Research Article

Knowledge, attitude, and practice of techniques of breast-feeding among postnatal mothers in a coastal district of Karnataka

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Abstract

Background: Successful lactation is determined by the early initiation of breast-feeding and continuation of lactation, which in turn is determined by positioning, an important aspect to get neonates to latch on to the breast.

Objective: To explore the knowledge, attitude, and practices (KAP) of postnatal mothers in the immediate postpartum period regarding the techniques of breast-feeding and to reassess their KAP following education.

Materials and Methods: This observational study was conducted in a teaching hospital in a coastal district of Karnataka, which involved 118 postnatal mothers within the first week of delivery who were breast-feeding. The study was done as per the standard KAP methodology using a preformatted structured questionnaire involving 12 questions, which were evaluated under various domains such as initiation of feeding, latching, maternal positioning, and postfeed techniques. Assessment was done with the help of a scoring system carried out before and after education, and the results were analyzed with appropriate statistical tests. When the participants answered more than minimum specified number of questions correctly for each domain, the score was considered satisfactory, and the percentage of such women were calculated both pre- and posteducation; any improvement in the performance domain-wise and total scores were noted.

Result: The KAP mean scores of participant women at the time of recruitment with different demographic variables were compared in various domains of breast-feeding techniques, and it was found that educated women having antenatal care at higher centers and who received information regarding breast-feeding techniques before delivery showed higher scores ($P < 0.001$). The mean scores of these domains were also compared before and after administering lactational education, and it was found that such a training session improved KAP of postnatal women in all the domains significantly ($P < 0.001$).

Conclusion: Implementation of training programs for breast-feeding women in various techniques of breast-feeding, especially with regard to latching and maternal positioning, can improve the knowledge and attitude of postnatal mothers and aid in better practices of feeding, which in turn promotes comfortable and successful lactation.

KEY WORDS: Knowledge, attitude and practice (KAP), lactation, positioning, latching

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Introduction

Breast-feeding is one of the gifts that nature has given, which is vital for the growth and development of the newborn and healthy for both the newborn and the mother.[1] Awareness regarding the importance of direct breast-feeding has been increasing over decades with the information, communication, and education strategies brought about by various

organizations that involve social workers and health-care providers. Women in India are well aware of the importance of breast-feeding; rather, they consider it a bound duty and a routine mandatory protocol, whether or not they know the advantages of breast-feeding.[2]

But, the knowledge and awareness about the techniques of breast-feeding such as the time of initiation of feeding, latching on, and mother's position while feeding the baby seems limited. Inappropriate techniques of breast-feeding such as delay in the initiation of breast-feeding and improper feeding result in the failure of lactation. Failed lactation deprives the neonate from the natural passive immunity that the breast milk provides and makes the babies susceptible to hypoglycemic seizures, and the end result is the impairment of neonatal sensory and cognitive developments.[3] Moreover, improper posture of the mother and positioning of the baby can result in persistent backache.[4,5] There are other implications that may further worsen the problems in the form of cracked nipple, breast engorgement, and breast abscess.[6] Henceforth, there is a need to increase the knowledge, bring awareness, change the attitude of mothers in relation to the technique of breast-feeding, and make them to adopt the correct practices of feeding, which will enhance maternal and neonatal health.

As most of the women may encounter these problems related to improper techniques in the immediate postpartum period, the ideal time to educate them would be the antenatal period itself. However, in the busy antenatal clinics in India, this aspect is most neglected. The next most sensible period to assess and guide them to practice correct techniques would be the immediate postpartum period. This is the period where they will be under the supervision of health professionals having the responsibilities in guiding the mothers to adopt and practice the correct techniques of breast-feeding.[7] By taking into consideration the above-mentioned facts, this study was designed to explore the knowledge, attitude, and practices (KAP) of postnatal mothers in the immediate postpartum period regarding the techniques of breast-feeding and to reassess their KAP posteducation.

Materials and Methods

This was a prospective observational study conducted in a teaching hospital in coastal Karnataka from March to June 2014, involving 118 mothers who were exclusively breast-feeding and delivered within the last week of the day of interview were recruited for the study. Informed consent was taken from the mothers. Institutional regulatory body gave the necessary permission to conduct the study (IEC 201/2014). Pro forma with validated questionnaire (Annexure 1) consisting of both closed- and open-end questions, which were grouped under different techniques of breast-feeding such as the time to initiate breast-feed, latching, positioning of mother while feeding, and postfeed techniques, was given to the mothers in the language they can understand. After

Annexure 1: Validated Questionnaire

A. INITIATION OF BREAST-FEEDING

1. How will you start feeding?
   a. By placing the nipple between baby's upper lip and nose and by gently brushing her upper lip with nipple and encourage the baby to open her mouth wide with skin-to-skin contact.
   b. By holding the nipple within the fingers and pushing the nipple into the baby's mouth with skin-to-skin contact

B. LATCHING

2. Among the following, the comfortable technique is
   a. C hold b. V hold
3. Among the following, the correct technique is
   a. Nipple exclusively in baby's mouth
   b. Nipple, areola, and ½ of breast inside mouth
4. Which of the following is the proper technique?
   a. Baby's upper and lower lip everted
   b. Inverted
5. Prevent baby's nose getting blocked
   a. Cannot be prevented, so feeding with short breaks
   b. Gently press the upper breast with thumb next to baby's nose.
6. If baby falls sleep at breast
   a. Allow baby to sleep
   b. Stimulate the baby either by stroking one of the baby's cheek or the body

C. MOTHERS POSITION

7. Reason for practice of feeding while positioning
   a. comfort of mother/baby b. convenience of mother
8. Preferred position to feed the baby
   a. upright sitting in chair b. side-lying
   c. sitting in a chair in a semi-reclined posture
9. Preferred/correct position while feeding
   a. Lean forward toward the baby by pushing the breast forward (breast to baby)
   b. Pull the baby close to the breast by moving the arms (baby to breast).

D. POSTFEED TECHNIQUES

10. How to interrupt suction (stop feeding)
    a. Push the baby away from the breast
    b. Inserting finger between baby's gums and breast
11. Immediately after feed
    a. Put baby in lying down position
    b. Try to burp her
12. When will you burp your baby?
    a. After feeding both breasts
    b. after feeding each breast and at the end of feeding

Key:

1-a, 2-a, 3-b, 4-a, 5-b, 6-b, 7-a, 8-c, 9-b, 10-b, 11-b, 12-b

FIGURE 1. PICTORIAL DISPLAY

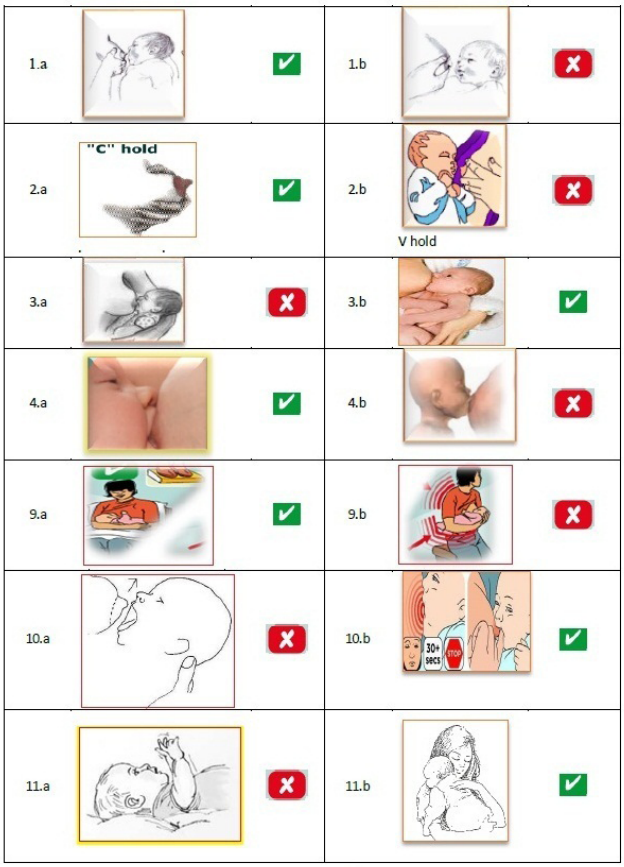

Figure 1: Pictorial display of wrong and correct techniques of breast feeding

Table 1: Presumed scores and satisfactory performance after education

Name of the domain	Maximum score	Satisfactory score
Initiation of feeding	1	1
Latching	5	≥3
Maternal positioning	3	≥2
Postfeed techniques	3	≥2
Total	12	≥8

answering the questionnaire, the preeducation KAP of the postnatal mothers was assessed. Later, they were educated about the correct techniques of breast-feeding using pictorial display [Figure 1], following which their KAP were reassessed (posteducation KAP) as per the same standard questionnaire. Scoring of the responses was done with a score of 1 for the correct response and 0 for a wrong response.

Table 1 indicates what was presumed to be a satisfactory performance following education.

Table 2: Demographic data—initiation of feeding

	N	Initiation of feeding, mean ± SD	*F*	*P*
Age (years)				
<30	91	0.63 ± 0.49	0.08	0.778
>30	27	0.66 ± 0.48		
Parity				
Primi	69	0.62 ± 0.49	0.62	0.431
Multi	49	0.69 ± 0.47		
Education				
Uneducated	35	0.31 ± 0.47	31.36	0.000*
Educated	83	0.80 ± 0.41		
Occupation				
Housewife	60	0.65 ± 0.48	0.003	0.953
Professional	58	0.66 ± 0.48		
Place of antenatal care				
Peripheral hospital	27	0.37 ± 0.49	13.49	0.000*
Tertiary hospital	91	0.74 ± 0.44		
Antenatal advice				
Received	87	0.79 ± 0.41	37.55	0.000*
Not received	31	0.26 ± 0.45		

*Paired sample *t*-test; $P < 0.05$, significant.

Sample Size Calculation

As there were no previous studies about the knowledge of postnatal mothers in the above-mentioned domains, we decided to conduct a pilot study involving 20 subjects. We found that only 50% of the women presented adequate total scores according to the above-mentioned schema at the time of recruitment. We hypothesized that, if any educational program improves this score by 70%, then it can be considered significant. Accordingly, the sample size was calculated in order to have the test significance of 0.05 and power of 80% using the formula:

$$n = (Z_{\alpha/2} + Z_{\beta}) * \left(\frac{p_1(1-p_1) + p_2(1-p_2)}{(p_1 - p_2)} \right)$$

where

n = sample size;

$Z_{\alpha/2}$ = the critical value of the normal distribution at $\alpha/2$ (value is 1.96, for P value of 0.05);

Z_{β} = the critical value of the normal distribution at β (value is 0.84, for power of 80%);

p_1 and p_2 = the expected improvement in the performance before and after the training, respectively (0.5 and 0.7 for 50% and 70%, respectively).

Accordingly, we obtained the sample size as 90, and, hence, our study sample of 118 subjects can be considered more than adequate to test the efficacy of the education program about breast-feeding.

The data were analyzed using SPSS software (version 16; Chicago, IL, USA) by appropriate statistical tests. Descriptive

Table 3: Demographic data—techniques of latching

	N	Latching, mean ± SD	F	P
Age (years)				
<30	91	2.69 ± 1.41	0.79	0.383
>30	27	2.96 ± 1.37		
Parity				
Primi	69	2.59 ± 1.40	2.17	0.144
Multi	49	2.98 ± 1.41		
Education				
Uneducated	35	2.14 ± 1.40	10.12	0.002*
Educated	83	3.01 ± 1.34		
Occupation				
Housewife	60	2.67 ± 1.35	0.47	0.494
Professional	58	2.85 ± 1.47		
Place of antenatal care				
Peripheral hospital	27	1.78 ± 1.40	19.51	0.000*
Tertiary hospital	91	3.04 ± 1.28		
Antenatal advice				
Received	87	3.24 ± 1.15	59.47	0.000*
Not received	31	1.39 ± 1.15		

*Paired sample *t*-test; $P < 0.05$, significant.

Table 4: Demographic data—position of feeding

	N	Position of feeding, mean ± SD	F	P
Age (years)				
<30	91	1.14 ± 0.73	1.20	0.275
>30	27	1.31 ± 0.75		
Parity				
Primi	69	1.25 ± 0.72	5.20	0.024
Multi	49	0.96 ± 0.61		
Education				
Uneducated	35	1.11 ± 0.63	0.02	0.896
Educated	83	1.13 ± 0.71		
Occupation				
Housewife	60	1.12 ± 0.74	0.03	0.867
Professional	58	1.14 ±0 .63		
Place of antenatal care				
Peripheral hospital	27	1.07 ± 0.73	0.21	0.649
Tertiary hospital	91	1.14 ± 0.68		
Antenatal advice				
Received	87	1.23 ±0 .66	7.86	0.006*
Not received	31	0.84 ± 0.69		

*Paired sample *t*-test; $P < 0.05$, significant.

Table 5: Demographic data—postfeed techniques

	N	Post feed techniques, mean ± SD	F	P
Age (years)				
<30	91	2.05 ± 0.66	4.94	0.028*
>30	27	2.37 ± 0.69		
Parity				
Primi	69	2.07 ± 0.65	0.76	0.385
Multi	49	2.18 ±0.73		
Education				
Uneducated	35	1.89 ± 0.68	6.07	0.015
Educated	83	2.22 ± 0.66		
Occupation				
Housewife	60	2.12 ± 0.64	0.001	0.975
Professional	58	2.12 ± 0.73		
Place of antenatal care				
Peripheral hospital	27	1.78 ± 1.40	11.76	0.001*
Tertiary hospital	91	3.04 ± 1.28		
Antenatal advice				
Received	87	2.25 ± 0.63	14.31	0.000*
Not received	31	1.74 ± 0.68		

*Paired sample *t*-test; $P < 0.05$, significant.

Table 6: Demographic data—total preeducation KAP

	N	Total KAP	t	P
Age (years)				
<30	91	6.56 ± 2.17	0.69	0.408
>30	27	6.96 ± 2.35		
Parity				
Primi	69	6.54 ± 2.14	0.46	0.500
Multi	49	6.82 ± 2.32		
Education				
Uneducated	35	5.46 ± 1.85	16.51	0.000
Educated	83	7.16 ± 2.16		
Occupation				
Housewife	60	6.55 ± 2.17	0.26	0.610
Professional	58	6.76 ± 2.27		
Place of antenatal care				
Peripheral hospital	27	4.96 ± 1.93	24.63	0.000*
Tertiary hospital	91	7.15 ± 2.04		
Antenatal advice				
Received	87	7.52 ± 1.69	88.89	0.000*
Not received	31	4.23 ± 1.61		

*Paired sample *t*-test; $P < 0.05$, significant.

statistics was used to calculate mean and standard deviation. Student's *t*-test was used to test the significance of mean in various groups; χ^2-test was used to analyze the crosstab data. Paired *t*-test was used to derive statistical differences between preeducation and posteducation improvement in patient performance. $P < 0.05$ was considered significant.

Result

In this study, among 118 postnatal mothers, majority were aged younger than 30 years [91 (77.1%)], primigravidae [69 (58.5%)], and educated [83 (70.3%)]. Both professionals [58 (49.2%)] and nonworking women [60 (50.8%)] were

Table 7: Knowledge, attitude, and practices of techniques of feeding—pre- and posteducation KAP of postnatal mothers

Techniques	Preeducation KAP	Posteducation KAP	*t*	*P*
	Mean ± SD	Mean ± SD		
Initiation of feeding	0.65 ± 0.48	0.91 ± 0.29	6.32	0*
Latching	2.75 ± 1.41	4.05 ± 0.54	10.16	0*
Position of mother	1.13 ± 0.69	1.64 ± 0.48	6.81	0*
Postfeed	2.12 ± 0.68	2.82 ± 0.38	9.7	0*
Total	6.65 ± 2.21	9.42 ± 1.00	13.92	0*

*Paired sample *t*-test; $P < 0.05$, significant.

Table 8: Analysis of satisfactory scores in relation to various domains of techniques of breast-feeding

Domains of feeding	Preeducation, *N* (%)	Posteducation, *N* (%)	*P*
Initiation of feeding	77 (65.3)	107 (90.7)	<0.001*
Latching on	72 (61.02)	118 (100)	<0.001*
Maternal positioning	36 (30.50)	76 (64.40)	<0.001*
Postfeed techniques	101 (85.60)	118 (100)	<0.001*
Total	72 (61.02)	114 (96.64)	<0.001*

*Pearson χ^2-test with Yates correction; $P < 0.05$, significant.

distributed almost equally. Among the recruited women, 91 (77.1%) mothers received antenatal care at higher centers, which included both private hospitals and tertiary-care hospitals, and most of them [87 (73.7%)] did not receive antenatal education on the techniques of breast-feeding.

Tables 2–6 describe the demographic variables and descriptive test statistics for various domains of breast-feeding techniques. Women of all age groups showed almost comparable mean values of KAP with regard to domains of initiation of breast-feeding and positioning while feeding. But, the difference in the mean KAP scores between both the age groups was statistically significant only with postfeed techniques ($P = 0.03$).

Multigravidae revealed high KAP mean scores than primigravidae. However, statistically significant difference was observed only with maternal position ($P = 0.02$). Professionals revealed high mean scores when compared with nonprofessionals, but the difference in the scores was not statistically significant. Educated women showed statistically significant ($P < 0.05$) higher KAP mean scores with all the techniques of feeding, except for positioning while feeding.

Women who received antenatal care at higher center showed higher KAP scores than those at peripheral center. The scores were statistically significant with all techniques, except for positioning while feeding. Women who received antenatal advice regarding the techniques of breast-feeding either from the health-care providers or from the parents and family members performed better with high KAP scores than women who did not receive any advice in the prenatal period. The differences were statistically significant ($P < 0.05$) with all the techniques.

Table 7 describes pre- and posteducation KAP mean values (along with standard deviations) with regard to domains such as initiation of feeding, latching, maternal positioning, postfeed techniques, and total scores. There was an improvement in the posteducation mean scores among all the women irrespective of age, parity, education, working status, place of antenatal care, and antenatal advice ($P < 0.001$). Further subanalysis (post hoc test) with respect to various demographic parameters showed elderly women having an advantage with respect to positioning ($P = 0.01$) and educated women with respect to latching on ($P = 0.03$) and postfeed techniques ($P = 0.02$).

Table 8 indicates improvement in performance scores as per schema mentioned earlier. The educational program significantly improved the maternal KAP in all the domains ($P < 0.001$).

Discussion

All mothers will have a wide range of experiences from the time of delivery in achieving their personal comfort. Mothers will have generalized myalgia in the immediate postpartum.[4] In addition to myalgia, they may experience abdominal pain with cesarean delivery or pain in the perineum with an episiotomy or an instrumental delivery. She can also experience breast pain owing to cracked nipples or engorgement as a result of improper latch.[6] Most of the mothers complain of musculoskeletal pain with the upright position for long periods of time.[4,5] All these problems may be caused or enhanced by the improper techniques of breast-feeding. There were studies done on maternal and neonatal positioning while feeding, on various holds of the baby by mother and some studies only on initiation of breast-feeding such as skin-to-skin contact (SSC).[8,9]

There are few studies in literature, which have analyzed various techniques such as latching and positioning of

mother and neonate while breast-feeding.[10–14] This study focused on maternal KAP on various techniques of breast-feeding in depth with an aim to identify deficits of KAP of the techniques. This would help the caregivers to address deficiencies in breast-feeding techniques, while educating lactating mothers. This will greatly improvise the knowledge and attitude and will facilitate adoption of good practices.

This prospective observational study revealed that demographic characteristics such as age of the mother, parity status, level of education, and type of health centers where antenatal care was sought revealed a significant impact on the KAP of postnatal mothers. In this study, elderly women (>30 years) revealed high KAP scores than women younger than 30 years of age, especially with latching and postfeed techniques. The results with latching in relation to age were similar to the results obtained from the studies done by Kronborg and Vaeth,[10] Santo et al.,[11] and Goyal et al.[12]

Primigravidae showed lesser knowledge when compared with those with multigravidae. But, multigravidae with poor knowledge had also failed to adopt the correct practices. Both primigravidae and multigravidae who revealed poor knowledge and poor practices had been followed-up, and majority of them encountered with problems related to maternal posture namely musculoskeletal problems such as severe backache, neck pain, and problems owing to latch failure such as cracked nipple, breast engorgement, and mastitis. The incidence of problems related to failure of latching has been reported high with primigravidae than with multigravidae, which may be owing to the previous experience of feeding in parous women.[6,10,12]

Educated women presented more knowledge and revealed better practices, which was a proven fact, as they can better understand and will be more receptive to the suggestions than uneducated. But, most of these uneducated women who had received antenatal advice regarding breast-feeding techniques, especially from the family members and hospital staffs, performed better than other women. The better performance of postnatal mothers who had antenatal care from a higher center could be owing to their better accessibility to have prenatal education on successful breast-feeding. Professional mothers showed better pre- and posteducation results than housewives, which were owing to their higher educational status and antenatal care at higher center.

There was a significant improvement in the posteducation KAP scores with initiation of breast-feeding, which was statistically significant ($P < 0.01$). Various studies done in the literature promoted early SSC as the gold standard in breast-feeding initiation with no adverse effects.[8,9] Majority of the women in the study practiced SSC with the baby at the time of delivery, but only 77 (65.3%) of them had knowledge on the importance of SSC. None of the mothers had idea regarding the untoward effects such as sudden unexpected postnatal collapse that has been reported in various studies done in the past.[15–17] Most of the mothers [101 (85.6%)] showed adequate knowledge, and their attitude and practices were satisfactory with postfeed techniques such as when to interrupt suction of baby or to stop feeding, burping, and its timing. After getting educated, all the mothers [118 (100%)] followed the proper postfeed techniques. The achievement was 100%, and when this result was analyzed, the fact that contributed to the success was found to be the association of neonatal morbidity and mortality with improper postfeed techniques. Hence, the remaining 17 (14.4%) mothers who showed poor pretest KAP also adopted and practiced correct techniques, in order to prevent the known complication of aspiration and its consequences.

Mothers, because of their maternal instinct, try to feed their babies at the expense of their own comforts, as complications related to positioning mostly affects the mother in the form of persistent backache, neck pain, and shoulder pain but less likely to affect the neonate until the feeding is continued. We observed that those mothers who delivered vaginally did not try to improve their comforts while breast-feeding and, finally, showed poor knowledge and practices of maternal positioning while feeding. Mothers delivered by cesarean preferred to feed their babies in lateral (side-lying) position. Most of the mothers practiced cross cradle hold of the baby in sitting posture, but none of them showed knowledge regarding various other neonatal holding techniques. The knowledge of the mothers was very poor on the advantage on the laid-back breast-feeding where the mother's body, specifically, her head, neck, shoulders, and upper and lower back were relaxed and was associated with an immediate relief of nipple pain.[18]

The improvement in the posteducation KAP scores was highly significant ($P < 0.001$) with regard to techniques such as initiation, latching, and positioning while feeding and postfeed techniques both individually and altogether. The preeducation KAP score on positioning was poor in multigravidae than primigravidae. This was owing to the less importance given to their personal comfort. But, they showed high KAP scores than primigravidae on all other techniques of feeding. Latching is the area where mothers had absolutely no idea before experiencing breast-feeding. Multigravidae who delivered first time at primary health center showed limited knowledge on the correct techniques of latching. They practiced the techniques with which they were comfortable. About 85% of them faced problems related to breast such as sore nipple and engorgement in the previous postnatal period and half of them discontinued breast-feeding in the previous pregnancy. The difference in the mean KAP scores after education was high in relation to latching with improvement of mean score from 2.75 to 4.05. These results signify the importance of education on latching on, especially in primigravidae. Prenatal education on proper latching on, the advantages associated with it, and the complications resulting from improper latching should be explained in detail. This helps to overcome the fear and stress related to breast problems resulting in lactation failure in the postnatal period. Hence, all the health professionals, doctors, nurses, and all health-care providers should have a complete idea on the various techniques related to latching, so that they can educate the mothers in the prenatal and postnatal periods, which will result in successful lactation.

The significant improvement in the mean scores of posteducation KAP with regard to all the techniques with a statistical

significance ($P < 0.01$) indicates the need of additional approach to improve the results and to have successful lactation.

Mbada et al.[19] conducted a KAP study on techniques of postures, positioning, hold practice, and latch-on among Nigerian mothers and concluded that most of the mothers practiced advisable breast-feeding postures and preferred sitting on a chair to breast-feed and utilized cross-cradle hold and baby-to-breast latch-on. Our study too showed similar results except for maternal positioning.

The results of this study prove that education of mothers on the aspects where they revealed poor knowledge results in better practices. Taking the aforementioned fact into consideration, we agree with Okolo and Ogbonna,[7] who advocated the need of education of the hospital staff through a planned training program, which will result in better compliance and better practices of maternity care with increased rates of breast-feeding.

The knowledge and attitude of postnatal mothers was assessed in the immediate postpartum week, as it was the most sensible period that decides on the continuation of exclusive breast-feeding with incorporation of proper techniques and enjoying the pleasure of mother and neonatal bonding resulting from successful and comfortable lactation or discontinuation of breast-feeding owing to maternal discomfort, which results in suboptimal neonatal sensory and cognitive development.

Hence information, education, and communication strategies, as a combined approach, under the guidance of trained hospital staff that plays a vital role in the improvement of techniques of breast-feeding should be encouraged to promote successful lactation.

The strength of this study was adequate sample size for testing hypothesis. The questionnaires were designed ingeniously and rather different, when compared with those studies reported in literature. However, in spite of education program, we could not achieve 100% satisfactory scores (except for latching on and postfeed techniques) regarding breast-feeding practices of mothers. The results would have been better if the patient's attendants (mainly their mothers) were also trained so that they could rectify patient's mistakes and habits.

Conclusion

Implementation of training programs for health-care providers concentrating on the various techniques of breast-feeding, especially on latching and maternal positioning of feeding, can improve the knowledge and attitude of postnatal mothers and aid in better practices of feeding, which in turn promotes successful and comfortable lactation.

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