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Original Research Article

Effectiveness of demonstration-based breastfeeding technique on breastfeeding performance among postnatal women: a pilot study

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ABSTRACT

Background: Breastfeeding is a key strategy for promoting child health and survival. Proper positioning and effective attachment are essential for successful exclusive breastfeeding, as they ensure efficient milk transfer and prevent common breastfeeding problems. Therefore, this randomized controlled pilot study evaluated the effect of demonstration-based breastfeeding technique on breastfeeding performance among postnatal women.
Methods: After receiving ethical clearance, 180 antenatal women participated in this single-blind trial. Random allocation of antenatal women was carried out using computer-generated random code numbers after meeting inclusion and exclusion criteria. In the study, antenatal women allocated to the intervention group received a structured demonstration on breastfeeding techniques, supplemented with an informational brochure at 37 weeks of gestation, whereas the control group received standard care with no additional intervention. Breastfeeding performance was assessed on the third postnatal day by using a standardized bristol breastfeeding tool among the intervention and control group. Descriptive and inferential statistics were used to analyze the data.
Results: A statistically significant difference in mean breastfeeding performance score was observed between the intervention and control group, indicating that structured demonstration of breastfeeding technique improved breastfeeding performance during the postnatal period.
Conclusions: The findings highlight the value of practical breastfeeding education in enhancing breastfeeding technique, which may contribute to a significant reduction in lactation failure and minimize problems related to breastfeeding.

Keywords: Breastfeeding technique, Breastfeeding performance, Postnatal women

INTRODUCTION

Breastfeeding is widely acknowledged as one of the most effective strategy for promoting child health and survival. Breast milk provides optimal nutrition for infants, as it is safe, hygienic and rich in antibodies that protect against common childhood illnesses.[1] However, despite its proven benefits, the success of breastfeeding is influenced by several factors, with proper positioning and attachment being essential determinants.[2] According to the WHO Global breastfeeding scorecard, only 44% of newborns are breastfed within the first hour of birth, which falls substantially short of the WHO's global target of achieving a 70% early initiation rate.[3] Multiple challenges continue to affect breastfeeding practices worldwide, including maternal and infant physiological factors; socio-cultural norms; educational and economic constraints; maternal age; mode of delivery, nipple characteristics; breastfeeding positions; environmental conditions; employment status; and family support. Furthermore, inadequate professional guidance and limited prenatal and postnatal care services further compromise optimal breastfeeding practices.[4,5] Breastfeeding technique

encompasses the combined elements of positioning, attachment and suckling.[6] Appropriate positioning and effective latching are essential for the initiation and continuation of exclusive breastfeeding, as they facilitate efficient milk transfer and prevent common breastfeeding-related problems.[7,8] Positioning refers to the manner in which the infant is held relative to the mother's body, while attachment involves the infant taking an adequate portion of the areola and breast tissue into the mouth.[8,9] Effective breastfeeding is a learned skill that develops with experience and requires correct maternal positioning, proper infant attachment and effective suckling to ensure successful and sustained breastfeeding.[6,10]

Although breastfeeding is widely practiced among Indian mothers, suboptimal breastfeeding techniques can compromise effective milk transfer, early discontinuation of breastfeeding and shifting themselves to formula feeding.[11] While breastfeeding is a natural process, it is also a learned behavior that requires appropriate knowledge and practice.[2] Mothers can effectively prevent and manage breastfeeding-related problems when they receive correct guidance on breastfeeding techniques from healthcare professionals.[6] In light of this, the present study was undertaken to assess the effect of structured demonstration of breastfeeding technique on breastfeeding performance.

METHODS

Study design and participants

This randomized (post-test-only design) single-blind control trial was conducted in the antenatal OPD and postnatal ward of government hospitals of Patiala, Punjab. The researcher obtained prior permission along with ethical clearance (registration No. TRG.9(310)/2018/6981) from the government hospital, Patiala. Written informed consent was obtained after the participant's agreement to participate in the study. The participants were informed that their participation is voluntary and their decision to withdraw would not have any negative consequences on their routine hospital medical care.

Sample size estimation

For this pilot study, the sample size was estimated using the one-tenth rule, whereby approximately 10% of the accessible population was considered sufficient. Thus, the sample included was 180 antenatal women, ensuring feasibility and a meaningful preliminary comparison between groups.

The inclusion criteria of the study were the antenatal women who completed 37 weeks' gestation, delivered full term infants, had no disease or contraindications to breastfeeding, no nipple abnormalities and infants who had no sucking problems. The investigator excluded antenatal women with high-risk and multiple pregnancy.

Randomization and masking

Antenatal women were enrolled using consecutive sampling. Randomization was performed by nursing staff at the antenatal OPD registration counter using computer-generated random numbers, which were recorded on the antenatal cards of women attending the OPD at or beyond 37 weeks of gestation without obstetric complications.

Eligible participants were subsequently allocated in a 1:1 to either the experimental group, which received a demonstration of breastfeeding techniques or the control group, which received routine midwifery and obstetric care. This was a single-blind study. Blinding of the primary investigator was not possible because the investigator demonstrated the breastfeeding technique. However, assessment of breastfeeding performance was carried out by participatory observers (nursing staff) in the postnatal wards who were blinded to group assignment (Figure 1).

Intervention

Antenatal women assigned to the experimental group received the standard care of the hospital along with a structured demonstration regarding breastfeeding technique. An information brochure on breastfeeding technique was also handed over to antenatal women to refer, while going to start breastfeeding during the postnatal period. The standard care (usual obstetric and midwifery care) was provided to the control group during the antenatal and postnatal period.

Data collection tools

Socio-demographic profile (including age and qualification) were obtained by questionnaire at recruitment before randomization and obstetric and newborn profile (pregnancy, parity, type of delivery and gender of newborn) were drawn from the medical record after the birth of newborn. Breastfeeding performance was determined by using a standardised bristol breastfeeding assessment tool. This tool consisted of four components such as positioning, attachment, sucking and swallowing, with each one score range from 0-2. The maximum score of the tool was 8 and the minimum score was 0, indicating that the higher the score, better the breastfeeding performance.

Data collection method

On the first day after gathering information regarding socio-demographic profile the investigator demonstrated the breastfeeding technique to the intervention group among antenatal women. On the 3rd day of the postnatal period outcome of breastfeeding performance of postnatal women was abstracted through standardised bristol breastfeeding assessment tool. The interview- cum-observation method was utilized to collect the data and this was done by participatory observers (blind to

randomization) in both the intervention and control group. On each subject, participatory observers had spent an average of 10-15 minutes to collect data regarding breastfeeding performance.

Statistical Analysis: At the end of the study, data were analyzed by Statistical Package for the Social Sciences software (version 20; Armonk, NY: IBM Corp) for descriptive statistics (i.e., percentage, mean and SD) and inferential statistics (i.e., independent t-test, Fisher's exact test and $\chi 2$ test). A statistically significant level was set at $p<0.05$.

RESULTS

Table 1 A chi-square test of homogeneity was used to compare socio-demographic, obstetrical and newborn profile between the experimental group (n=90) and the control group (n=90). No statistically significant differences was found between the two groups with respect to all variables at $p<0.05$. Thus, the groups were comparable and homogeneous with respect to baseline demographic, obstetrical and newborn profile.

Table 2 presents the comparison of post-test breastfeeding scores between groups. The experimental group had a higher mean score (M=6.33, SD=1.98) than the control group (M=5.54, SD=2.44) with a mean difference of 0.79. An independent-sample t test as indicated that the difference was statistically significant, t=2.385 at $p<0.05$. These findings suggest that demonstration of breastfeeding technique had a positive effect on breastfeeding performance. Table 3 reveals that among the components of breastfeeding performance, a statistically significant difference was observed only in attachment between postnatal women of the experimental and control group (t=5.99, $p<0.05$). The experimental group showed a higher mean attachment score compared to the control group, indicating that the intervention was effective in improving correct attachment during breastfeeding.

For the other components position, sucking and swallowing although the experimental group showed marginally higher mean score for position and sucking and a slightly lower score for swallowing, these differences were not statistically significant ($p>0.05$). Overall, the findings suggest that the intervention had a significant effect on attachment but did not produce statistically significant changes in the other components of breastfeeding performance.

Table 1: Frequency, percentage distribution and homogeneity of experimental and control group (n=180).

S. no.	Demographic variables	Intervention group (n=90)	Control Group (n=90)	χ^2	df	P value
		f (%)	f (%)			
1	**Age (in years)**					
	18-23	24 (26.7)	35 (38.9)			
	24-29	47 (52.2)	40 (44.4)	3.716#	3	0.290NS
	30-35	17 (18.9)	12 (13.3)			
	>35	2 (2.2)	3 (3.3)			
2	**Qualification**					
	Illiterate	27(30)	35 (38.9)			
	Up to matriculation	21 (23.3)	20 (22.2)	2.15	3	0.54NS
	10+2	20 (22.2)	15 (16.7)			
	Graduate & above	22 (24.4)	20 (22.2)			
3	**Pregnancy**					
	Wanted	84 (93.3)	81 (90.0)			
	Unwanted	06 (6.7)	09 (10.0)	0.655NS	1	0.418NS
4	**Parity**					
	Primipara	46 (51.1)	43 (47.8)			
	Multipara	44 (48.9)	47 (52.2)	0.200NS	1	0.655NS
5	**Mode of delivery**					
	Normal vaginal delivery	02 (2.2)	04 (4.4)			
	Normal vaginal delivery with episiotomy	59 (65.6)	48 (53.3)	2.985#	2	0.240NS
	Forceps/ ventouse	------	------			
	Lower segment cesarean section	29 (32.2)	38 (42.2)			
6	**Gender of newborn**					
	Male	49 (54.4)	43 (47.8)	0.8	1	0.371NS
	Female	41 (45.6)	47 (52.2)			

#=Fisher's exact test, NS=non-significant at 0.05 level.

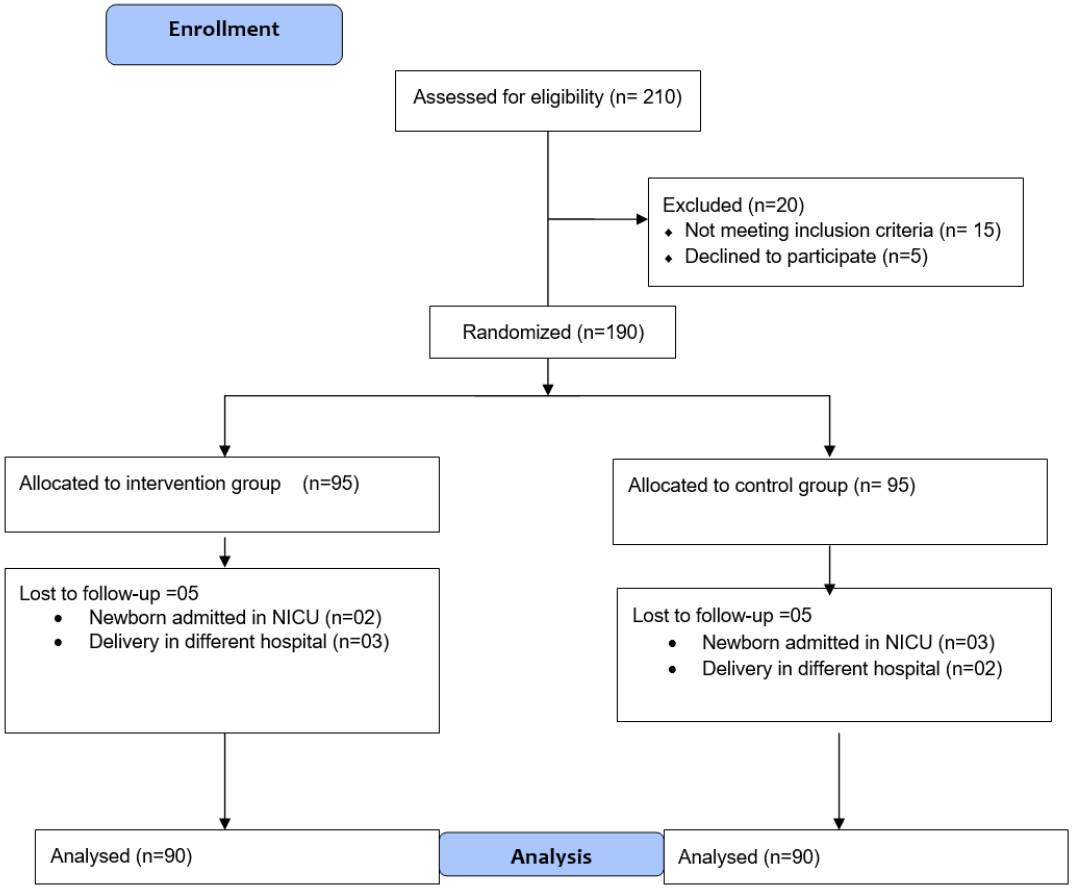

Figure 1: Consort flow diagram.

Table 2: Comparison of mean breast-feeding performance score of postnatal women among experimental and control group (n=180).

Group	Mean±SD	Mean difference	t-test	df	P value
Experimental (n=90)	6.33±1.977	0.789	2.385*	178	0.018
Control (n=90)	5.54±2.436				

Minimum score=00, Maximum score=08, *Significant at 0.05 Level.

Table 3: Comparison of component-wise mean breastfeeding performance score of experimental and control group among postnatal women (n=180).

S. no.	Components	Interventional group (n= 90)	Control group (n=90)	T value	P value
		Mean±SD	Mean±SD		
1	Position	1.267±0.667	1.067±0.715	1.939	0.0541
2	Attachment	1.711±0.566	1.144±0.696	5.99	0.000*
3	Sucking	1.744±0.646	1.656±0.752	0.851	0.396
4	Swallowing	1.622±0.743	1.678±0.732	0.505	0.614

df =178, *Significant at 0.05 Level.

DISCUSSION

Breastfeeding is a cost-effective public health strategy with a substantial impact on reducing infant morbidity and mortality. In countries with limited healthcare resources, such as India, establishing an effective breastfeeding promotion and support strategy is a public health priority. This study, therefore, investigated the effect of a structured demonstration of breastfeeding technique during antenatal period on the breastfeeding performance among postnatal women. The present study showed a statistically significant improvement in breastfeeding performance among women who received a structured demonstration of breastfeeding technique compared to those who received standard care. The findings highlight the importance of

practical, skill-based interventions in enhancing maternal breastfeeding performance.

Women who received direct instruction and visual guidance may gain greater confidence and competence, thereby reducing common breastfeeding difficulties. Correspondingly, the post-test mean score of latch in the intervention group was found to be significantly higher than in the control group.[12] Even evidence from various literature indicates that breastfeeding education delivered during the antenatal and early postpartum periods enhances maternal breastfeeding self-efficacy and improves breastfeeding outcomes.[13-16] Intervention had significantly improved the attachment component of breastfeeding performance among postnatal women, highlighting its effectiveness in enhancing correct latch-on techniques. Attachment is a key factor for successful breastfeeding and is more amenable to focused education and demonstration.

No significant differences were observed in position, sucking and swallowing, suggesting that these components may require prolonged practice, repeated reinforcement or were already adequately addressed through routine postnatal care. These results are consistent with previous researches, which reported significant improvement in latching among intervention group during follow-up.[17,18] Similarly another study also observed statistically significant differences between the experimental and control groups, with $p<0.05$ during the first session (except for swallowing) and $p<0.001$ during the second session (except for areolar grasp and swallowing).[19]

These findings underscore the role of nurses and healthcare professionals in providing timely and effective breastfeeding education during antenatal and postnatal care to enhance breastfeeding performance, support early initiation and contribute to sustained breastfeeding practices.[20] As a hospital-based study, this research has inherent limitations. Breastfeeding performance was evaluated on the 3rd postpartum day, although breastfeeding is a learned behavior that generally improves with time and practice. Furthermore, being observed during breastfeeding may have led mothers to alter their usual feeding behavior.

The small sample size and short duration of the study further limit the generalizability of the findings. In addition, the outcomes may have been affected by several uncontrolled confounding factors, including variations in milk supply, nipple characteristics, maternal and infant health status between follow-ups, adherence to breastfeeding techniques, parental lifestyle, maternal anxiety levels, availability of social support and environmental distractions. Hence, large-scale community-based studies are suggested, where mothers can be observed in their home settings with adequate privacy and comfort, allowing for a more natural and accurate evaluation of breastfeeding practices.

CONCLUSION

Practical demonstration and early training in correct breastfeeding positioning and attachment during the antenatal period and immediately after delivery are essential for promoting effective and exclusive breastfeeding. Early observation, correction and reinforcement of breastfeeding technique helps to prevent common difficulties such as breast engorgement and reduce maternal anxiety, particularly among post-caesarean mothers. With most deliveries occurring in healthcare facilities, there is a valuable opportunity for healthcare providers and grass-root workers such as ANMs and ASHAs to educate and support antenatal and postnatal women through counselling and hands-on training.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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