

Perceptions of Mothers with Preterm Babies towards Donor Breast Milk at Women and Newborn Hospital, Lusaka Zambia

Monde Muyanganam^{1,2*}, Maureen Masumo², Mutinke Zulu²

¹Department of Paediatrics and Neonatal Nursing, Lusaka College of Nursing, Lusaka, Zambia

²School of Nursing Sciences, University of Zambia, Lusaka, Zambia

Email: *muyanganam@yahoo.com

How to cite this paper: Muyanganam, M., Masumo, M. and Zulu, M. (2024) Perceptions of Mothers with Preterm Babies towards Donor Breast Milk at Women and Newborn Hospital, Lusaka Zambia. *Open Journal of Pediatrics*, 14, 669-685.

<https://doi.org/10.4236/ojped.2024.144064>

Received: April 10, 2024

Accepted: June 4, 2024

Published: June 7, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Breast milk offers essential nutrients crucial for the development of the pre-term immune system, thus reducing the incidence of infection and mortality often associated with prematurity. In the absence of breast milk, the preferred option is donated breast milk, the best alternative for hospitalized neonates whose mothers have insufficient breast milk or are unavailable. In Zambia, donor breast milk is unavailable. Instead, the protocol recommends the administration of formula milk. However, the use of formula milk in preterm babies is associated with an increased risk of necrotizing enterocolitis and sepsis. Zambia needs to establish a donor milk bank, hence the need to understand the perception of mothers towards donated breast milk. A qualitative descriptive case study utilized 10 focus group discussions with in-depth interviews, purposively selected using a variation strategy. Data was thematically analysed. Participants demonstrated potential acceptance to donor breast milk utilization, as more nutritional compared to formula despite lack of awareness. Concerns related to safety, quality, fear of disease transmission and discomfort feeding from a different bloodline were identified as hinderance to possible utilisation. These perceptions underscore the importance of educational initiatives aimed at dispelling myths and misconceptions surrounding donor breast milk and establishing donor breast milk programs. Therefore, the study recommends educational initiatives tailored to raise awareness to mothers about donor breast milk.

Keywords

Perception, Donor Breast Milk, Preterm Baby

1. Introduction

Breast milk is recommended by the World Health Organisation as the optimal source of nutrition for babies in the initial six months of life [1]. Its composition contains vital immunological properties essential for the development of an infant's immune system, particularly during the first six months of life. Premature neonates, born before term, encounter heightened health risks due to diminished transfer of antibodies through the placenta, underscoring the importance of breast milk for their immune system development [2].

BM is associated with several short and long-term benefits of, providing nutrition and optimizing the development of the preterm immune system, thus reducing the incidence of infection often associated with prematurity and low birth weight (LBW) in babies [3]. Breast milk (BM) is the preferred choice for preterm infants over infant formula, demonstrating a distinct preference. This preference significantly reduces the risk of necrotizing enterocolitis (NEC) and sepsis compared to the use of formula milk [4].

However, World Health Organization (WHO) recommends that for neonates who cannot receive breast milk from their mothers, the next preferred option is donated breast milk. Donated breast milk (DBM) according to the National Institute of Health and Clinical Excellence (NICE) is defined as milk expressed by a mother that is then processed by a donor milk bank (DMB) for use by a recipient that is not the mother's baby [5]. DMB are essential in facilitating the collection, processing, and distribution of donor human milk, serving as intermediaries between donors and recipients, with the primary objective being to ensure the quality and safety of this biological product. Thus, DBM is the best alternative for hospitalized neonates whose mothers have insufficient breast milk or are unavailable. Countries worldwide have established DMBs to allow mothers with excess milk to donate, driven by altruism, surplus milk, awareness of the benefits, and social significance [6].

Numerous countries globally, such as Brazil (with around 157 milk banks), Sweden (with 64), the United Kingdom (with 112), Hungary (with 82), and the United States of America (with 69), have implemented donor milk banks. This initiative is propelled by altruism, recognition of benefits, and societal significance [6]. In Africa, the donation of donor breast milk is relatively scarce, with statistics not well-established in most countries [7].

Exploring perceptions of DBM is crucial for establishing donor milk banking. However, in Zambia, there is a dearth of data on DBM, highlighting the significance of understanding perceptions of DBM. Therefore, this study sought to explore the perceptions of mothers with preterm babies towards DBM. Study findings will be instrumental in informing policy formulation and implementing DBM programs in the country.

Mothers' perceptions towards donor breast milk vary globally. Studies reveal mixed views, with some recognizing its benefits while others express concerns [2] [8]. Mothers' Perceptions of DBM differ, some are influenced by individual

preferences, interpersonal, cultural, and social factors [9] [10]. Majority of the mothers face breast milk challenges from maternal illness and mortality, altering the initiation of breastfeeding which is widely recognised for its favourable outcomes in preterm babies, highlighting the essential role of healthcare professionals in offering support [11].

Various barriers hinder the utilization of donor breast milk, including sociocultural, economic, and healthcare system dynamics [12]. Concerns about safety, lack of awareness, discomfort with using another mother's milk, and issues related to transportation and distribution form significant obstacles [13] [14]. Addressing these barriers through education, support, and policy interventions is essential to promote the utilization of donor breast milk [15], hence the study to explore the perception of mothers.

Prematurity ranks as the second leading cause of neonatal mortality in the country, with approximately 77,600 preterm births occurring annually [16]. Achieving Sustainable Development Goal 3, which aims to reduce global neonatal mortality to 12 deaths per 1000 live births by 2030, requires Zambia to implement effective strategies. 85% of neonatal mortality in Zambia is attributed to prematurity, resulting in approximately 6800 preterm deaths annually from preventable causes [17]. Simple interventions such as kangaroo care and feeding support, including breast milk, can significantly improve preterm infant survival rates [18]. However, there is a lack of data on donor breast milk in Zambia, emphasizing the importance of exploring the perceptions of DBM. The findings from the study will be crucial for policy formulation aimed at implementing donor breast milk programs in the country.

Research gaps exist in understanding mothers' perceptions towards donor breast milk in Zambia's context. This study aimed to fill these gaps by exploring mothers' perceptions toward DBM at Women and New-Born Hospital (WNBH) in Lusaka, Zambia. By exploring local contextual factors, the study sought to inform targeted interventions and educational programs to promote the optimal utilization of donor breast milk among mothers of preterm infants in Zambia.

2. Methods

2.1. Study Design

The qualitative descriptive case study aimed to explore mothers' perceptions of donated breast milk. The data collection process lasted for one month and took place at the Women and Newborn Hospital (UTH-WNBH) within the University Teaching Hospital in Lusaka, Zambia, a prominent tertiary hospital known for its exceptional women's and neonatal care services.

2.2. Study Population

The study targeted mothers nursing preterm babies at WNBH, Lusaka, Zambia, ensuring a diverse range of experiences and perspectives in understanding perceptions towards donated breast milk.

2.3. Sample Size

The sample size determination aimed at achieving data saturation, continuing interviews until no new information emerged, particularly focusing on mothers with preterm babies at WNBH until saturation was reached. Purposive sampling with variation ensured representation across key criteria relevant to perceptions of donated breast milk, facilitating a comprehensive understanding of the phenomenon. This involved mothers above 18 nursing preterm babies at WNBH NICU, while exclusion criteria included critically ill babies or those with congenital malformations, ensuring a focused study population.

2.4. Data Collection Tool and Technique

An unstructured guide was utilized for the interviews, with focus group discussions conducted in both English and Nyanja (translated to English and transcribed). The study recorded audio and transcribed the discussions using Microsoft Word Office.

2.5. Data Analysis

A thematic descriptive framework was utilized to analyze the data, involving the identification of key themes and patterns. This process encompassed systematically organizing and categorizing data into meaningful units, generating descriptive summaries, and identifying recurring themes to provide a comprehensive understanding of the research topic. Summaries were aligned with quotations to illustrate the direct correspondence between participants' statements and the emerging themes, synchronizing their voices and experiences to bolster the credibility and trustworthiness of the qualitative analysis.

2.6. Trustworthiness

Ensuring the trustworthiness of the study involved leveraging qualitative skills through prolonged engagement, data triangulation, and strict adherence to ethical standards, thereby reinforcing the credibility and reliability of the findings.

2.7. Ethical Consideration

Ethical clearance, granted under reference number 4438-2023, was obtained, and participants provided voluntary informed consent, with stringent measures in place to safeguard anonymity and autonomy, thereby upholding ethical integrity throughout the study.

3. Results

3.1. Attributes of Participants

In **Table 1**, it's evident that out of 92 participants, majority of the participants were in the education variation. Education levels varied among participants, with a majority having limited formal education, while others were educated, highlighting the importance of tailoring the educational initiative to accommodate

individuals to varied levels of education. Additionally, the majority of participants were unemployed and identified themselves as housewives. The age distribution showed 24 participants between 18 to 30 years old, and an equal number above 30 years. Nine mothers stayed in the NICU for 3 to 7 days, while 8 stayed longer than 7 days. Additionally, 9 participants were unavailable mothers, comprising 4 grandmothers, 2 aunties, and 3 healthcare providers.

In **Table 2**, participants recognized breast milk's importance for preterm infants but often opted for formula due to challenges. Themes included breast milk's benefits (nutritional value, feeding challenges) and perceptions toward donated milk: positive (nutrition, potential acceptance) and negative (inheritance fears, cultural taboos). Family consent also influenced perceptions.

Table 1. Attributes of participants.

Attributes	Total Number (N = 92)
Education	
Un-education	12
Educated	8
Grade 9	12
Above grade 9	10
Age Groups	
18 - 30 years	12
Above 30 years	12
Duration of stay in NICU by available Mothers	
3 - 7 days	9
Above 7 days	8
Unavailable Mothers	
Grandmothers	4
Aunties	2
Health care providers	3

Table 2. Thematic descriptive framework on DBM perception.

Theme	Subtheme	Quotations
Benefits of breast milk	• Nutritional superiority	• “Breast milk surpasses infant formulas in nutritional value, making any comparison between them incomparable. Its nutrient composition aids in combating diseases, making breast milk the superior choice” (respondent 1, educated FDG).
	• Immune protection	• “Breast milk is optimal feed for babies as it provides essential nutrients, and immune protection against diseases, and promotes the overall health and well-being of a preterm baby”.
	• Emotional connection	• “I believe nothing compares to my own breast milk for my baby. There’s a connection, a natural goodness that comes with it. Formula feels like a compromise, and I want the best for my preterm baby” (respondent 3, 18 - 30 years FDG).

Continued

Awareness of Donor Breast Milk	<ul style="list-style-type: none"> Lack of awareness Comparison to blood donation 	<ul style="list-style-type: none"> “I never knew there was such a thing as donor breast milk. It’s surprising how little we know about it, and it makes me realize the importance of spreading awareness so that mothers like me can make informed choices for our babies” (respondent number 3, 3 - 7 days, FGD). “It closely resembles blood donation, the only distinction being the substance—milk, which undergoes disease screening just like blood, before transfusion” (respondent number 6, grade 9, FGD).
Potential acceptance	<ul style="list-style-type: none"> Perceived benefits Importance of health Lifesaving initiative 	<ul style="list-style-type: none"> “Donor breast milk, akin to natural breast milk, contains all the essential nutrients required by the baby in the correct proportions, as ordained by nature” (responded 2, unavailable mum FGD). “Knowing that donor milk can contribute to my baby’s health, especially when one has insufficient breast milk, makes it a viable option for me. It’s about giving our child the best possible start in life” (respondent number 7, 3 - 7 days FGD). “At first, I lacked breast milk, and the doctor cautioned against using formula for my twins because of their extreme prematurity. I think this situation led to a delay in their weight gain, as they lost weight during that time. If a donor milk initiative had been available, my babies could have gained weight sooner, potentially reducing my hospital stay” (responded 4, educated).
Hindrances to utilization of Donor Milk	<ul style="list-style-type: none"> Fear of disease transmission Cultural considerations Unfamiliarity Spousal approval 	<ul style="list-style-type: none"> “If breast milk is not thoroughly screened, there is a risk of transmitting HIV/AIDS and other blood-related illnesses to the baby” (respondent number 8, above 7 days FGD). “Our culture do not allow for such practices; I can only offer my baby milk from a relative” (respondent number 2, 3 - 7 days FGD). “I am unfamiliar with the concept of donor breast milk, which makes it exceedingly challenging for me to provide consent for it” (respondent 4, 3 - 7 days FGD). “I cannot make this decision independently; I need to consult with my husband before opting for donated breast milk” (respondent number 6, above 7 days FGD).

3.2. Theme 1—Benefits of Breast Milk

Breastmilk is optimal feed for preterm as it provides essential nutrients, and immune protection against diseases, and promotes the overall health and well-being of a preterm baby. Despite the stated benefits of breast milk unit protocol and guidelines is that, in cases where the mother is unavailable or unable to produce an adequate amount of breast milk, artificial formula is provided to the babies as an alternative feeding option.

3.2.1. Nutritional Superiority

Participants shared their belief in the vital significance of breast milk in comparison to formula for optimal growth and well-being of preterm infants. *“We recognise the significance of utilizing breast milk for feeding preterm babies, there are instances where mothers face challenges in producing the required*

quantity. In such cases, preterm formula milk is administered as an alternative” (respondent 4, health worker KI). Health workers in the unit recognize and follow established protocols and guidelines in instances where the mother is either unavailable or unable to produce a sufficient quantity of breast milk for her preterm baby. In such situations, the standard practice involves the administration of artificial preterm formula to meet the nutritional needs of the infants. Some considerations and preferences influence their feeding choices, emphasizing the importance of individualized and mother-centric approaches in the care of preterm infants.

3.2.2. Immune protection

Participants expressed their belief that breast milk provides optimal nutritional composition and is beneficial for preterm infants, offering protection against diarrhea and illness likely to affect the baby. As echoed by one participant stating, **“Breast milk has nutrient composition that aids in combating diseases, making breast milk the superior choice”** (respondent 3, above 7 days FDG).

3.2.3. Emotional Connection

Participant felt more connected with the baby when they breast feed noting that failure to provide milk to the baby can be emotionally dissatisfying. One participant stated that, **“I believe nothing compares to my own breast milk for my baby. There’s a connection, a natural goodness that comes with it. Formula feels like a compromise, and I want the best for my preterm baby,”** (respondent 3, 18 - 30 years FDG). Furthermore, participants mentioned facing emotional challenges that hindered the expression of milk, as echoed by one participant, **“We opt for formula milk because sometimes it’s difficult to express breast milk, we Mothers go through a lot in taking care of preterm babies. It’s not just about feeding; it’s about navigating a complex journey with emotional and logistical hurdles”** (respondent number 1, unavailable mother, FGD).

3.2.4. Good Nutritional Value

One participant eloquently captures this sentiment, stating, **“I believe nothing compares to my own breast milk for my baby. There’s a connection, a natural goodness that comes with it. Formula feels like a compromise, and I want the best for my preterm baby,”** (respondent 3, 18 - 30 years FDG). This quotation encapsulates the participants’ unanimous preference for breast milk, for its nutritional value.

Participants emphasized challenges such as delayed milk production and the necessity for alternative feeding methods when comparing breast milk to formula. **“Breast milk surpasses infant formulas in nutritional value, making any comparison between them incomparable. Its nutrient composition aids in combating diseases, making breast milk the superior choice”** (respondent 1, educated FDG). The sentiment underscores the significance participants attribute to breast milk for its nutritional benefits.

3.3. Theme 2—Awareness of Donated Breast Milk

3.3.1. Lack of Awareness

Participants expressed a widespread lack of awareness of DBM, highlighting the need for targeted educational campaigns. They emphasized the crucial role of education in informing choices and raising awareness on DBM as an alternative feeding option for preterm infants. As stated by one participant, **“I never knew there was such a thing as donor breast milk. It’s surprising how little we know about it, and it makes me realize the importance of spreading awareness about it”**, (respondent number 3, 3 - 7 days, FGD).

3.3.2. Comparison to Blood Donation

Participant drew donor milk parallels to wet nursing, highlighting the anonymity of donors. Despite its novelty, participants recognized the significant benefits of donated breast milk for preterm infants, citing its nutritional superiority over other feeding options. Additionally other participant likened donor milk to blood donation stating, **“It closely resembles blood donation, the only distinction being the substance—milk, which undergoes disease screening just like blood, before transfusion”** (respondent number 6, grade 9, FGD). Participants likened donating breast milk to blood donation, citing it, for its rigorous screening process despite its novelty, they recognized the significant benefits of DBM, citing its nutritional superiority over other feeding options. Participants disclosed a widespread lack of knowledge regarding DBM, as other participant likened donor milk to wet nursing stating,

“It is very similar to wet nursing, but the discrepancy lies in the fact that in this case, I am not acquainted with the individual providing the breast milk” (respondent number 3, available Mother, FGD). Despite the lack of awareness participants believed donated breast milk, is highly beneficial for all preterm babies, surpassing other feeding alternatives that lack the same nutritional richness found in BM, indicating potential acceptance and viewing DBM as a favorable and potentially lifesaving initiative.

3.4. Theme 3—Potential Acceptance of Donor Breast Milk

Participants expressed positive perceptions towards donor breast milk, indicating potential acceptance and viewing DBM and milk banking as a favorable and potentially lifesaving initiative.

3.4.1. Perceived Benefit

Participants expressed willingness to accept DBM, recognizing the implementation of DBM and DMBs as a highly beneficial initiative. They acknowledged that not all newborns have access to BM due to various circumstances, such as maternal milk insufficiency. One participant stated, **“I can receive the milk, other than having the baby starve”** responded 6, 3 - 7 days FGD.

Participants believed that the introduction of DMB would effectively address BM insufficiency among mothers.

3.4.2. Important to Baby's Health

Participants highlighted the significance of health considerations and acknowledged the perceived benefits of DBM for preterm well-being. The focus on health considerations and the recognition of potential benefits highlights the intricate factors influencing participants' perceptions towards accepting donor milk for the care of preterm infants. One participant noted, **"Knowing that donor milk can contribute to my baby's health, especially when one has insufficient breast milk, makes it a viable option for me. It's about giving our child the best possible start in life"** (respondent number 7, 3 - 7 days FGD). Mothers of preterm babies regarded DBM as the optimal alternative, recognizing it as beneficial for babies. As another participant echoed, **"Donor breast milk, akin to natural breast milk, contains all the essential nutrients required by the baby in the correct proportions, as intended by God (responded 2, unavailable mum FGD)"**. They underscored the importance of BM as the optimal feeding choice for preterm, providing them with essential nutrients, protection against diseases, and promoting overall health and well-being. BM has nutritional richness, providing essential nutrients, vitamins, and minerals crucial for the optimal growth and development of preterm infants as stated by one key informant, **"It is the best alternative for unavailable mums as it is recommended milk by WHO"**, (respondent 2, KI, un-available mum FGD). Health workers noted that donor milk naturally mimics the nutritional composition of BM, positioning it as an optimal alternative when a mother's milk is lacking or insufficient, as another health worker quotes, **"DBM is rich in nutrients and immunological properties that contribute significantly to bolstering the immune system of preterm infants. The diverse array of nutrients and protective elements present in DBM plays a pivotal role in enhancing the overall health and resilience of the immune system in premature babies"** (responded 3, health worker, KI). This demonstrates that health workers recognise that DBM not only addresses the immediate nutritional needs of premature babies but also acts as a formidable shield, enhancing their overall health and resilience against potential health challenges. This recognition is particularly significant in the context of preterm infants who may face increased vulnerability due to their premature birth. The incorporation of such valuable elements from KI acts as a vital component in the comprehensive strategy to support the well-being and immune development of preterm babies, ultimately contributing to better health outcomes.

3.4.3. Lifesaving Initiative

One participant expressed a profound perception of DBM, viewing it as a life-saving intervention.

"At first, I lacked breast milk, and the doctor cautioned against using formula for my twins because of their extreme prematurity. I think this situation led to a delay in their weight gain, as they lost weight during that time. If a donor milk initiative had been available, my babies could have gained weight sooner, poten-

tially reducing my hospital stay” (responded 4, educated).

This perspective underscores the participant’s recognition of the critical role that DBM would play in enhancing the well-being and survival of preterm infants, emphasizing its significance as a vital and potentially life-saving measure in preterm care.

3.5. Theme 4—Hinderance to the Utilisation of Donor Breast Milk

The concerns and hesitations voiced by participants reveal a complex framework guiding their negative perception. Worries about the milk’s source, the risk of disease transmission, and cultural norms play a significant role in shaping their views on donor breast milk.

3.5.1. Fear of Disease Transmission

Participants expressed concerns about the safety of donated breast milk, fearing the potential transmission of diseases to preterm infants. Specifically, participants emphasized the risk of disease transmission if donors were not adequately screened. One participant quote, **“If breast milk is not thoroughly screened, there is a risk of transmitting HIV/AIDS and other blood-related illnesses to the baby (respondent number 8, above 7 days FGD)”**, this apprehension was echoed by nearly all participants. Another participant said, **“It is through breast milk where one transmits/inherits convulsive disorder such as epilepsy, (respondent number 5, above 30 years, FGD)”**. They attributed these concerns to uncertainties surrounding the acquisition, and handling, up to the receiver of DBM. Participants expressed concerns about the collection of donor breast milk, focusing on the need for safety assurances, stringent screening processes, educational initiatives to spell out misconceptions surrounding DBM, and effective government management. One echoed that, **“just like blood banks the government should take charge of managing these milk banks to ensure rigorous screening of breast milk donors for HIV/AIDS, because private hospitals are just interested in money, (respondent 6, grade 9 FGD)”**. Their desire for a system comparable to blood screening protocols underscores the importance participants place on establishing a robust and regulated process for collecting DBM. This reflects a heightened awareness of safety measures and a call for comprehensive protocols to ensure the quality and integrity of the collected milk. This commitment to safety underscores the responsibility and dedication to promoting the highest standards in the collection and distribution of DBM.

3.5.2. Safety and Quality

Some participants highlighted concerns about the sources of the milk and the potential transmission of diseases. These expressed reservations emphasize the critical need to address fears and doubts surrounding the utilization of donor breast milk. One participant articulates this sentiment, stating, **“I worry about where the milk comes from and if it’s safe. If there’s a clear process of screening and safety checks, it would make me feel more comfortable”** (respondent

number 2, 3 - 7 days FGD). Transparent communication and the implementation of stringent safety measures emerge as crucial components in addressing these concerns, reinforcing the significance of building trust and confidence among mothers considering DBM as a feeding option, as one participant stated, **“Ensuring the safety of the collected milk is of utmost importance. It is imperative to establish a system that ensures comprehensive screening and government to oversee the initiative, will assure me the peace of mind”,** (respondent number 8, above 7 days FGD), this narrative emphasise the paramount importance of ensuring the safety of the collected milk, and a system that incorporates thorough screening and government oversight the operation of the milk banks.

3.5.3. Culturally Unacceptable

Participants articulate reasons for rejecting donor breast milk, attributing their reservations to uncertainty about the donor’s health status and adherence to cultural norms, **“No, I cannot, as I am unfamiliar with the person and their family, from whom the donor milk may come. Our culture do not allow for such practices; I can only offer my baby milk from a relative,”** (respondent number 2, 3 - 7 days FGD). Another participant stated **“I am hesitant to provide my baby with DBM as it is something I do not fully comprehend”** (respondent number 6, above 30 years, FGD). They underscored the need for targeted interventions and educational initiatives to alleviate concerns related to donor selection, health screening, and cultural considerations. Additionally, another participant added **“Spiritual powers and evil spirit can be transmitted in breast milk, that is why in wetting only a close relative who is of good character was picked,”** (FDG educated).

3.5.4. Inheritance of Negative Traits

Cultural barriers linked to DBM, participants expressed concerns regarding the concept of different bloodlines. Some participants believed that cultural traditions discouraged breastfeeding from individuals of separate bloodlines. As one participant reflects, **“Our cultural beliefs emphasize the importance of blood relations, and this affects our decision about accepting donor milk”,** (respondent number 6, unavailable mother FGD). Another participant added, **There is a belief that a person from a different bloodline may transfer negative traits such as prostitution, stealing, and other undesirable behaviours through breast milk, (responded 4, grade 9 FDG).** In another dimension some participants cited rumours, and concerns about potential associations with Satanism, regarding donated milk rejection stating, **“There are many rumors about things administered in the hospital, and some people even associate it with negative practices like Satanism,”** (respondent number 4, 3 - 7 days FGD). These diverse views emphasize the need for cultural sensitivity in program implementation, reflecting the intricate interplay between these beliefs and decisions on infant feeding practices. Addressing these concerns requires tai-

lored educational efforts that dispel misconceptions and build trust within the community.

3.5.5. Unfamiliarity

Participants in the study identified unfamiliarity, the need for spousal approval, and the perceived importance of shared decision-making as barriers to the utilisation of DBM. Additionally, the decision to use DBM was often made in consultation with significant others, underscoring the importance of shared decision-making in the process. These insights emphasize the need for targeted educational efforts to enhance understanding of DBM and highlight the collaborative nature of decision-making in choosing DBM as an alternative feeding option. Participants highlighted a lack of knowledge about DMB as a potential barrier to utilisation which was conditionally influenced by negative attributes, **“I am unfamiliar with the concept of donor breast milk, which makes it exceedingly challenging for me to provide consent for it”**, (respondent 4, 3 - 7 days FGD). The notable lack of awareness underscores the pressing need for tailored educational initiatives aimed at fostering a deeper understanding and familiarity with the concept of donor breast milk.

3.5.6. Spousal Approval

The decision to utilize DBM was significantly influenced by significant others, a factor that emerged as extremely important for the majority of participants. One participant said, **“Before agreeing to use donor breast milk, I need to consult with my family especially my husband so that they are aware in case of any eventualities”**, respondent 2 grade 9 FGD. The narratives vividly depict the intricate decision-making processes that guide mother’s perception of using DBM. These insights underscore the multifaceted nature of the participants’ perspectives as one participant stated, **“I cannot make this decision independently; I need to consult with my husband before opting for donated breast milk”** “(respondent number 6, above 7 days FGD)”.

4. Discussion

Participants in the study despite having limited levels of education unanimously agreed that DBM coffers superior nutrition compared to formula, making it the preferred choice for infant feeding. Mothers recognized BM as a potential life-saving intervention for preterm infants, acknowledging its nutritional value over formula yet, obstacles such as BM insufficiency or mothers’ unavailability due to illness made them opt for formula [19]. Currently, in Zambia, the local protocol for maternal milk insufficiency states the administration of preterm formula [20]. However, numerous studies have linked the vice to the development of NEC and sepsis [21]. Preterm morbidity and mortality remain high, there is need for the country to establish a DMB, to address preterm feeding complications, as currently DBM is unavailable in Zambia, hence the need to understand perceptions towards donor milk.

Participants in the study were unfamiliar with DBM, yet they recognized its significant benefits for preterm infants, surpassing other feeding alternatives lacking the nutritional richness of BM, as similar sentiment were echoed in the study by Magowan *et al.* [22]. This study unveiled a notable lack of awareness about DBM and milk banks, underscoring the urgent necessity for a targeted educational campaign to raise awareness of DBM and DMB. This knowledge gap corresponds with findings from studies conducted in Ethiopia [3].

Despite WHO recommendations stating DBM as an alternative when a mother's milk is insufficient or unavailable, positive perceptions towards DBM were not without concerns [5]. Certain participants expressed concerns regarding the potential transmission of diseases and the inheritance of undesirable traits from donors, individual preferences as factors related to DBM utilisation. Furthermore, participants expressed apprehensions regarding DBM, citing HIV/AIDS transmission, as barriers to donation and utilization, consistent with findings by Govender [23] in South Africa. These concerns, emphasize the need for transparent communication and stringent safety measures to build trust among mothers considering DBM, echoing findings from the study by Kimani-Murage *et al.* [4].

To ensure the safety and quality of DBM, it is recommended to implement internationally recognised safe milk banking practices from donation, milk screening, administration, and prescription. Developing standard operating procedures for donor screening and milk processing is crucial. Government and collaborative partners should conduct campaigns and workshops to raise awareness about safe DBM practices [4]. Additionally, governments can adopt tools from countries with established donor milk policies, incorporating technical input from existing milk bank networks to act as baseline standard protocol. Moreover, implementing training programs for milk handlers would ensure the safety and quality of DBM in the country like Zambia that are seeking to establish donor milk banks.

Perceptions hindering the utilisation of DBM are rooted in social-cultural myths and misconceptions, particularly concerning the fear of the baby inheriting negative traits from the donor through DBM. Additionally, certain participants voiced concerns about BM from mothers of different bloodlines, expressing apprehensions about the potential transmission of negative traits. This sentiment aligns with studies in East Africa [4] [18], Kenya, both explored perceptions towards DBM, with findings consistent with this study, where participants expressed concerns about the potential transfer of undesirable traits such as prostitution and theft. Hence the need for culturally sensitive approaches and customized education campaigns would be crucial to correct misunderstandings and foster trust among community members, addressing these barriers effectively.

These findings underscore the need for sensitization and education programs focusing on the acquisition procedures, handling, and storage of DBM, as well as

emphasizing its importance. Additionally, to ensure the success of DBM initiatives, the government should conduct massive campaigns to educate the public and health workers on DBM. It's important to note that these views may be biased towards the generalisation of the country as the study was conducted in Lusaka, in an urban setting.

Another potential hindrance to utilisation of DBM was found to be significantly associated with spousal consent, highlighting the importance of cultural-sensitivity and the lack of decision-making among women. Similar sentiments were echoed by Magowan *et al.*, [22] highlighting the necessity for women to obtain spousal approval before consenting to medical aid, is unfortunately common and somewhat expected, given the societal norm observed in the study, where many women identified primarily as housewives, depending on husband's for monetary support, similar to Iloh's [19] study findings. This collective responsibility model is vital for ensuring the health and well-being of preterm babies, indicating that fostering a supportive environment is an essential in understanding DBM as an alternative feeding method in a culturally dynamic society. However, it is notable that the study did not interview any husbands, indicating the necessity for future research aimed at understanding the perceptions of husbands to facilitate their buy-in regarding DBM utilization process.

Despite these variations, it is crucial to customize interventions and educational initiatives to accommodate the diverse characteristics of participants. Recognising the necessity for nuanced approaches across different contexts of perception towards DBM in our communities is particularly important, especially in a limited resource setting where maternal milk insufficiency is prevalent due to maternal illness or mortality [22]. Implementing donor DBM programs could significantly enhance outcomes for preterm infants hence the need to establish a milk bank.

Examining mothers' perceptions of DBM presents significant implications for neonatal nursing across education, practice, research, and administration. Addressing concerns about disease transmission and misconceptions surrounding donor breast milk is crucial in nursing education to ensure future healthcare professionals are well-informed. Moreover, extensive campaigns are needed to educate the public about breast milk banking by health workers. Nursing administrators must recognize and address knowledge gaps through targeted educational initiatives. Additionally, future research is needed to guide donor milk banking practices and develop standardized policies, guidelines, and protocols before the establishment of milk banks

This study significantly advances our understanding of DBM by providing deeper insights into mothers' perceptions of DBM among mothers with preterm infants. This study has uncovered some perceptions and concerns surrounding DBM utilisation, including specific fears related to disease transmission and misconceptions among mothers in a limited resource setting like Zambia. This new aspect underscores the urgency of education and awareness initiatives to ensure

informed decision-making about DBM. As a result, the study underscores the crucial need for customized interventions and educational campaigns to effectively promote the adoption of DBM in neonatal health care management.

5. Conclusion

In conclusion, this study offers valuable insights into the perceptions of mothers with preterm infants regarding DBM, shedding light on its implications for neonatal care, education, administration, and research. This study underscores the potential acceptance of DBM particularly with preterm babies. Despite the unfamiliarity, participants recognized its high benefits for preterm babies, surpassing other feeding options lacking the same nutritional richness. However, some expressed concerns about disease transmission and inheriting undesirable traits from donors, hence the study emphasised the critical need for focused educational programs, encompassing awareness campaigns to dispel common misconceptions and doubts surrounding DBM utilization. Donor human milk could significantly impact neonatal health in limited-resource settings, prompting the need to understand perceptions surrounding DBM. The study findings may be instrumental in the establishment of national policies and guidelines to govern donor milk banking.

Acknowledgement

Funding for this manuscript was supported by the Fogarty International Center of the National Institutes of Health, the U.S. Department of State's Office of the U.S. Global AIDS Coordinator and Health Diplomacy (S/GAC) and the President's Emergency Plan for AIDS Relief (PEPFAR) under the Award Number R25 TW011219 under the project title: Strengthening Health Professional Workforce Education Programs for Improved Quality Health Care in Zambia (SHEPIZ) Project. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Andrew Phiri University of Zambia, School of Veterinary Medicine.

Victoria Mwiinga Kalusopa University of Zambia, School of Nursing Sciences (SHEPIZ).

Conceptor Kwalyela Mungulushi University, Department of Nursing Sciences.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] World Health Organization (2023) Breastfeeding. <https://www.who.int/health-topics/breastfeeding>
- [2] Haiden, N. and Ziegler, E.E. (2017) Human Milk Banking. *Annals of Nutrition and Metabolism*, **69**, 8-15. <https://doi.org/10.1159/000452821>

- [3] Gelano, T.F., *et al.* (2018) Acceptability of Donor Breast Milk Banking, Its Use for Feeding Infants, and Associated Factors among Mothers in Eastern Ethiopia. *International Breastfeeding Journal*, **13**, Article No. 23. <https://doi.org/10.1186/s13006-018-0163-z>
- [4] Kimani-Murage, E.W., *et al.* (2019) Perceptions on Donated Human Milk and Human Milk Banking in Nairobi, Kenya. *Maternal & Child Nutrition*, **15**, e12842. <https://doi.org/10.1111/mcn.12842>
- [5] NICE (2010) Donor Breast Milk Banks: The Operation of Donor Breast Milk Bank Services. NICE Clinical Guideline.
- [6] Velmurugan, S., Prabakar, V., Bethou, A. and Ramamoorthy, L. (2020) Perceptions on Human Milk Donation and Banking: Maternal Optimism. *Journal of Family Medicine and Primary Care*, **9**, 5820-5821. https://doi.org/10.4103/jfmipc.jfmipc_998_20
- [7] Blencowe, H., *et al.* (2020) National, Regional, and Worldwide Estimates of Low Birthweight in 2015, with Trends from 2000: A Systematic Analysis. *The Lancet Global Health*, **7**, E849-E860. [https://doi.org/10.1016/S2214-109X\(18\)30565-5](https://doi.org/10.1016/S2214-109X(18)30565-5)
- [8] Kair, L.R., *et al.* (2015) The Experience of Breastfeeding the Late Preterm Infant: A Qualitative Study. *Breastfeeding Medicine*, **10**, 102-106. <https://doi.org/10.1089/bfm.2014.0121>
- [9] Bakar, A.S., Raflis, N.A.M. and Tan, K.A. (2019) Challenges and Solutions to Breastfeeding Preterm Infants: A Review. *International Journal of Pediatrics and Adolescent Medicine*, **6**, 147-151.
- [10] Bonet, M., *et al.* (2015) Variability of Preterm Birth Rates in the 14 European Regions: Results from the MOSAIC Project. *BJOG: An International Journal of Obstetrics & Gynaecology*, **122**, 1590-1596.
- [11] Li, R., *et al.* (2017) Breastfeeding and Risk of Infections at 6 Years. *Pediatrics*, **139**, e20161993.
- [12] Gianni, M.L., *et al.* (2018) Facilitators and Barriers of Breastfeeding Late Preterm Infants according to Mothers' Experiences. *BMC Pediatrics*, **16**, Article No. 179. <https://doi.org/10.1186/s12887-016-0722-7>
- [13] Weaver, G., Bertino, E., Gebauer, C., Grovslien, A., Mileusnic-Milenovic, R., Arslanoglu, S., Barnett, D., Boquien, C.Y., Buffin, R., Gaya, A., Moro, G.E., Wesolowska, A. and Picaud, J.C. (2019) Recommendations for the Establishment and Operation of Human Milk Banks in Europe: A Consensus Statement From the European Milk Bank Association (EMBA). *Frontiers in Pediatrics*, **7**, 53. <https://doi.org/10.3389/fped.2019.00053>
- [14] De Halleux, V., Pieltain, C., Senterre, T. and Rigo, J. (2017) Use of Donor Milk in the Neonatal Intensive Care Unit. *Seminars in Fetal and Neonatal Medicine*, **22**, 23-29. <https://doi.org/10.1016/j.siny.2016.08.003>
- [15] Rabinowitz, M.R., Kair, L.R., Sipsma, H.L., Phillipi, C.A. and Larson, I.A. (2018) Human Donor Milk or Formula: A Qualitative Study of Maternal Perspectives on Supplementation. *Breastfeeding Medicine*, **13**, 195-203. <https://doi.org/10.1089/bfm.2017.0114>
- [16] Castillo, M.C., *et al.* (2019) The Zambian Preterm Birth Prevention Study (ZAPPS): Cohort Characteristics at Enrollment. *Gates Open Research*, **2**, 25. <https://doi.org/10.12688/gatesopenres.12820.3>
- [17] Ministry of Health (2022) Trend in Preterm Admission, Discharge, and Mortality Trend Statistics from the Year 2019 to 2021 for Women. New-Born Hospital at University Teaching Hospital. Lusaka, Zambia.

- [18] Namuddu, M.G., *et al.* (2023) Acceptability of Donated Breast Milk among Pregnant Women in Selected Hospitals in Central Uganda: A Cross-Sectional Study. *International Breastfeeding Journal*, **18**, Article No. 32. <https://doi.org/10.1186/s13006-023-00569-x>
- [19] Iloh, K.K., Osuorah, C.D.I., Ndu, I.K., Asinobi, I.N., Obumneme-Anyim, I.N., Ezeudu, C.E., Oluchi, U.M., Anyanwu, O.U., Ekwochi, U., Ogoke, C.C., Ayuk, A.C. and Obu, H.U. (2018) Perception of Donor Breast Milk and Determinants of Its Acceptability among Mothers in a Developing Community: A Cross-Sectional Multi-Center Study in South-East Nigeria. *International Breastfeeding Journal*, **13**, Article No. 47. <https://doi.org/10.1186/s13006-018-0189-2>
- [20] University Teaching Hospitals, Women and Newborn Hospital, and Lusaka Children's Hospital (2015) Neonatal Intensive Care Unit Protocol. Ministry of Health. Lusaka, Zambia.
- [21] Collins, A., Weitkamp, J.H. and Wynn, J.L. (2018) Why Are Preterm Newborns at Increased Risk of Infection? *ADC Fetal & Neonatal Edition*, **103**, F391-F394. <https://doi.org/10.1136/archdischild-2017-313595>
- [22] Magowan, S., *et al.* (2020) Exploring the Barriers and Facilitators to the Acceptability of Donor Human Milk in Eastern Uganda—A Qualitative Study. *International Breastfeeding Journal*, **15**, Article No. 28. <https://doi.org/10.1186/s13006-020-00272-1>
- [23] Govender, N. (2020) Knowledge, Perceptions and Attitude of Community Members and Healthcare Workers Regarding the Donation of Breast Milk and Use of Donated Human Milk (DHM) in Empangeni, KwaZulu-Natal. Master's Thesis, Department of Paediatrics and Child Health, Cape Town.