Research Article

Knowledge of Nurses about Human Milk and Milk Banking

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Abstract

Exclusive breast feeding is recommended for first 6 months of life. Breast milk can be continued up-to 2 years and beyond as well. Unfortunately all mothers cannot breast feed their babies due to various causes related to mother and newborn. Breast milk can be stored and even donor milk can be used for feeding the newborns. For this purpose nurses should have information about human milk and its banking. The study aims to assess the nurse's knowledge about human milk and its banking.

Methods: Quantitative, non-experimental descriptive research approach was used to assess the knowledge of nurses about human milk and its banking that was conducted in a tertiary level hospital in Kathmandu Nepal. Knowledge was assessed using self- structured questionnaire. Data was analyzed by descriptive and inferential statistical methods.

Results: Study depicts that majority of nurses have adequate knowledge about human milk and milk banking.

Conclusion: Despite the satisfactory knowledge of nurses, there should be provision of in service training and symposium at regular interval to keep update knowledge and efficient working.

Keywords: Human Milk; Human Milk Banking; Knowledge; Nurses

Human milk banking

Breast feeding is the best and quintessential method for infant feeding for first six months of life. It remains as a nourishing food for the first two years of life and beyond even after complimentary feeding is introduced. Human milk continues to be the only milk which is appropriate and imperatively suited to the human infant who is either term or preterm or post term and extremely low birth weight (ELBW), very low birth weight (VLBW), low birth weight (LBW), appropriate for gestational age (AGA) and large for gestational age (LGA) babies. Human milk is natural, economic and easily available conducive start to life. It is specific to species

and its benefits are universally accepted in regards to optimum growth and development. It is equally beneficial for all newborn babies, importantly for very low birth weight and extremely low birth weight babies and ameliorates neuro-cognitive development [1]. Human milk fed VLBW infants have lesser incidence of infection and sepsis/meningitis [2-4]. Human milk is beneficial for preterm brain due to presence of critical nutrients and other neurotropic factors needed for developing brain [5]. There is decreased incidence of retinopathy of prematurity (ROP) and severe intra-ventricular hemorrhage and periventricular leucomalacia (IVH/PVL) in ELBW babies [6,7]. For breast feeding mothers, it gives protection against breast and ovarian cancer, type 2 diabetes along with

improved birth spacing and lower risk of osteoporosis. Importance of breast feeding is better recognized in low and middle income countries where 37% babies are exclusively breast fed in comparison to shorter duration in high income countries. Breast feeding practice is better in high-income better-educated women than in low-income women with few years of formal education [8].

Annually more than 20 million infants are born as a low birth weight (LBW) as a consequence of preterm birth, small for gestational age or a combination of both. Most of these birth about more than 96% are in the developing countries. These LBW babies are at an increased risk of infection, early growth retardation, developmental delay and even death during infancy and childhood. World Health Organisation recommends that LBW babies should be fed with mother's own milk to improve the immediate and longer term health and wellbeing of the individual infants. It has shown significant impact on neonatal and infant morbidity and mortality in the population. If mother's own milk is not available then expressed breast milk from a donor mother or formula milk in the only option. Formula feed seems to be an option for family because it's easily available, easy to prepare and helps sharing feeding duties among family members. Sometimes it is a status symbol for family by using costly formula. Due to lack of clean and sterile condition and maternal awareness how to prepare it, frequently it is improperly prepared. This leads to diarrhea, malnutrition and pneumonia resulting in high infant morbidity and mortality. Despite advances in infant formula, evidences available currently show donor human milk is better than formula milk because it lowers the incidence of necrotizing enterocolitis, severe gut disorders and other infection during hospital stay [9]. So it's advisable to use donor milk over formula milk as it is cost effective with lesser infections and hospital stay with considerable financial benefits to the individuals, families and health systems. The cost of donor milk program is small with greater cost savings [10]. Donor milk is a preferable option to bridge the gap for the better outcome [11,12].

Demand for human donor milk

There many conditions that leads to scarcity or unavailability of mother's own milk for her child. This issues are maternal illness or death and abandonment, infant's illness, poor latching or delayed milk production. If a baby is preterm or is admitted in neonatal intensive care unit mother may not produce enough milk due to psychological stress and physical barriers. In such condition World Health Organisation and other policy groups recommend donor human milk as an acceptable substitute. A human milk bank plays a pivot role by screening and recruiting breast milk donors, collecting, processing, screening, pooling and providing to needy infants. First human milk bank was in Vienna ,Austria dates back to 1909 and worked well as an alternative to wet nursing. First human milk bank of Asia was established in 1989 in Mumbai, India. The neonatal mortality rate is still high in low middle income country like Nepal with no such human milk bank at present. One of the best way to reduce it is providing ideal and optimum nutrition that has a profound effect on survival and well-being. The government, NGO and communities have admirable role for inception of human milk bank [13].

Methods

The study was a quantitative, non-experimental descriptive research approach that was conducted in a tertiary level hospital in Kathmandu Nepal from January 2021 to February 2021. The total sample size was 120 and it included nurses working in the hospital during the study period. The study tool consisted of two parts.

Part 1

Demographic data: It included demographic information of the study like age gender, professional qualification, working area working department, working experience and neonatal ward/ICU experience.

Part 2:

It consisted of structured questionnaire to assess the knowledge of the participants regarding the importance of human milk and milk banking. There were 40 multiple choice questions with one correct answer among the four options. Each question had a score of one (1) mark for correct answer and zero (0) for incorrect answer with overall score ranging from 0-40. Eligibility for the tool was established by split half method which is 0.83(highly reliable).

Inclusion criteria

The study included the nurses working in the hospital during the study period.

Exclusion criteria

The study excluded the nurses who were not willing to participate in the study.

Ethical consideration

Ethical approval was taken from the Institutional Ethical Committee and the informed written consent was taken from the participants before enrolling in the study.

Statistical methods

Descriptive statistics was used for data analysis by calculating mean and median. Standard deviation and inferential statistics were calculated by applying chi-square test to assess the association of level of knowledge with selected demographic variables. Karl Pearson correlation was used to calculate the reliability of the tool.

Result
Section 1

Socio-demographic characteristics of subjects.

Table 1 shows the frequency and percentage distribution of subjects as per their socio demographic characteristics.

Demographic variables	Age group	Frequency (Number)	Percentage (%)
Age	15-24	66	55.0
	25-34	44	36.7
	35-44	10	8.3
Qualification	Intermediate	65	54.2
	Bachelor	51	42.5
	Masters	4	3.3
Work Experience	<1 year	55	45.8
	1-5 years	46	38.3
	6-10 years	12	10.0
	>10 years	7	5.8
Department of work	NICU/PICU	20	16.7
	MATERNITY	38	31.7
	ICU/CCU	35	29.2
	OT	2	1.7
	Ward	25	20.8
Experience in NICU/PICU/ Pediatric ward	Yes	55	45.8
	No	65	54.2

Table 1

More than half of the nurses were (55%) were from the age group of 15-24 years and only (8.3%) were from the age group 35 years and above. Almost half of the nurses (54.2%) had professional qualification of intermediate followed by (42.5%) bachelor in nursing. Only (3.3%) had studied master level course. All (100%) were working in urban area and are female. As per their working department (16.7%) nurses were working in neonatal ICU/paediatric ICU followed by (31.7%) working in maternity (gynae and obstetric) ward.

Majority of nurses (45.8%) had working experience of 1 year followed by 38.3% nurses with working experience of 1-5 years. Only 5.8% had working experience of more than 10 years. Less than half of the nurses (45.8%) had neonatal ward/NICU/PICU/ Pediatric ward experience whereas (54.2%) of nurses had not worked in neonatal ward/NICU/PICU/Pediatric ward.

Section 2

To assess the knowledge of nurses regarding importance of human milk and milk banking.

Table 2 shows the mean age of the nurses and score secured by them in the study.

Variable	Frequency	Minimum	Maximum	Mean	Std. Deviation
Age	120	19	44	25.77	5.521
Score	120	10	34	25.47	3.889

Table 2

The youngest nurse was of 19 year and the eldest was of 44 years with a mean age of 25.77 years with standard deviation of 5.521. Similarly the minimum score was 10 and maximum was 34 with a mean of 25.47 and standard deviation of 3.889 and most of them had adequate knowledge.

Section 3

To determine the association between knowledge of nurses regarding importance of human milk and milk banking with selected demographic variables.

Table 3 shows that 64 (97%) nurses in the group 15-24 years had adequate knowledge regarding importance of human milk and

Age group	Inad-equate knowledge	Adequate knowledge	Total number	Chi-Square	P value
15-24	2(3%)	64(97%)	64		
25-34	4(9.1%)	40(90.9%)	40	4.675	0.097
35-44	2(20%)	8(80%)	8		
Total	8	112	120		

Table 3: Level of knowledge and its association with age.

milk banking while 3% had inadequate level of knowledge. On the other hand only 8 (80%) nurses in age group 35 years and above had adequate knowledge. 40 (90.9%) nurses in age group 25-34 years had adequate knowledge while 2(3%) and 4 (9.1%) nurses in age group 15-24 years and 25-34 years had inadequate knowledge respectively. To explore the association of level of knowledge with age , Chi- square test was computed , the value of which was found to be 4.675 with p value 0.097 which was non-significant at p- value <0.05.

Hence it is concluded that level of knowledge has no association with age.

Professional Qualification	Inad-equate knowl-edge	Adequate knowledge	Total number	Chi-Square	P value
Intermediate	3(4.6%)	62(95.4%)	65		
Bachelor	5(9.8%)	46(90.2%)	51	1.532	0.465
Master	0(0%)	4(100%)	4		
Total	8	112	120		

Table 4: Level of knowledge and its association with Professional Qualification.

Table 4 depicts that 62(95.4%) nurses with professional qualification of intermediate level had adequate knowledge regarding importance of human milk and milk banking while 3(4.6%) of them had inadequate level of knowledge. There was 4 nurse with professional qualification of master level (100%) and 46 (90.2%) nurses with professional qualification of bachelor level with adequate knowledge with only 5 (9.8%) nurses with bachelor level qualifica-

tion had inadequate knowledge. To explore the association of levels knowledge with professional qualification, Chi- square test was computed, the value of which was found to be 1.532 with p value 0.465 which was non-significant at p- value <0.05.

Hence it is concluded that level of knowledge has no association with professional qualification.

Work department	Inad-equate knowledge	Adequate knowl-edge	Total number	Chi-Square	P value
NICU/PICU	1(5%)	19(95%)	20		
MATERNITY	5(13.2%)	33(86.8%)	38	3.907	0.419
ICU/CCU	1(2.9%)	34(97.1%)	35		
OT	0(0%)	2(100%)	2		
WARD	1(4%)	24(96%)	25		
TOTAL	8	112	120		

Table 5: Level of knowledge and its association with Work Department.

Table 5 shows that 19 (95%) nurses working in the NICU/PICU ward had adequate knowledge regarding importance of human milk and milk banking while 5% had inadequate level of knowledge. On the other hand, 33 (86.8%) of nurses working in maternity (gynae and obstetric) ward had adequate knowledge while (13.2%) had inadequate knowledge. Nurses working in ICU/CCU and OT had adequate knowledge (97.1% and 100%). To explore the association of levels knowledge with age, Chi- square test was computed , the value of which was found to be 3.907 with p value 0.419 which was non-significant at p value <0.05.

Data shows that nurses working in the NICU/PICU and ICU/CCU had more knowledge than nurses working in Maternity (gynae and Obstetric) ward.

Table 6 shows that 53(96.4%) nurses having working experience in NICU had adequate knowledge regarding importance of human milk and milk banking while 59 (90.8%) nurses with no working experience in NICU had adequate level of knowledge. To explore the association of levels knowledge with working experience in NICU, Chi- square test was computed, the value of which was found to be1.499 with p value 0.221 which was non-significant

NICU experience	Inadequate knowledge	Adequate knowledge	Total number	Chi-Square	P value
Yes	2(3.6%)	53(96.4%)	55		
No	6(9.2%)	59(90.8%)	65	1.499	0.221

Table 6: Level of knowledge and its association with NICU experience.

at p- value <0.05.Hence it is concluded that level of knowledge had no strong association with working experience in NICU.

Need of milk bank	Frequency	Percent	Cumulative percentage
Yes	104	86.7	
No	16	13.3	
Total	120	100	100

Table 7: Need of Milk Bank.

Table 7 shows that 86.7% of nurses responded positively for the need of milk bank while 13.3% thought that milk bank is not needed.

Discussion

Human breast milk bank is not a new concept. The concept of "wet nurses" has been around for at least 4000 years. It used to be the only alternative feeding available for babies before the introduction of bottles and formula. Anecdotally, this is still practiced in many parts of the world, with sisters or friends with similar aged babies sharing breast feeding.

The present study showed that 93.3% of nurses had adequate knowledge while 13.3% had inadequate knowledge regarding human milk and milk banking. Nurses in this study group had positive attitude towards need of human milk banking. These findings are consistent with the study by Renuka which revealed 15% had poor knowledge and rest had average to good knowledge. Study conducted by Poonam Kumari revealed that 34% of nurses had inadequate knowledge which is quite high than the present study as well as study by Renuka. Bhat Asha Vinod did a study among B.Sc. Nursing students and found that only 3% had poor knowlegde, 33% had good knowledge and rest had average knowledge [14].

Conclusion

Most of nurses had adequate knowledge regarding human milk and milk banking. There was significant association with the working department to the level knowledge. Significantly better knowledge was observed in nurses working in paediatric department and NICU. There should be regular workshop and seminars to enrich the knowledge regarding human milk and milk banking. Hospital should have standard guidelines and protocols on milk banking. If biological mother is not available to directly breast her child nurses can store milk and feed her baby. Similar studies can be done about willingness of lactating mothers to donate their milk for banking and need of milk banking. Such study will help to pave a path to establish human milk bank that will be a boon to needy newborns.

Acknowledgements

Funding

Conflict of Interest

None declared.

Ethical Approval

The study was approved by the Institutional Ethics Committee.

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