowledge that breastmilk can be expressed by hand or pump

(table 2). Two hundred and thirty two (75%) believed that expressed breastmilk is still nutritious for the baby to feed on, and majority 271(87%) knew that handwashing is important before expressing breastmilk. Also 65% knew that it is not correct to discard the first few drops of milk when expressing breastmilk, while only 139(45%) knew that there is no difference in volume when expressing breastmilk by hand or pump.

More than half of the mothers knew that breastmilk could be stored at room temperature, refrigerated, or stored in the freezer. However there is a huge knowledge gap in terms of duration of storage at room temperature, in the refrigerator or freezer. Two hundred (66%) believe that breastmilk can be stored at room temperature up to 8 hours, while only 71(23%) and 86 (28%) knew that it can be stored up to 72 hours in the refrigerator and frozen up to 9 months respectively.



Table 2: Showing Knowledge of breastmilk expression and storage

| Indicator | Level | Score | Frequency n (%) |
|--|--------------------------------------|-------|-----------------|
| What can be used to express breastmilk? | Not known | 0 | 13 (4.2) |
| | Hand | 1 | 297 (95.8) |
| | Pump(manual/electric) | 1 | |
| | Both hand and pump (manual/electric) | 1 | |
| There is no difference in volume when expressing breastmilk by hand or using a pump | Yes | 1 | 139 (44.8) |
| | No/ I don't know | 0 | 171 (55.2) |
| Whether EBM is nutritious for the baby | Yes | 1 | 232 (74.8) |
| | No/I don't know | 0 | 78 (25.2) |
| Hand washing is important before expressing breastmilk | Yes | 1 | 271 (87.4) |
| | No/I don't know | 0 | 39 (12.6) |
| You should not discard the first few drops of milk when expressing milk | Yes | 1 | 202 (65.2) |
| | No/ I don't know | | 108 (34.8) |
| Breastmilk can be stored at room temperature | Yes | 1 | 186 (60) |
| | No/I don't know | 0 | 124 (40) |
| Breastmilk can be stored in a refrigerator | Yes | 1 | 200 (64.5) |
| | No/ I don't know | 0 | 110 (35.5) |
| Breastmilk can be stored in a freezer | Yes | 1 | 165 (53.4) |
| | No/ I don't know | 0 | 144 (46.6) |
| How long can breastmilk be stored in room air | Up to 8hrs | 1 | 207 (65.8) |
| | >8hrs/ not known | 0 | 106 (34.2) |



| | | | |
|--|----------------------|---|------------|
| How long can breastmilk be stored in a refrigerator | Up to 72hrs | 1 | 71 (22.9) |
| | >72hrs/ not known | 0 | 239 (77.1) |
| How long can breastmilk be frozen | Up to 9months | 1 | 86 (27.7) |
| | > 9 months/not known | 0 | 224 (72.3) |

One hundred and three (33.2%) respondents practiced breast milk expression (figure 1), out of which 57 (54.8%) practiced breast milk expression to achieve six months of exclusive breastfeeding; 51(58.7%) learned how to express breast milk from healthcare providers followed by friend/relative 28 (27%) (figure 2).

Hand expression was done by 72 (69.2%) of the mothers, 20 (19.2%) expressed by pump while 12 (11.5%) expressed by both hand and pump. Most mothers preferred expressing milk at home 74 (70.6%) compared to expressing it at work 11 (9.8%). Mothers with access to refrigerators at home were 85 (85.6%), while only 22 (22.9%) have access to a

refrigerator at work. Despite higher numbers of mothers having refrigerators at home, only 2 (2.1%) store breast milk for up to 9 months, and 11(11.3%) store it for up to 72hrs. Most mothers 84 (86.6%) preferred to store breast milk at room temperature. The storage of milk was mainly in baby feeding bottles 62 (64.6%), 24 (25%) stored in cups, while 10 (10.4%) were stored in special milk bags. Only 32 (31.4%) of the mothers have designated locations at work to express breast milk while 21 (22.6%) have allocated time to express breast milk at work. The major challenge mothers have with expressing breast milk was lack of place to express breast milk at work 49 (49%).

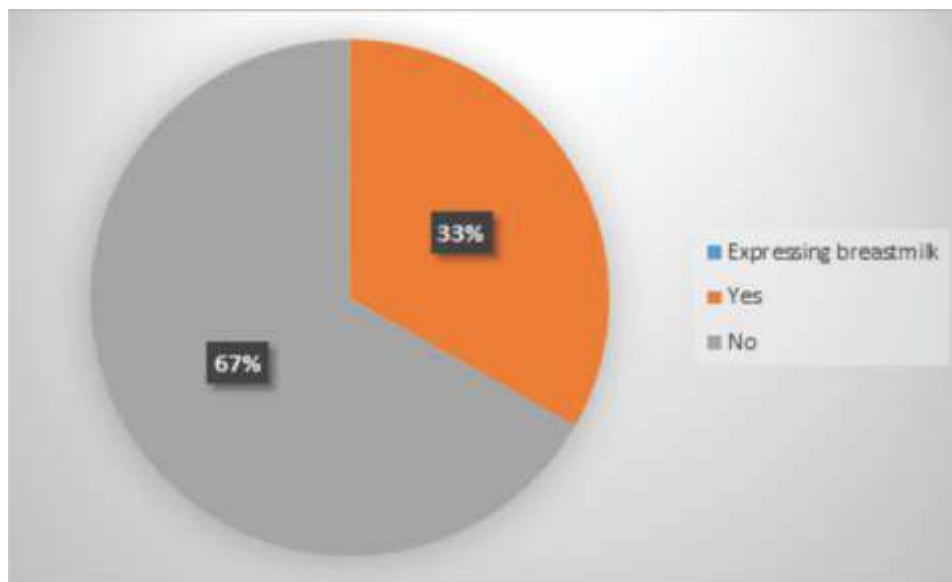


Figure 1: Showing Practice of Breast Milk Expression

All the variables were tested against the practice of breast milk expression (table 3). Among the variables that were statistically significant are; the age of the mother, ethnic group

and reason for expressing breast milk with a P-value of <0.05. While among the variables not statistically significant were: the educational status of the mother, age of the child, and marital status.



Table 3: Association between Breast Milk Expression and variables

| Variable | Frequency (%) | Chi-squared test | P- value |
|-----------------------------------|---------------|------------------|----------|
| Age group of mother | | | |
| 16-21 | 19 (6) | 52.7 | 0.01 |
| 22-27 | 77 (30.3) | | |
| 28-33 | 118 (38.1) | | |
| 34-39 | 72 (23.2) | | |
| 40-45 | 24 (7.7) | | |
| Age group of child | | | |
| 0-3 | 201 (64.8) | 7.703 | 0.26 |
| 4-6 | 109 (35.2) | | |
| Marital Status | | | |
| Married | 285(91.9) | 7.108 | 0.069 |
| Divorced | 10(3.2) | | |
| Separated | 3(1.5) | | |
| Widowed | 11(3.5) | | |
| Ethnic group | | | |
| Hausa | 207 (66.8) | 7.99 | 0.046 |
| Yoruba | 37 (11.9) | | |
| Igbo | 17 | | |
| Others* | 49 | | |
| Educational Status | | | |
| Primary | 29 (9.4) | 1.42 | 0.70 |
| Secondary | 31(10) | | |
| Tertiary | 232 (74.8) | | |
| No formal education | 18 (5.8) | | |
| Reason for expressing breastmilk | | | |
| For someone else to feed the baby | 25 (24) | 305.5 | 0.001 |



| | |
|-------------------------------------|-----------|
| To give the baby while I am at work | 9 (8.7) |
| To prevent engorgement | |
| To achieve 6 months of EBF | 13 (12.5) |
| | 57 (54.8) |

*Other tribes (Kanuri, Ebira, Edo, Igala, Birom, Babur, Idoma)

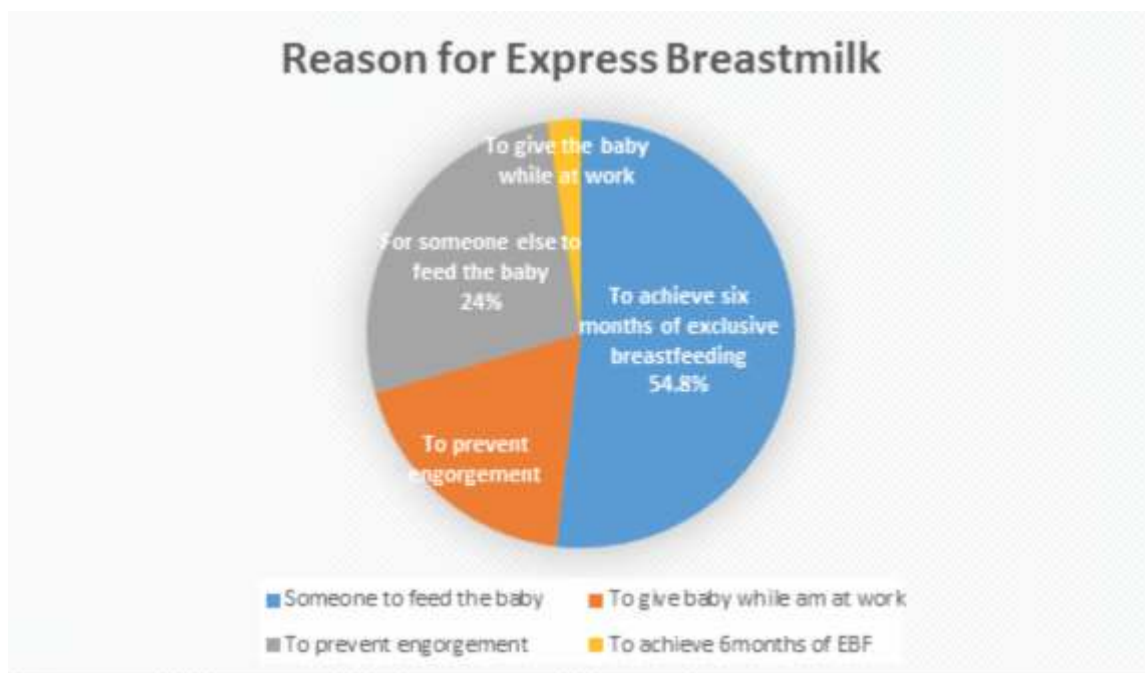


Figure 2: Breast milk Expression and Reasons for Expressing Breast milk.

Discussion

Breastmilk expression has been seen as a strategy to practice exclusive breastfeeding. The 2018 Baby Friendly Hospital Initiative (BFHI) implementation guide recognizes that mothers need to be trained on how to express breastmilk as a way of maintaining lactation in the event of being separated from their infants temporarily.¹⁹ Breast milk expression is believed to be a feasible intervention to ensure high-level coverage of exclusive breastfeeding. Reports from studies across the globe showed a direct association between the prevalence of expressed breast milk feeding and the overall prevalence of

exclusive breastfeeding.²² In the past, Expressed breastmilk was predominantly for those infants who were immature, small or unwell, but a systemic review in 2013 shows that it has become increasingly common in healthy term infants.²³ In this study, only 103 (33.2%) of mothers expressed and stored breast milk. The age range of mothers was 18-45 years which indicates that they are in their reproductive age.²⁴

Most of the mothers (95.8%) knew about methods of breast milk expression. Information on the expression of milk was mainly from health care



providers (58.7%) and this is in keeping with similar findings in Kano²⁵ and also in support of the study on knowledge of, and attitudes to giving expressed breastmilk to infants in rural coastal Kenya.²⁶ This shows that health education during antenatal and immunization clinics plays a major role in addressing issues to child health.

Most (69.2%) mothers seemed to prefer expressing using the hand technique followed by the pump in 19.2%, while 11.5% use both. This is an impressive start as the 2018 BFHI recognizes that hand expression is more advantageous in terms of availability and convenience for all mothers.¹⁹

Twenty-four percent of mothers recognized the need to express breast milk for someone else to feed their baby, while the reason given by 54.8% was to achieve six months of exclusive breastfeeding. This shows that mothers are seeing an opportunity to achieve exclusive breastfeeding through expression of breastmilk. Exerted efforts need to be made in empowering lactating mothers with the correct knowledge and skills in BME.

In this study, 70.6% of working mothers preferred to express their milk at home compared to expressing at work. This seems to indicate that women found the home environment a more comfortable place to express milk compared to the workplace, indicating the need to make effort in providing lactation rooms at workplace.

Up to 60% of the mothers responded correctly that expressed milk could be stored at room temperature, and 64.5% knew that it could be refrigerated, but only 33.2% practiced BME. This shows that having the correct knowledge of expressing breastmilk does not necessarily translate to practice.

The result on handwashing was encouraging as most mothers (87.4%) demonstrated washing their hands before expressing breastmilk.

In terms of the workplace, only 31.4% and 22.6% of mothers who express breast milk reported to have designated location and allocated time for expressing breast milk at workplace.

Extended freezer storage of milk has been shown to preserve key macronutrients and immunoactive components of human milk.²⁷ Most mothers (62.2%) store milk at room temperature, yet 85.6% reported having a refrigerator at home.

This means that education is vital to all mothers concerning the use of refrigerators or freezers to safely store human milk.

There is a statistically significant association ($\chi^2=52.7$, $P=0.01$) between the age of mothers and practice of breast milk expression, with the highest number of mothers that practice breast milk (118) expression reported among the age range of 28-33 years. Also, there is a statistically significant association between breast milk expression and reason for expressing breast milk ($\chi^2=305.5$, $P=0.0460$) where 54.8% of mothers reported expressing breast milk in order to achieve six months of exclusive breastfeeding. This coincides with the study in a public well-baby clinic, in Kenya, on Knowledge, attitude, and practice of breast milk expression among working mothers.¹⁶

Limitations

This study was based on reported rather than the observed practice of breast milk expression. There was the risk that the mother might have reported what was expected of them, rather than their actual practice.

The study was carried out among mothers attending the immunization clinic at Aminu Kano Teaching Hospital. The findings may not be generalizable to the whole state, country, and globe.

Conclusion

Most working mothers are knowledgeable about the expression and storage of breast milk, however, only a minority practice breast milk expression. The main reason for practicing breast milk expression by mothers is to achieve six months of exclusive breastfeeding. Many working mothers lack adequate facilities to enable them to express and safely store breast milk at their workplace.

It is recommended that;

Health education should be provided during antenatal and immunization visits to enlighten and encourage all mothers on the practice of breast milk expression and use of expressed breastmilk.

Provision of well-equipped lactation rooms and break time would help in encouraging more working mothers to express breast milk which will inadvertently help in EBF.

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