

Human milk banks – The benefits and issues in an Islamic setting

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Abstract. The benefits of human milk for both infants and mothers have been well established. Especially preterm infants benefit from breast milk. However barriers to breast milk expression in mothers with preterm babies result in a relatively low availability of human milk for these particularly vulnerable infants. To overcome this problem, human milk banks have been established in many parts of the world. The Muslim countries have been not participating in these milk sharing activities for preterm babies because of inherent religious cultural issues. This article addresses these issues and discusses potential ways to overcome these issues.

Key words: Human milk bank, human milk sharing, breastfeeding, preterm

1. Introduction

1.1. Benefits of breast milk for all babies

The benefits of breastfeeding and breast milk to both mothers and infants are very well studied (1). Breastfeeding is the optimal nutrition. It has important positive effects on the gastrointestinal system, it improves host defence and has a positive effect on the psychological well being of the child (1). Perhaps among the most important benefits rank the reduction of severe infections such as otitis media, lower respiratory tract infections, diarrhoeal disease and urinary tract infections. This is thanks to the effect of immunoglobulin and growth factors to prevent bacterial adherence to and direct invasion of the mucosa of the gut and respiratory system. Other than that, there are positive effects to the mother as well, e.g. reduction in postpartum hemorrhage, faster recovery of pre-pregnancy weight and better mother-child bonding (1).

1.2. Benefits of breast milk for the preterm baby

In ill and premature babies, feeding with breast milk is of paramount importance. Sepsis and necrotizing enterocolitis are two important complications in premature and ill babies that carry a high mortality and morbidity. A Cochrane

Systematic Review (2) on the effect of feeding human milk vs. formula milk in premature babies, showed that breast milk has been shown to reduce these complications. The meta-analysis included 8 trials with total of 1017 stable premature babies, less than 32 weeks gestational age and less than 1800 gm birth weight (3-9). Feeding with breast milk (from own mother or donated milk) was compared to formula milk (term or preterm formula). All the included studies showed a significant increase in confirmed necrotising enterocolitis (NEC) in the group of babies fed with formula milk – either term or preterm milk formula (OR 2.46 95% CI 1.19, 5.08 p = 0.015). The incidence of feeding intolerance was also significantly higher in babies fed formula milk (OR 4.92 95% CI 1.17, 20.70 p= 0.03). No significant differences were found for the incidence of invasive infection. All 1017 babies in the included studies were stable. If the comparison would be made for high risk babies (e.g. small for gestational age and unstable babies) it may well be that a reduction in invasive infection is demonstrated by the use of breast milk. There were some results, showing a potential short term benefit of formula milk as well. The time taken to regain birth weight was significantly shorter in babies fed with formula milk (4 days with 95% CI 5.81, 2.18 p<0.001). The other growth parameters (crown-rump length, crown-heel length, femoral length and head circumference) were also statistically significantly higher in babies fed with formula milk in the short term period. However, this

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effect was not sustained and the growth parameters at 9 months, 18 months and 8 year old were comparable. In all but one (7) of the included studies no human milk fortifier was used. Nowadays with the wide use of human milk fortifier, even the suspected short term benefit of formula milk on the short term growth may no longer be real.

1. 3. Problems to obtain breast milk

Despite its benefit, breast feeding practice is far from universal. Mothers of preterm babies face particular problems which result in a lower percentage of preterm babies receiving breast milk than term babies (10,11). Identified barriers include: worries about the amount and the content of the milk, stress, noisy and busy NICU, the fragility and complications of the infants (12).

Because of this, a series of potentially effective interventions have been practiced. These include antenatal and postnatal counselling and education, kangaroo care, increased water intake and other nutritional interventions, frequent expressions, encouragement of family support and drug therapy. There is strong scientific evidence for the efficacy of antenatal and postnatal education but for other interventions evidence for their efficacy is either scanty or lacking (13).

Other than the barriers associated with having a premature baby, a mother may not be able to breastfeed her child if she is medically unfit e.g. acute complications during post partum period or on drugs e.g. chemotherapy or radiotherapy where it is contraindicated to breastfeed their babies.

2. Milk sharing

An important way to overcome the lack of availability of breast milk for preterm babies is the concept of human milk sharing or human milk bank. In many countries successful milk banks have been established for preterm babies but in many developing nations, cultural, infrastructural and religious barriers have prohibited the establishment of such programs. Hereafter the authors will give a historical overview of milk sharing in the past and present and its financial implications, after which the focus will be on the issues faced in an Islamic community and potential ways to overcome these issues.

2. 1. History of human milk sharing

The first evidence for the support of human milk sharing was documented in the code of Hammurabi from 1790 BC (14). This ancient Babylonian law was including one section which clearly indicated that babies who were not

breastfed by their own mothers were given to other relatives, friends or strangers. This practice was referred to as 'wet nursing'. These babies were not only given breastfeeding, but they were thought to inherit the physical, mental and emotional traits of their wet nurses through the breast milk. This had also been practiced by the Muslim leader and prophet, Nabi Muhammad p.b.u.h. when he was born in Mecca in the year 570 AD. He was breastfed by a lady named Halimatun Saadiah and stayed with her until he was 4 year-old.

This practice also became a tradition mainly in rich families in many communities e.g. the Europeans and the Egyptians. In the 13th century, European women made more money working as wet nurses than any other occupation open to women (15).

The first human milk bank was established in 1909, in Vienna, Austria. Ten years later, two additional milk banks were opened-in Boston and in Germany. Until now, there are hundreds of milk bank in more than 35 countries.

The interest in human milk donation waxed and waned over the last 100 years. The advances of milk analysis, improvement in food processing and formula milk posed a huge threat to breast milk. In the mid 20th century, cultural changes had resulted in the replacement of human milk by artificial feeding. The rate of breastfeeding in US was only 20% in 1956 (16). Fortunately, advances in medicine especially in the field of paediatrics have again put human milk in its rightful place. Now it is again common knowledge that it is superior to formula milk.

The establishment of human milk banks was supported by a World Health Assembly Resolution (1980) (17). In 1985, the Human Milk Banking association of North America (HMBANA) was established with the main goals being to establish the standards for all North American milk banks (15). Unfortunately in the mid 1980s, the interest in milk banks declined with the advent of AIDS which resulted in closure of many milk banks. However, with adequate screening and increasing evidence on the benefits and safety of human milk, the number of donor milk banks again increase globally.

2.1. The current situation.

In 2009, there were more than 300 banks all over the world in about 38 countries (18). However the distribution is not even. Many are located in European countries, North and South America. Brazil tops the list with 187 banks, Sweden 27, France 19, United Kingdom 18,

Norway and Finland 15 each, United States 11, India 7, South Africa 6, Switzerland 6, Slovakia 6 and Australia 2. There is 1 milk bank in Bulgaria, Canada, Dominican Republic and Republic of China. Germany had 60 milk banks by the late 80s, however after reunification of Germany; many of the milk banks were closed.

A few more countries e.g. Greece, South American countries and Kuwait have indicated some milk sharing activities but no official figures on the establishment of milk banks in these countries are available. The existing milk banks are non-profit making. Many associations, e.g. United Kingdom Association of Milk Banking (UKAMB) and Human Milk Banking Association of North America (HMBANA), International Milk Banking Initiative (IMBI) and International Breast Milk Projects (IMBP) are examples of associations that are established to help promote, established the usage of milk donations. Human milk banks are relatively rare in African and Asian developing nations, even though in these countries many children, especially those orphans from HIV infected parents could benefit greatly from milk sharing programs. So far, Kuwait is the only Muslim country documented to have milk sharing activities.

2. 2. *Economy - Is human milk bank cheap?*

The establishment of a human milk bank requires not only a significant amount of funding, but it involves also labour-intensive operations which include recruiting and screening donors, collection of donor milk, screening, storing, processing and distributing it to recipients (19). For example, a milk bank which was established in 1992 (Mother's Milk Bank at WakeMed in Raleigh, North Carolina) started with a fund of US 72,000. This did not include the space required, the maintenance salaries for the coordinators and the laboratory tests for donors and samples.

The donors were volunteers and were not paid. The recipients were paying only for transportation costs. The costs of running a milk bank may pose a challenge to developing nations where the need for human milk is highest. In India, the first milk bank started off with approximately \$10,000 US and annual recurrent costs \$3,000 US (20). In Brazil, the combination of other professions e.g. paramedics and postmen to promote breastfeeding and breast milk donation, firefighters to help with collection of the breast milk from door to door really help to minimize the financial burden to the health system (21).

3. Different cultural and religious perspectives

Different cultures and religions may have a different perspective on this issue. Most of the religions in the world have no big issues with milk donation even though individuals within a religion may have mixed responses to the idea of donating human milk. There are a few reports of interviews with mothers from a Western background on the issue of wet nursing and the responses ranged from acceptance to total outrage (22,23).

Neither in Christianity, Buddhism or Hinduism there seems to be any formal issues regarding human milk sharing and would rather encourage than prohibit it. Even in Jehovah witness communities who ban human to human blood transfusion there could be no strict ruling is found on the sharing of human milk.

Also in the Muslim religion, milk sharing is considered as a virtue. Breast feeding is very strongly encouraged and many verses in the Quran (e.g. "And for all the mothers, you are to breastfeed your child until they are 2 year-old" (24) and "you must be kind and do good deeds to your parents; your mother were pregnant with you and gave birth to you with all the pain and difficulties; and she had breastfed you until thirty months"(25) emphasize that for a mother to breastfeed their child and breastfeeding is considered a very virtuous act. Islam also forbids improper disposal of breast milk and it should not be sold.

Even though donation of human milk is perfectly allowed and even praised as a virtue, the belief in Islam that makes the establishment of milk banks in the Islamic world at least a complex issue is the following. Any child aged less than 2year-old who was given breast feeding by a donor mother more than 5 times, is considered to be brothers with the donor mother's children though they are not originally blood related. This means that, being brothers or sisters, they cannot marry each other.

Even though this belief would not create a problem in individual cases of milk sharing since both families involved are fully aware of what is happening and marriage of the children thus connected could be prohibited, it makes establishment of a milk sharing program at hospital level complex.

The authors have approached religious authorities in the country where they work and have identified potential approaches that would make a milk sharing program still possible, while

respecting fully the religious beliefs of everyone involved.

4. Potential ways to overcome religious and cultural obstacles

Even though in the Islamic community, as mentioned earlier, the issue of human milk sharing is a bit tricky, there are a few potential ways to overcome this.

Religious leaders thought it was better to call an initiative in this direction 'milk sharing', rather than milk bank. The term milk sharing transpires more the human touch and human values associated with initiative than the term 'bank'. Some extra precautions would be necessary in a milk sharing initiative for Muslim nations:

1. Instead of having multiple donors for a child, the donor should be limited to a very strict minimum (preferably only one donor per child)
2. There should be no mixing of donor's milk
3. All samples must be adequately labeled allowing full identifications of the donor.
4. Disclosure of the identity of the donor to the recipients and his family. Both donor and recipient should consent to such disclosure.
5. The name, address, identity card number of the donors could be attached to the child's birth certificate
6. Every mother should be made clear that the responsibility to breastfeed their baby is upon them. The program would be established to benefit preterm babies. Mothers should try to get their own milk production started as soon as possible, so the number of donors can be limited.
7. Only children of mothers with medical contraindications to breastfeeding or of mothers who passed away would be given shared milk for a prolonged period.
8. If some donor mother have only (or mainly) children of one sex, the milk could be preferably reserved for recipients of the same sex.

5. Vision for the future and conclusion

Provision of human milk is a way to ensure that all our children get the best start in life. Nevertheless, some babies and mothers were unfortunate and were not able to either provide or receive breast milk. Our role as health care providers is to find ways and means to help this group of mothers and babies. Human milk banks can help solve this problem. Some beliefs in

Islam would make the operation of milk bank complex, but with some precautions it is still likely that also in Muslim communities a human milk sharing initiative can be successfully established.

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