The Utilization of Human Milk Banks in India

Challenges and Opportunities for Improving Infant Health

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Abstract

Human milk banks are important for the health of newborns, especially preterm babies, but they are not used much in India. This research examines why human milk banks aren't widely used, pointing out issues like low public awareness, cultural beliefs, and challenges with the growth of these important services. The study highlights areas for improvement by comparing India's system with successful milk banks worldwide. The paper recommends facilities. Economic challenges and a lack of community support slow suggestions like raising public awareness through education, policy changes, improving healthcare facilities, and encouraging community involvement. Solving these issues could greatly improve health for babies in India, especially for those who need it the most.

Introduction

Human milk, or breast milk, is a natural secretion that nourishes infants with a balanced composition of proteins, fats, carbohydrates, vitamins, and minerals essential for development. It is rich in antibodies, offering protection against infections and fostering emotional bonding. A human milk bank collects and distributes pasteurized donated breast milk, especially for preterm or ill infants who cannot receive milk from their mothers. Women donating milk must meet health and lifestyle criteria, actively lactate, and undergo

screening to ensure milk safety. These facilities are vital for providing a safe feeding option for infants in need, particularly in NICUs

How do milk bank operates?

Figure 1.
Process of Storing Human Milk Banks

Human milk banks ensure the safe collection, processing, and distribution of donor milk to benefit infants, particularly those who are premature or have health challenges. Donors undergo thorough screening, including blood tests for infections like HIV and hepatitis, as well as detailed questionnaires about their medical history and lifestyle, to meet eligibility standards. Milk is typically collected from donors' homes, stored in freezers at temperatures of -18°C (0°F) or lower, and transported securely to the milk bank. Once received, the milk is processed using Holder pasteurization, where it is heated to 62.5°C (144.5°F) for 30 minutes to destroy harmful bacteria

while retaining important nutrients and antibodies. The processed milk is tested for bacterial safety and nutritional content, frozen at -20°C (-4°F), and stored for up to six months. Priority is given to infants in critical need, such as those in neonatal intensive care units, with strict guidelines in place for transportation and usage. By following the standards of organizations like the WHO and HMBANA, milk banks combine scientific practices and community efforts to ensure that donor milk is safe and nourishing for vulnerable infants.

Reasons why human milk banks are not widely used in India.

1. Lack of Awareness : Many people are not familiar with human milk banks and how they can support babies, especially those born prematurely. There are common misconceptions about the safety and health benefits of donor milk.

2. Cultural Beliefs : In various cultures, breastfeeding by the mother is viewed as the ideal choice, which can make people reluctant to use milk from other women. Some individuals may feel uncomfortable with the idea of using milk from someone else.

3. Accessibility Issues : Most human milk banks are found in urban areas, making it difficult for families living in rural regions to access them. Many milk banks may not have enough resources to help all the families who need

support.

4. Financial Constraints : Even when some services are offered at no cost, families may still face expenses related to transportation or equipment for storing milk. Limited insurance coverage can make donor milk a financial burden for some families.

5. Personal Choices : Some parents may prefer using formula, as it may seem more straightforward than sourcing donor milk. Concerns regarding allergies or other health issues can lead to hesitance in using donor milk.

6. Healthcare Provider Support : Medical professionals may not inform families about human milk banks or guide them on how to access services. Many healthcare providers might lack sufficient knowledge about the advantages of donor milk.

7. Fear of Dependency : Some parents may wish to avoid relying on donor milk for their infant's nutrition. There may be anxieties about forming a bond with the baby when using milk from another person.

8. Community Engagement : There is often not enough community support or information available about human milk banks. Many areas lack initiatives to educate people about the importance of donor milk.

9. Equity Issues : Families with lower income levels may struggle more to access donor milk. Some communities may not have good access to healthcare resources or information about milk banks.

10. Quality Concerns : Parents might worry about the safety and consistency of donor milk. High demand combined with limited supply can discourage

families from considering donor milk options. To enhance the use of human milk banks in India, it is crucial to raise awareness, improve access, and foster a supportive environment for families. By addressing these challenges, more families can take advantage of the benefits that milk banks offer.

Comparing India's Human Milk Banking with Global Methods

India's approach to human milk banking has developed rapidly over recent years and has unique features compared to global practices. Below is a comparison across various dimensions:

1. **Scale and Infrastructure:**

   India: India's human milk banking system is the largest in Southeast Asia. Organizations like the Breast Milk Foundation and the Human Milk Bank Association of India spearhead over 50 operational milk banks, mainly in urban hospitals. However, this network is still limited relative to India's population size and spread.

   Globally: Countries like Brazil and the United States have robust milk bank networks. Brazil has the world's largest number of milk banks, integrated within public health systems. In the U.S., milk banks are largely supported by the Human Milk Banking Association of North America (HMBANA), which connects

various hospitals and institutions to ensure broader coverage.

2. **Donor Screening and Milk Processing Standards:**

   India: Indian milk banks follow screening and pasteurization protocols recommended by the Indian Academy of Pediatrics, which includes health screenings, pasteurization, and proper storage methods.

   Globally: HMBANA in North America and the UK's National Health Service (NHS) set stringent donor screening and milk handling standards. Protocols in countries with established milk banks often include comprehensive health histories, serological testing, and strict handling to ensure safety.

3. **Access and Distribution:**

   India: Milk banks in India primarily serve neonatal intensive care units (NICUs) in public and private hospitals, focusing on vulnerable infants. Access barriers, such as geographic distance and cost, limit milk bank use, particularly for rural and low-income families.

   Globally: In countries like Brazil, milk banks are widely available in public hospitals and subsidized for low-income families due to government support. In the U.S., milk banks distribute milk with prescriptions from healthcare providers and have some insurance coverage for families in need.

4. **Public Awareness and Cultural Perceptions:**

India: Cultural hesitance regarding milk sharing is a barrier, as breastfeeding holds deep personal significance. Awareness campaigns by NGOs and healthcare providers are working to shift these perceptions.

Globally: Countries with long-established milk banking systems generally have greater public acceptance. Brazil, for example, has conducted extensive government-supported awareness campaigns to normalize milk donation, greatly boosting donor engagement.

5. **Challenges and Opportunities:**

India: Challenges in India include funding constraints, cultural perceptions, and limited infrastructure, which restrict milk bank growth. However, increasing awareness about breastfeeding benefits and healthcare sector support signal growth potential.

Globally: Challenges globally include equitable access and high safety standards. Brazil's public-supported system offers a model for expanding milk bank access and sustainability, especially for low-income populations.

6. **Cost and Funding Models:**

India: Funding is a mix of government support, charitable donations, and hospital contributions. Private hospitals often have higher access costs, though some nonprofit banks offer milk free or at low cost for families unable to afford it.

Globally: Brazil's government healthcare policies ensure free access to donor milk. In the U.S., funding comes from private and hospital donations, with some insurance coverage for families with medical prescriptions.

7. **Use of Technology and Innovations:**

   India: Indian milk banks are increasingly adopting digital tracking and cold chain logistics improvements, though resources limit technological advancement in some regions.

   Globally: Developed countries utilize advanced pasteurization, digital inventory management, and testing technology. Brazil's low-cost, effective pasteurization techniques are adaptable to India's needs.

8. **Research and Data Collection:**

   India: Research is emerging in India, with improved data collection efforts to understand milk banking's impact on infant health. More research is needed to support policy-making and healthcare guidelines.

   Globally: Extensive research in Brazil, the U.S., and Europe demonstrates how milk banking reduces infant mortality and improves health outcomes for preterm infants. This evidence base informs practices in other countries.

9. **Training and Skill Development:**

   India: India's milk banks rely on healthcare professionals

for training, often in urban centers. Expanding training for rural healthcare providers could support future milk bank growth.

Globally: The U.S. and Europe have formal training and certification programs for milk bank staff. Brazil offers international exchange programs, sharing expertise with other countries to expand milk banking knowledge.

Methodology

Qualitative data captures non-numerical information about phenomena, often collected through interviews, observations, and open-ended surveys.

- Analyze state-wise milk bank data from reports and institutional sources.
- Categorize data by major contributors and visualize trends using pie charts.

1. Maharashtra : Maharashtra remains the leading state with the highest number of milk banks. Cities like Mumbai and Pune drive this dominance due to their advanced healthcare infrastructure and early adoption of milk banking.

The state-wise distribution of human milk banks in India reveals key trends in neonatal healthcare, as illustrated in the figure below:

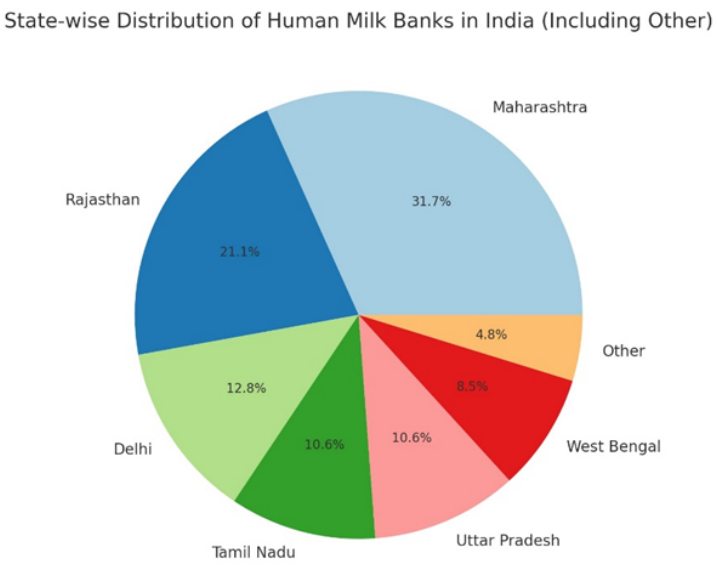

Figure 2.
State-wise Distribution of Human Milk Banks in India

2. Rajasthan : Rajasthan holds the second position, with notable contributions from facilities like the Divya Mother Milk Bank in Udaipur, which serves as a model for other states.

3. Delhi : Delhi contributes significantly, with its central location and urban infrastructure making it a hub for neonatal care services.

4. Tamil Nadu : Tamil Nadu's contributions are driven by facilities in Chennai, such as the Institute of Child Health, which focuses on improving infant survival rates.

5. Uttar Pradesh : Uttar Pradesh supports milk banking through institutions like King George's Medical University in Lucknow, reflecting growing awareness and healthcare expansion.

6. West Bengal : West Bengal's milk banks, particularly in Kolkata, serve the eastern region, though the state contributes a smaller percentage overall.

7. Other States : This category includes minor contributors with one or few milk banks spread across other states. These states are in the early stages of developing milk bank infrastructure, aiming to bridge regional gaps in neonatal care.

- The growth of milk banks across India reflects a nationwide effort to improve infant nutrition and reduce neonatal mortality.
- Major contributors like Maharashtra and Rajasthan demonstrate the impact of strong healthcare infrastructure, while other states are gradually enhancing their services.

Strategies for Expanding Human Milk Banks Across India

1. Boost Public Awareness : Nationwide campaigns and community workshops to educate about human milk benefits.

2. Strengthen Healthcare Partnerships : Collaborate with hospitals and NGO's to enhance outreach and education.

3. Enhance Infrastructure : Establish regional milk bank hubs and improve cold chain logistics.

4. Utilize Technology : Develop mobile apps for donor registration and im-

plement digital tracking systems.

5. Engage Communities : Train local health workers and involve community leaders to normalize milk donation.

6. Address Cultural Sensitivities : Design targeted outreach programs and share success stories to encourage participation.

7. Facilitate Expansion : Offer a helpline for information and utilize social media for outreach.

8. Develop Mobile Milk Bank Units : Create mobile units for underserved areas and integrate with health camps.

9. Foster Donor Loyalty Programs : Implement recognition and referral programs for donors.

10. Integrate with Other Health Services : Combine milk banking with maternal health and child nutrition initiatives.

11. Encourage Academic Research : Provide scholarships for research on human milk banking and publish findings.

12. Encourage Feedback : Establish feedback mechanisms and regularly review programs for improvement.

These strategies aim to enhance the accessibility and acceptance of human milk banks, ultimately benefiting infant health across India.

Conclusion

This research explores the status of human milk banks in India, highlighting the reasons for their limited use. It identifies a lack of public awareness and misunderstandings about the role of milk banks as major barriers. By comparing India's practices with those of other countries, the study reveals potential improvements. The proposed strategies aim to educate the public, engage local communities, and leverage technology to promote the benefits of donor milk. Addressing these challenges will enable more infants to access essential nutrition and foster a supportive environment for breastfeeding in India.

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