Effectiveness of Nurse Led Education Program on Knowledge regarding Human Milk Banking among Antenatal Mothers Admitted in Selected Hospital of Mangaluru, India

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ABSTRACT

Introduction A Human milk banking is essential for the health of premature and sick infants. Educating antenatal mothers about this practice can increase awareness and encourage milk donation. Nurses as trusted healthcare providers, are well suited to lead these education programs in mangaluru.

Methods: A quasi-experimental two-group pre- and post-test design with an evaluative approach was adopted to assess the knowledge of 80 antenatal mothers in their third trimester selected by convenient sampling techniques from a hospital in Mangaluru. The information required were collected using socio-demographic sheets knowledge ascertained by structured questionnaire consisting of 20 questions were used. Data was used to summarized and evaluated by descriptive and inferential statistics.

Results: Pre-test and post-test mean score of the experimental group the pre-test knowledge score was 9.23±1.49 and post-test was 16.23± 1.35 with the gained percentage 21.33% which is statistically very highly significant with computed 'p'value of 0.001. Whereas in control group mean pre-test knowledge score was 8.75± 2.05and mean post-test was 7.73± 1.68 with 'p' value 0.051 showing there was no statistically significant difference between pre-test and post- test knowledge scores, with mean percentage gain of 2.01% . Overall knowledge score between experimental and control group calculated using unpaired "t" test and was statistically significant at 0.05 level. There was significant association between pre-test knowledge score and gestational age.

Conclusion: The intended nurse led education program can bring significant improvement among antenatal mothers and suggested that further evidence-based research should be conducted to improving maternal and child health outcomes related to human milk banking.

Keywords: Antenatal Mothers,Human Milk Banking, Knowledge

INTRODUCTION

Human milk is especially made for and well suited for human newborns, breastfeeding is the best method of nourishing infants. The United Nations Children's Fund and the World Health Organization declared in 1980 that human milk from a nursing mother is the next best thing for a baby who is unable to drink milk from their own mother.[1] A human milk bank is a facility that gathers, filters, prepares, and distributes donated human milk from nursing mothers who are not connected to the recipient biologically. The milk is prescribed for infants. Donor milk is used to treat a variety of illnesses, including as immunological deficits, allergies, intolerance to formula feeding, and preterm.[2,3] Furthermore, growth factors found in mothers' milk can protect growing

tissues, encourage development, especially in the gastrointestinal system, and aid in the healing of injured tissue following an infection. It is also advised that during prenatal follow-ups, medical experts provide counselling.[4,5] Worldwide, 10% of babies are born prematurely, and 15% of those babies are born with a very low birth weight, which puts them at higher risk of developing sepsis and necrotizing entero colitis. Compared to formula-fed newborns, VLBW babies who are fed their own mother's milk show notably decreased rates of NEC and sepsis. Guidelines suggest using pasteurized human donor milk as a supplement in place of preterm formula to address this, despite the fact that pasteurization may reduce the quality of the milk.[6]

Furthermore, economic studies carried out in underdeveloped regions have demonstrated that reducing the incidence of low birth weight could result in considerable financial savings for families and healthcare systems. The fact that illnesses associated with bottle feeding and poor feeding techniques account for more than half of neonatal fatalities in India emphasizes the vital role that breastfeeding plays as an infant's "passport to life." But sometimes, cultural practices, oversight issues, conventional wisdom, and ignorance keep babies from getting this important advantage. This study was carried out to asses the knowledge of antenatal mother regarding human milk bank as well as to evaluate the efferctiveness of nurse led education on human milk banking.

METHODS

A quasi-experimental two-group pre- and post-test design with an evaluative approach was selected for this study.

The sample comprised 80 antenatal mothers in their third trimester, with 40 in the control group and 40 in the experimental group, all recruited from a hospital in Mangaluru using convenient sampling techniques. A structured knowledge questionnaire was developed by the investigator, consisting of 20 multiple-choice questions covering topics on human milk banking (HMB), including its definition, advantages and disadvantages, objectives, donor criteria, milk expression techniques, and methods to motivate mothers to donate. A baseline proforma collected demographic details such as age, gestational weeks, and number of pregnancies, education, religion, and prior knowledge of HMB. The tool's content validity was established by seven experts in Obstetrics and Gynecology Nursing, and the reliability test yielded a coefficient of r=0.87, indicating high reliability. After a successful pilot study, permission was obtained from hospital authorities, and informed consent was secured from participants. The pre-test was administered to both groups, followed by the implementation of a nurse-led educational program on HMB for the experimental group. After five days, post-tests were conducted for both groups, aligning with the typical hospital stay of mothers in their third trimester. The exclusion criteria included illiterate mothers and those admitted for medical termination of pregnancy (MTP), intrauterine death (IUD), or fetal demise.The data were recorded on a master sheet and analyzed statistically to assess the effectiveness of the intervention.

S.N.	Demographic Characteristics	Experimental Group(n=40)		Control Group(n=40)	
		f	%	f	%
1	Age(in years)	Mean age=26.60±5.27			
	20-25	16	40	20	50
	26-30	18	45	11	27.5
	31-35	4	10	5	12.5
	36-40	2	5	4	10
2	Gestational week				
	27-29	25	62.5	17	42.5
	30-32	13	32.5	14	35
	33-35	2	5.0	9	22.5
3	Number of pregnancies				
	One	16	40	8	20
	Two	21	52.5	26	65
	Three and more	3	7.5	6	15

Table 1: Findings related to socio demographic variables of antenatal mothers.

4	Educational status				
	No formal education	1	2.5	0	0
	Elementary	7	17.5	0	0
	8-10th standard	8	20	19	47.5
	PUC/PDC	19	47.5	12	30
	Graduation and above	5	12.5	9	22.5
5	Religion				
	Hindu	25	62.5	24	60.0
	Christian	5	12.5	4	10
	Muslim	10	25	12	30
6.	Prior information on HMB				
	Yes	9	22.5	9	22.5
	No	31	77.5	31	77.5
7.	Sources of information on HMB				
	Relatives	1	11.1	-	-
	TV/social media	-	-	2	22.2
	Newspaper/magazine	3	33.3	2	22.2
	Health care worker	5	55.6	5	55.6
8.	Ever donated milk in HMB	40	100	40	100

RESULTS

The study found that the mean age of participants was 26.60 ± 5.27 years. Among the experimental group, 40% were aged 20-25 years, and 40.5% were 22-23 years, while the control group had 50% aged 20-25 years and 27.5% aged 22-23 years. Regarding gestational age, 62.5% of the experimental group and 42.5% of the control group were 27-29 weeks, while 32.5% and 35% were 30-32 weeks, respectively. In terms of pregnancy history, 52.5% in the experimental group and 65% in the control group were on their second pregnancy, while 40% and 20% were first-time mothers. Educational levels showed that 20% of the experimental group and 47.5% of the control group had completed 8-10th grade, while 12.5% of the experimental group and 22.5% of the control group were graduates. Most participants were Hindus (62.5%) across both groups, with smaller percentages being Christians and Muslims. Additionally, 77.5% of mothers in both groups had no prior knowledge of human milk banking, and those who were informed largely received it from healthcare workers.

The data presented in Fig 1 shows that in the experimental group during the pre-test 1(2.5%) of the mothers had poor and 39 (97.5%) had moderate knowledge and none of them had good knowledge, whereas in the control group 8 (20.0%) of the mothers had poor and 31 (77.5%) had moderate knowledge and 1(2.5%) had good knowledge.
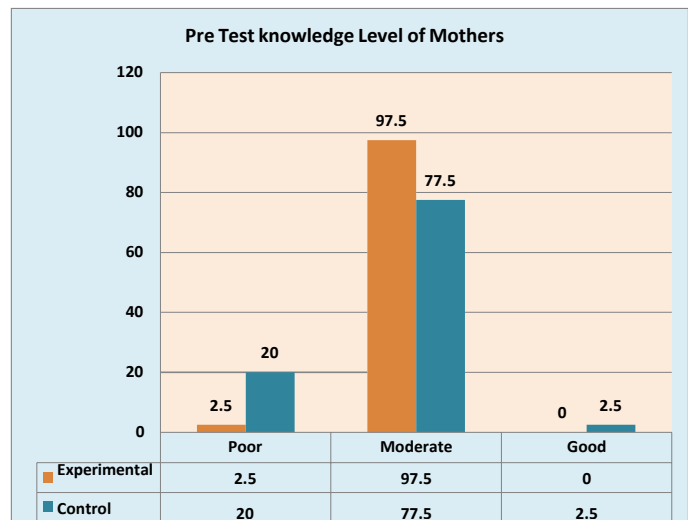

Figure 1: Pre-Test Level of Knowledge of Mothers Regarding Human Milk Bankingin Experimental And Control Group

It clearly indicates that there is the need to improve the antenatal mother's knowledge towards human milk banking. The data presented in Fig 2 shows that in the experimental group following the post- test and 39(97.5%) mothers had good and 1(2.5%) of the mothers had moderate knowledge and none of them had poor knowledge, whereas in the control group 10 (25%) of the mothers had poor and 30(75%) had moderate knowledge and none of them had good knowledge.
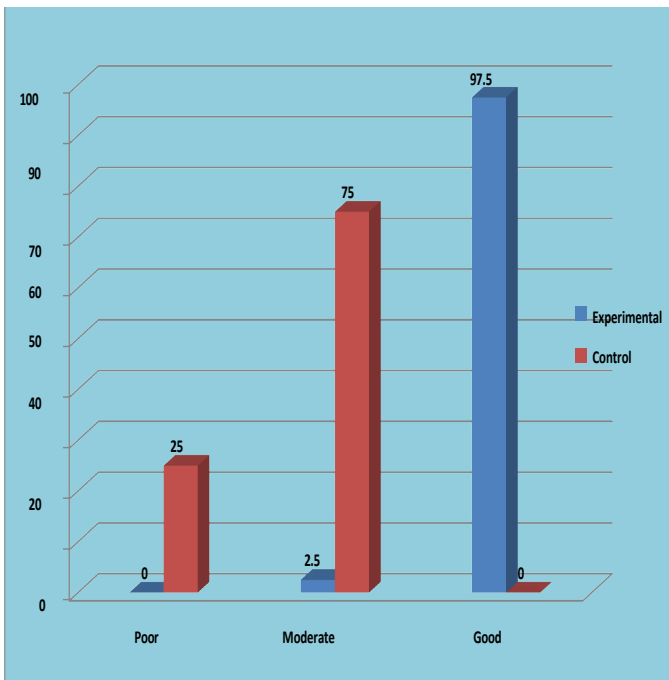
Figure 2: Post-Test Level of Knowledge of Mothers Regarding Human Milk Bankinging Experimental And Control Group

The experimental group achieved a higher percentage 39(97.5%) compared to the control group 30(75%) of good knowledge. In table 2 show that overall knowledge score between experimental and control group, nurse led education intervention programme was found to be successful in raising knowledge regarding human milk banking (p 0.001).

Table 2: Effectiveness of nurse led education program on human milk Banking among antenatal mothers.

Level of post –test knowledge			Mean difference		
	Mean	±SD		t value	p value
Experimental	16.23	±1.35	-7.00	16.197	0.001**
Control	7.73	± 1.68	1.025		

The association between mean pre-test knowledge scores and demographic variables were computed by using chi-square test.

There was significant association between the pre-test knowledge score and the baseline variables ($\chi2$ = 5.895)

Table 3: Association between demographic variables and the Pre-test knowledge score regarding human milk banking

S.N	Demographic characteristics	>median (<9)	<median (>9)	χ2	p value
1	Age(in years)				
	20-25	16	20	1.369	0.504
	26-30	18	11		
	31-35	4	5		
	36-40	2	4		
2.	Gestational Week	25	17	5.895	0.015*
	27-29	13	14		
	30-32	2	9		
	33-35				
3.	Number of pregnancies	16	8	0.254	0.614
	One	21	26		
	Two	3	6		
	Three and more				
4	Educational Status				
	No formal education	1	0	0.345	0.842
	Elementary	7	0		
	8-10th standard	8	19		
	PUC/PDC	19	12		
	Graduation and above	5	9		
5	Religion				0.457
	Hindu	25	24	1.567	
	Christian	5	4		
	Muslim	10	12		
6	Prior Information on HMB				
	Yes	5	13	0.937	
	No	25	37		

whereas there was no significant association between other demographic variables and knowledge scores of experimental and control group.

DISCUSSION

This present study found that during pre-test 2.5% of the had poor knowledge with an average score of 9.23 ± 1.49 and following the intervention 2.5% of the subjects had moderate knowledge with an average score of 16.23 ± 1.35. The control group showed more or less the same average score (pretest 8.75 ± 2.05 & posttest 7.73 ± 1.68). The study results were similar with the study conducted among 244 mothers in Turkey (2020) which evaluate the effects of human milk banking nurse led educational program The study result found significant in preparation (p = .000) and knowledge with mean pre-test score of 29.50 ±3.65 which increased to 30.96± 5.17 in the experimental group whereas in the control group mean pre-test and post-test score was more or less the same 20.23± 3.97 and 20.26± 2.69, in preparation(p=.000).[7]

This study result shows that pre-test level of knowledge score was 9.23 ±1.49 and post-test was16.23 ± 1.35 with mean difference of 7 with p value of 0.001 in experimental group and there was no significance (p 0.051) in control group. Overall knowledge score was highly significant (p 0.001) which shows that effectiveness of intervention on HMB. An interventional pre and post-test study, carried out among 60 mothers at Chittoor, Andhra Pradesh, provided support for the study's findings (2021). Pre-post evaluation results indicate a significant improvement in knowledge, practice, and attitude (P 0.001).[8]

According to the current study, there was a significant correlation (χ2 = 5.895; p 0.015) between pre-test knowledge score and the baseline variables (gestational age) about human milk banking.The present study incongruent with the descriptive study that evaluated how well it affected antenatal mother's knowledge attitude and awareness of human milk banking in Chandigarh, India. The findings revealed that there was no statistically significant correlation between ages, religion, source of knowledge, gender.[9]

CONCLUSION

Human milk banking is a vital resource for supporting breastfeeding and improving infant health outcomes, especially for vulnerable populations such as preterm or sick newborns. Among antenatal mothers, awareness and education about human milk banking can increase willingness to donate and utilize banked milk. Nurse led education programs on human milk banking among antenatal mothers, we can empower women to make informed decisions about their breast milk and support the health and well-being of their babies.

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