Original Research Article

A Comparative Study to Assess Problem of Inverted Nipple and Its Relationship to Successful Breast Feeding Among Antenatal Mothers

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ABSTRACT

Background: The first feed is a profoundly important experience to the mother and her baby. Breast feeding is the ideal form of feeding in the neonate. Artificial feeding exposes the infant to infection and results in over a million deaths annually worldwide due to ill effects. Most of primi mothers are not able to breastfeed their babies properly due to inverted nipples. The poor breastfeeding may not be always the outcome of illiteracy; it can also be due to flat or inverted nipples.

Material and Methods: The comparative research approach with two group post- test only experimental design was used. The independent variable was the cut disposable syringe technique in treating inverted nipple and dependent variable was the successful breastfeeding (LATCH).Study was conducted on 60 mothers admitted in maternity ward of Krishna Hospital, Karad, by using purposive sample technique. The data were collected, tabulated and analyzed by using descriptive and inferential statistics.

Result:

Demographic variables in both groups

In group I 27(45%) and 29(48%) mothers from group II belonged to 18- 25 years of age. The difference in proportions was not significant (Fisher exact P = 0.6120). In group I 24(40%) and 22(37%) mothers from group II were educated up to primary and secondary. The difference was not significant (P = 0.7611). In group I 28(47%) and 29(48%) mothers from group II were housewives. The difference was not significant (P= 1.0000). In group I 26(43%) and 26(43%) mothers from group II had their monthly income more than 5000 Rs. The difference was not significant (P =1.0000). In group I 30(50%) and 27(45%) mothers from group II belonged to joint family. The difference was not significant (P = 0.2373).In group I 27(45%) and 30(50%) mothers from group II were Hindu by religion. The difference was not significant (P = 0.2373).

Supportive and teaching needs

There was no significant difference found in the mean score of supportive needs and teaching needs between group I and group II (P=0.1595 and t=1.425).

Successful breastfeeding according to LATCH score

In both groups all the babies had LATCH score 7 and above and they were achieved successful breastfeeding.

Weight loss of the babies on 4th day

The mean weight of the babies on 4th day was 2.4906 + 0.2409 Kg. in group I, 2.4671 + 0.3080 Kg. in group II the difference was not significant as Unpaired t=0.3268, P=0.7450.

Problem of inverted and normal nipples

None of the mother was developed problem with inverted and normal.

Conclusion: The correction of inverted nipples with cut disposable syringe technique may be effective in achievement of successful breastfeeding with inverted nipples.

INTRODUCTION

"The nature has designed the provision that infants be fed upon their mother's milk. They find their food and mother at the same time. It is complete nourishment for them both for their body and soul". [1] - *Rabindranath Tagore*

The new born infant requires dietary energy for adequate growth and development. Infant nutrition research repeatedly concludes that human milk and breast feeding are gold standard to which all other forms of infant feeding alternatives should be compared. In addition to provide essential nutrients breast feeding provides unique opportunities for positive interactions and bonding between infants and mother's decision to breast feed is determined by many factors. Feeding her new infant can be an exciting, satisfying and personally empowering experience for many women. The nurse can provide vital support. [2]

The first feed is a profoundly important experience to the mother and her baby. Unless individual circumstances indicate otherwise, the mother should have her baby with her immediately after delivery and breast feeding should begin as soon as possible. [3]

Mother milk is best suited to serve the biological needs of her baby! Breast feeding is natural and instinctive. Every mother wants to breast feed her baby and she must be provided with necessary guidance, support and encouragement by family members and health care professionals. And, every mother can successfully breast feed and provide a best start in life to her baby. Like mother's love there is no substitute for mothers, milk. [1]

It is important that the mother and infant have the opportunity to breast feed as soon after delivery as possible. Mother who feed during the first hour of life, breast feed longer and have more positive comments about their experience than women who first breast feed at 16 or more hours after birth. The initial satisfying breast feeding experience acts as a reinforces for subsequent feedings (Johnson, 1976). This early breast feeding has an imprinting effect (Riordan and countryman, 1980). It reinforces not only the infant's sucking reflex and pattern but also the mother's self-esteem. [4]

Breast feeding is the ideal form of feeding in the neonate. Artificial feeding exposes the infant to infection and results in over a million deaths annually worldwide due to ill effects. [5]

Breast Feeding Promotion Network of India (BPNI) 2002, says, infant aged (0-5) months who are not breast feed have seven fold and fivefold increased risk of death from diarrhea compared with infants who are exclusively breast feed. At the same age, nonexclusive breast feeding results in more than two-fold increased risk of dying from diarrhea. [5]

All newborn that cry soon after birth and do not show any signs of illness must be kept close to mother and put to the breast soon after birth. This will ensure warmth initiation of breast feeding and emotional bonding. [6] The motivation and preparation for breast feeding should begin during antenatal period. Awareness, willingness, keenness and confidence on the part of mother are crucial for successful establishment of lactation. Early bonding soon after delivery promotes breast feeding. Healthy infants should be roomed - in with the mother and should never be separated from the mother by keeping him in the nursery. Early breast feeding in all babies, irrespective of the mode of delivery and avoidance of prelacteal and prolacteal feeds are essential to establish successful breast feeding. Active support to the mother, use of proper technique and good attachment of the baby to the breast facilitates breast feeding. [1]

Breast feeding success depends on appropriate attachment of the infant at the breast, in which the nipple and much of the areola are drown well into the baby's mouth. Anatomical variations of the breast, including flat nipple, inverted nipple, large breast and large nipple may act as barriers for the baby to latch on to the breast effectively. Babies need to have good attachment to the breast for successful breast feeding and potential maternal problems such as these variations can make good attachment hard to achieve. Also, infant problems, such as tongue tie can be important. Alexander et al considered inverted and non – protractile nipples as leading to problems establishing and maintaining breast feeding. [7]

Most women with inverted nipples who give birth are able to breast feed without complication, but inexperienced mothers may experience higher than average pain and soreness when initially attempting to nurse. When a mother uses proper breast feeding technique, the infant latch onto the areola, not the nipple, so women with inverted nipples are actually able to breast feed without issue. An infant that latches on well may be able to slush out an inverted nipple. [8]

The occurrence of inverted and flat nipples is not uncommon in the practice of newborn care. Although such conditions should not preclude (prevent) breast feeding if expert counseling and advice on proper positioning are available, many mothers get frustrated and quit breast feeding. [9] The inverted nipple is a relatively common problem, with a large majority of cases attributable to congenital causes. Inverted nipples should not preclude breastfeeding; they often seriously hamper initiation and continuation of breastfeeding. [10] Inverted and flat nipples are common with an incidence of 16.3% among nulliparous women attending antenatal clinics. Large majority (90.2%) of them exclusively breast fed with satisfactory weight gain with adequate support. Incidence of flat / non protractile inverted nipple is 9.6%. Large majority of flat / non protractile nipple can be corrected antenatally (75%). [11]

A study was conducted to assess the prevalence of inverted and non-protractile nipples in pregnant women who were intending to breast feed. Among 3006 women examined, the overall prevalence was found to be 9.8% the three factors which cause a reduction in the prevalence of inversion and non-protractility are increasing gestation, increasing maternal age and previous breast feeding. Parity appears to have no effect. The mechanism of influence which these factors prevalence may be in biological, but other influences which have bearing on a women's choice of infant feeding method. [12]

Nipple problems may lead to a delay in breast feeding initiation and thus deprive the baby from getting the benefits of colostrum. Inability to attach at the breast causes infrequent suckling and may lead to breast engorgement, and if the mother is not shown how to maintain an adequate supply through expression of milk, the production of milk is likely to decrease. [10]

Dewey et al. in their study showed that inverted and flat nipples were one of causes, along with many other factors, of delayed onset of lactation. Breast variations, such as flat nipples, inverted nipples, large breast and large nipples among first time mothers have been shown to act as important barriers to weight gain among breastfed neonates in the early days of life. Maternal factors like breast conditions, nutrition, parity, and feeding practices for previous babies, lactation gap and infant's initial refusal to suckle at the breast did not influence the outcome variables according to one study, as long as repeated suckling was ensured and if the mothers had education and motivation as well as strong skilled support of health workers. [10]

A prospective cohort study was conducted to assess the effect of maternal breast variations on neonatal weight gain in the first seven days of life, in 100 newborns identified that Neonates born to mothers without the specified breast variations had a

mean weight gain of (+) 53 ± 154.4 g at day seven., Not only there was no increase in the mean weight of neonates in the other group, but they had a mean decrease of weight of (-) 162 ± 125.5 g by the seventh day of their life compared to birth weight. Thus, neonates born to mothers without breast variations had significantly greater weight gain than neonates born to the mothers with the specified variations (p < 0.01). Breast variation among first-time mother's acts as an important barrier to weight gain among breastfed neonates in the early days of life. [9]

It was estimated by Alexander et al. that about 10% of pregnant women have inverted or non-projective nipples, which hinder breast feeding apart from flat and retracted nipples, they also documented other anatomical problems of nipples that they had observed. Various methods to correct flat and inverted nipples with varying degrees of success and complications have been reported in the literature. The best simple method to date had been reported by Kesaree et al. the inverted syringe method to pull out the flat or retracted nipple. [10]

However, the practical problems with breastfeeding remain and despite much effort it is still increasing. Most of primi mothers were not able to breastfeed their babies properly due to inverted nipples. The poor breastfeeding may not be always the outcome of illiteracy; it can also be due to flat or inverted nipples. Whichever may be the cause, the final result of poor breast feeding is the hindered growth and development of child in all aspect.

MATERIALS AND METHODS

The comparative and evaluative research approach was used. The research design adopted for the study was experimental with two group post- test only design. (Group – I (N=30) Health Education O1) (Group – II (N=30) X + Health Education O1) Group – I = Antenatal mothers with normal nipple. Group – II = Antenatal mothers with inverted nipple. X =

Correction of inverted nipples with help of cut disposable syringe technique. O1 = Post intervention assessment of the effectiveness of cut disposable syringe technique in treating inverted nipple for successful breast feeding in primipara mothers. In the study, the intervention (treatment) was introduced to group – II with 20 ml disposable syringe. 20 ml plastic syringe was used after cutting the barrel 1 centimeter from the nozzle and the piston inserted from the cut end of the barrel. The other opening of the barrel was placed around the nipple and withdrawn the piston gently. The nipple was slowly protruded in to the barrel. After 30 – 60 seconds, piston was pushed back gently to release the hold of the syringe on the nipple. This procedure was repeated before each breast feeding. As soon as the nipple becomes prominent, the nipple and areola held between index finger and thumb to form an erect nipple and the baby was put to the breast. Both the groups were provided health education about techniques and importance of breast feeding.

Independent variable is cut disposable syringe technique in treating inverted nipple and dependent variable is successful breast feeding (LATCH).

Research setting was maternity ward of Krishna Hospital Karad. Population comprises of antenatal mothers admitted in maternity ward of Krishna Hospital, Karad. Samples were 60 primi antenatal mother with inverted nipple and normal nipples admitted in maternity ward of Krishna Hospital, Karad by using purposive sampling technique which is a type of non-probability sampling technique.

A tool comprised section I includes demographic variables and section II includes – part I assessment of breasts and nipple, part II includes interventions for inverted nipples, and part III includes tool for assessment of successful breast feeding.

The tool used was a standardized observation scale (LATCH scale) and electronic weight machine for taking weight of the babies (same weight machine used for all the babies).

LATCH scale: As L is for latch, zero indicated to sleepy or reluctant, no latch achieved, one is repeated attempts to hold nipple in mouth, stimulate to suck and two is for grasp breast tongue down lips flanged, rhythmic sucking. A is for audible swallowing – zero for none, one for a few with stimulation and 2 for spontaneous and intermittent < 24 hrs. old, spontaneous and frequent > 24 hrs. old. T is for type of nipple – zero for inverted, one for flat and two for everted. C is for comfort (breast / nipple) – zero indicated engorged, cracked, bleeding, large blisters or bruises, severe discomfort, one for filling, reddened / small blister or bruises, mild / moderate discomfort, two for soft non tender. H is for hold (positioning) – zero indicates full assist (staff holds infant and breast, one for minimal assists), (staff holds and then mother takes over), two for no assist from staff, mother able to position / hold infant.

Scoring done according to APGAR score 0 -3 poor, 4-6 fair and 7- 10 good. The success of breast feeding during first 4 days of life was determined by using the LATCH technique as described by Jensen et al. The LATCH score of 7 or higher was considered as successful, and score below 7 considered as unsuccessful.

Weight: The infant was weighted nude. The weight was recorded on an electronic weighing machine and zero error was adjusted before weighing. Infant's weight was measured daily on first four days at morning 9:00 am. Only one weight machine was used for all babies.

The ethical clearance and permission obtained from ethical committee of KIMSDU Karad and informed consent was taken from each participant. Assessment of antenatal mothers was done on the day of admission by using tool. After assessment the samples divided into group – I (antenatal mothers with normal nipple) and group – II (antenatal mothers with inverted nipple) immediately after delivery, intervention with cut disposable syringe was given to group - II and routine health education about techniques of breast feeding given to both the groups. After interventions the data was collected up to 4 days by using tool for assessment of successful breastfeeding. Data was tabulated and analyzed by using descriptive and inferential statistics. Inferential statistics - Fisher exact test, Paired 't' test, Unpaired 't' test and computation of 't' and 'p' values were used for comparison of pattern of weight loss of the babies on 1st day and 4th day between group - I and group - II and also for comparison of score of supportive needs and teaching needs between both groups.

RESULTS

Table No. -1: Comparison of antenatal mothers according to demographic variables in both groups   N= 60

Sr.No.	Demographic Variable	Group 1 (30)	Group 2 (30)	Fisher exact test
1	**Age**			
	18-25 Yrs	27(45%)	29(48%)	0.6120
	>26 Yrs	3(5%)	1(2%)	
2	**Education**			
	Primary and Secondary	24(40%)	22(37%)	0.7611
	Graduates and Postgraduates	6(10%)	8(13%)	
3	**Occupation**			
	Housewife	28(47%)	29(48%)	1.0000
	Others	2(3%)	1(2%)	
4	**Monthly income**			
	>5000 Rs.	26(43%)	26(43%)	1.0000
	<5000 Rs.	4(7%)	4(7%)	
5	**Type of family**			
	Joint Family	30(50%)	27(45%)	0.2373
	Nuclear Family		3(5%)	
6	**Religion**			
	Hindu	27(45%)	30(50%)	0.2373
	Buddhist	3(5%)	-	

Group - I 27(45%) mothers and 29(48%) mothers from group - II were belonged to 18- 25 years of age. The difference in proportions was not significant (Fisher exact P = 0.6120).

In group - I 24(40%) mothers and 22(37%) mothers from group - II were having education up to primary and secondary. The difference in proportions was not significant (Fisher exact P = 0.7611).In group - I 28(47%) mothers and 29(48%) mothers from group - II were housewives. The difference in proportions was not significant (Fisher exact P =1.0000).In group - I 26(43%) mothers and 26(43%) mothers from group - II had their monthly income more than 5000 Rs. The difference in proportions was not significant (Fisher exact P = 1.0000). In group - I 30(50%) mothers and 27(45%) mothers from group - II were belonged to joint family. The difference in proportions was not significant (Fisher P = 0.2373).

In group - I 27(45%) mothers and 30(50%) mothers from group - II were Hindu by religion. The difference in proportions was not significant (Fisher exact P = 0.2373).

Table No. - 3: Comparison of mothers according to score of supportiveand teaching needs by using Unpaired 't' test N= 60

	Mean	SD	Minimum	Maximum	Unpaired 't' value	P value
Group - I	23.33	0.9942	22	25	1.425	0.1595
Group-II	23.73	1.172	22	26		

There was no significant difference found in the mean score of supportive needs and teaching needs between group - I and group – II (P=0.1595 and t = 1.425). The total score of supportive needs and teaching needs successful were 26.

Table No. - 4: Distribution of respondents according to LATCH score in both groups   N= 60

LATCH Score	Group - I		Group - II	
	Frequency	Percentage	Frequency	Percentage
> 7 (breastfeeding)	30	100	30	100
< 7 (Unsuccessful breastfeeding)	-	-	-	-

From both the groups all the babies had LATCH score 7 and above and they were achieved successful breastfeeding.

Table No. - 5: Assessment pattern of weight loss of the babies between 1st and4th day by using Paired 't'test in group - I N=30

Group-1	Mean + S.D.	Mean Difference	't' value	P value
1st day	2.7184 + 0.2518	0.2280	15.418	<0.0001
4th day	2.4906 + 0.2409			

The mean weight of the babies on1st day was 2.7184 + 0.2518 Kg. and on 4th day was 2.4906 + 0.2409 Kg. in group – I and the difference was statistically significant.

Table No. - 6: Assessment pattern of weight loss of the babies between 1st and4th day by using Paired 't' test in group - II N=30

Group-II	Mean + S.D.	Mean Difference	't' value	P value
1st day	2.7059 + 0.3547	0.2388	16.458	<0.0001
4th day	2.4671 + 0.3080			

The mean weight of the babies on1st day was 2.7059 + 0.3547 Kg. and on 4th day was 2.4671 + 0.3080 Kg. in group – II and the difference was statistically significant.

Comparison weight of the babies on first day between group - I and group – II by using unpaired't' test

The data presented in table 5 and 6 indicates that the mean weight of the babies on 1st day was 2.7184 + 0.2518 Kg. in group - I and 2.7059 + 0.3547 Kg. in group - II. Thus the difference in mean weight of the babies on 1st day between group - I and group - II was statistically not significant as t=0.1578 (Unpaired 't' test)and P=0.8751.

Comparison pattern of weight loss of the babies on fourth day between group - I and group - II by using unpaired't' test

The data presented in table 5 and 6 indicates that the mean weight of the babies on 4th day was 2.4906 + 0.2409 Kg. in group - I and 2.4671 + 0.3080 Kg. in group - II. Thus the difference in mean weight of

the babies on 4th day between group - I and group - II was statistically not significant as t=0.3268 (Unpaired't' test) and P=0.7450.So there is no significant difference in mean weight of the babies on 4th day in group - I and group - II. Thus the correction of inverted nipples with cut disposable syringe technique may be effective in achievement of successful breastfeeding. Extra uterine life presents a challenge to the newborn infant.5 there was weight loss of 7-10% in the first week of life.3 the weight loss is normal in first few days because newborn exposes to extra uterine life. In present study weight loss were present in both the groups.

Assessment of problems with inverted and normal nipples was done among both groups like failing lactation, Suppression of lactation, Poor latch, Ineffective breastfeeding, Mastitis, Engorged breast. None of the mother was developed any problem during first four days of postpartum among both the groups.

DISCUSSION
Findings related to demographic variables

In the group - I out of 30 mothers, majority mothers 15 (50%) belonged to 18-21 years of age and in group - II out of 30 mothers, majority mothers 18 (60%) belonged to 22-25 years of age. These findings were similar to the findings of study conducted by JuliNaz at Government Hospital, Dharapuram, where majority primi mothers 23(76.67%) were belongs to the age group of 18-25 years. [7]

In the group - I majority mothers 20(66.66%) were educated up to secondary education and in group - II majority mothers 12(40%) were educated up to secondary education. These findings were contradicted to the findings of study conducted by JuliNaz at Government Hospital, Dharapuram, where majority primi mothers 20 (66.67%) were having higher education. [7]

In the group - I majority mothers 28(93.33%) were house wives and in group

-II majority mothers 29(96.66%) were house wives. These findings were similar to the findings of study conducted by JuliNaz at Government Hospital, Dharapuram, where majority primi mothers 27(90%) were house wives. [7]

In the group - I maximum mothers 26 (86.66%) having monthly income more than 5000 Rs. and in group - II also maximum mothers 26 (86.66%) having monthly income more than 5000 Rs.

In the group - I all the mothers 30 (100%) were from joint family, and in group - II maximum number of mothers 27 (90%) were from joint family.

In the group - I maximum mothers 27 (90%) were belongs to Hindu religion and in group - II all the mothers 30 (100%) were belongs to Hindu religion. These findings are similar to the findings of study conducted by JuliNaz at Government Hospital, Dharapuram, where majority primi mothers 24(80%) were belongs to Hindu religion. [7]

Comparison of samples according to demographic variables

In the present study it was observed that distribution of demographic variables for both groups were similar with majority of samples in the age group of 18– 25 years. The educational status in both the groups comparable, as many of samples being secondary educated, professionally majority of samples were housewives, most of the samples were having monthly income >5000 Rs. and most of mothers belongs to joint family and Hindu by religion.

There was no significant difference found in the proportions between group - I and group - II.

Comparison of respondents according to score of supportive needs and teaching needs

In the present study there was no significant difference found in the mean score of supportive needs and teaching needs between group - I and group – II(P=0.1595 and t = 1.425).

Findings related to LATCH score:

There was good latching and profuse breast milk secretion even from first day as effect of early initiation of breast feeding among both the groups and effect of intervention with cut disposable syringe among group - II.

Similar findings were noted in the study conducted by Nirmala Kesaree where seven mothers who had inverted nipples were helped to breastfeed their infants with the assistance of disposable syringe. These women were able to successfully breastfeed within one week. On follow-up, these mothers were able to sustain adequate breastfeeding. [13]

Findings related to assessment pattern of weight loss of the babies:
There was significant difference in weight of the babies on first day (birth weight) and fourth day among both the groups.

Findings related to comparison of mean weight of the babies on first day:
There was no significant difference found in the mean weight of the babies on first day between group - I and group - II.

Findings related to comparison pattern of weight loss of the babies on fourth day
There was no significant difference found in the mean weight of the babies on fourth day between group - I and group - II. Thus, the correction of inverted nipples with cut disposable syringe technique may be effective in achievement of successful breastfeeding.

Similar findings were noted in the study conducted by Indian pediatrics regarding using a simple device (disposable syringe) for management of inverted nipple in 35 cases of inverted nipple and in 34 has been successful in establishing breast feeding. The time interval between use of syringe and establishment of full breast feeding varied from 3 to 7 days in all except one case. On follow up, all the babies were continuing to breastfeed and nipples had permanently everted. [14]

Similar findings were noted in the study conducted by Gillian to assess the effectiveness of using disposable syringe to treat inverted nipple, it shows the

effectiveness of this device and its advantages over other measures. The study says the modified syringe technique is simple, inexpensive, and easily learned by mothers. The syringe is portable, safe, and can be used as often as required. [15]

These findings contradicted with findings in the study conducted by Reza Vazirinejad Shokoofeh Darakhshan. In their prospective cohort study, 100 healthy term neonates were followed from birth to day seven in two groups; Group A: fifty neonates born to mothers with specified breast variations and Group B: fifty neonates born to mothers without such breast variations ("normal breasts"). All neonates were the first child of their families and there was no sex ratio difference between the two groups. Neonates' weight at birth and day seven were measured and the mean weight differences in the two groups were compared using paired t-test. Neonates born to mothers without the specified breast variations had a mean weight gain of (+) 53 $\pm$ 154.4 g at day seven. Not only there was no increase in the mean weight of neonates in the other group, but they had a mean decrease of weight of (-) 162 $\pm$ 125.5 g by the seventh day of their life compared to birth weight. Thus, neonates born to mothers without breast variations had significantly greater weight gain than neonates born to the mothers with the specified variations including inverted nipples ($p < 0.01$). Breast variation among first-time mothers acts as an important barrier to weight gain among breastfed neonates in the early days of life. [9]

Findings related to problem with inverted and normal nipples:
None of the mother was developed any problem with inverted and / or normal nipples such as failing lactation, suppression of lactation, poor latch, ineffective breastfeeding, mastitis and engorged breast etc., during first four days of postpartum among both the groups. These findings are contradictory with the study conducted by Kamalendu Chakrabarti and Subhra Basu in

their study all the mothers faced some amount of distress at not being able to breastfeed their babies due to nipple problems. [10]

CONCLUSION

Based on the findings of the study the following conclusions were drawn.

-There was no significant difference found in the mean score of supportive needs and teaching needs between group - I and group - II (Unpaired 't' test, P=0.1595 and t = 1.425).

-The Paired't' test and Unpaired't' test was computed for comparison pattern of weight loss of the babies on first and fourth day between group - I and group - II.

-There was no significant difference found in the mean weight of the babies on first day and fourth day between group - I and group - II. Thus, it is concluded that, the correction of inverted nipples with cut disposable syringe technique may be effective in achievement of successful breastfeeding.

-Further the study indicates that all the primipara mothers did not able to breastfeed their babies successively due to improper latch and inverted nipples. They require appropriate interventions and health education to promote successful establishment and achievement of breastfeeding.

ACKNOWLEDGMENT

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