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Original Article

Comparative Study of Cradle Hold vs. Football Hold on Maternal Comfort and Breastfeeding Success among Post-Caesarean Mothers

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ABSTRACT

Background: Breastfeeding position technique is very important concerning maternal comfort and infant feeding practice, especially among mothers who gave birth via caesarean section. Although there are many breastfeeding positions, little is known concerning comparisons among them regarding their efficiency in mothers who gave birth via caesarean section. The aim of this study is to determine and compare the efficiency of breastfeeding positions known as cradle holds and football holds concerning mothers' comfort and infant feeding practice after giving birth via caesarean section. Hence, the present study is planned to evaluate mothers' comfort and infant feeding practices in two different breastfeeding positions namely cradle holds and football holds among mothers who gave birth via caesarean section. **Materials and Methods:** A quasi-experimental, non-randomized comparative study was conducted among 80 post-caesarean mothers at a tertiary care hospital in Vadodara, Gujarat. Participants were selected using purposive sampling and alternately allocated to either the cradle hold group (*n*=40) or the football hold group (*n*=40). Maternal comfort was assessed using a Visual Analog Scale, and infant feeding behaviour was evaluated using the Infant Breastfeeding Assessment Tool at 48 hr postpartum. **Results:** A preliminary analysis of the data indicates that the cradle hold position provided greater maternal comfort (less pain/discomfort) when compared to the football hold position, especially during the first 48 hr following childbirth. In addition, the infants in the cradle hold position had a better latch as well as a more consistent pattern of sucking. However, the cradle hold position was linked to greater satisfaction with the position that was easy to assume with regard to overall comfort, especially after the first 48 hr. **Conclusion:** Both the cradle hold position as well as the football hold position are acceptable modes of breastfeeding for a new mother. Though, the cradle hold position may be a superior position for providing greater maternal comfort, especially when incisions are involved, for a new mother undergoing a cesarean section. Future studies must be carried out to draw a definitive conclusion for breastfeeding positions for a new cesarean-section baby.

Keywords: Comparative study, Cradle hold, Football hold, Breastfeeding position, Maternal comfort, Infant feeding behaviour, Breastfeeding assessment, Caesarean section.

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INTRODUCTION

Breastfeeding is recognized to be one of the most successful approaches not just for the optimal growth and development and survival of the infant, but it is also a proven source of immense health benefits to the mother (Picó *et al.*, 2021). An optimal diet, along with vital antibodies and immune systems provided by breast milk, is instrumental in reducing the risks of illnesses and hospitalizations not just in infants but also in their mother (American Academy of Pediatrics, 2022). However, despite the WHO guidelines for exclusive and prolonged infant and young child feeding to be practiced for the first six months of the infant's life, the rate of exclusive breastfeeding has not been optimal (Hossain *et al.*, 2018). Though the rate of exclusive breastfeeding has improved from 37% in 2012 to 48% at present (Jumu, 2017), still hardly half of the infants in the world are receiving the benefits of optimal levels of breast-feeding (Chezem, 2012). Huge differences in the rates of exclusive breast-feeding are still there among the countries, depending upon healthcare support, factors for the protection of motherhood, and the enforcement of the WHO Code (World Health Organization, 2023). The WHO Global Breastfeeding Scorecard highlights further the

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importance of financial investment by stating that "over 85% of all countries reported public spending below recommended levels of US$4.70 per facility birth on breastfeeding support (UNICEF, 2022). Systemic issues in investment efforts are then exacerbated by medical ones faced by lactating mothers, particularly in instances of C-section births, which include pain, reduced physical movement, wait times prior to breastfeeding initiation, as well as difficulties in achieving comfortable positioning for infants to properly latch on to for successful breastfeeding to occur (Srinivasan, 2006). Both positioning and lactation are central to successful breastfeeding practices because physical comfort is necessary for efficient feeding and influencing feeding behavior (Kifle *et al*., 2018). Evidence suggests that alternative breastfeeding positions, such as side-lying and football holds, may enhance maternal comfort and promote favourable infant feeding behaviours in post-caesarean mothers when compared to conventional cradle hold positioning (Pehlivan and Demirel Bozkurt, 2021). Therefore, there is a compelling need to systematically evaluate breastfeeding positions that improve maternal comfort and infant feeding behaviour following Caesarean delivery, thereby contributing to improved breastfeeding outcomes and supporting global efforts to achieve optimal exclusive breastfeeding rates (Najahah, 2024).

MATERIALS AND METHODS

A quasi-experimental, non-randomized comparative study was conducted in the postnatal ward of Dhiraj General Hospital, Sumandeep Vidyapeeth (Deemed to be University), Vadodara, Gujarat, after obtaining approval from the Institutional Ethics Committee (SVIEC/ON/NURS/SRP/May/24/78).

Eighty post-caesarean mothers were selected using purposive sampling. Eligible participants were alternately allocated to either the cradle hold group (Group 1, n=40) or the football hold group (Group 2, n=40) to ensure equal group size. Randomization was not employed. Mothers with postpartum complications or medical illnesses were excluded. Written informed consent was obtained from all participants.

Maternal comfort during breastfeeding was assessed using a Visual Analog Scale, while infant feeding behaviour was evaluated using the Infant Breastfeeding Assessment Tool, which assesses latch, sucking, swallowing, and positioning. Data were collected at 48 hours postpartum.

The research tool for data collection it consists two section:

- **Section A:** Consists of items on demographic variables like are age, education, occupation, religion, habitat, family type, age of newborn, parity, gender of newborn, birth weight.
- **Section B:** Checklist for Maternal comfort and infant feeding behaviour.

All study instruments were validated by seven subject experts and pilot-tested to establish reliability. Each day, four participants were enrolled and evenly allocated to the two study groups. Data were analysed using SPSS version 25.0. Descriptive statistics including mean, standard deviation, frequency, and percentage were used to summarize baseline characteristics. The independent sample t-test was applied to compare mean maternal comfort and infant feeding behaviour scores between the two groups. The chi-square test was used to assess associations between breastfeeding position and selected maternal and neonatal variables. A p-value <0.05 was considered statistically significant.

RESULTS

Socio-Demographic Characteristics of Caesarean Section Mothers

In Group 1 (Cradle Hold), most of the mothers were between the age group of 20-25 years (52.5%), by those aged below 20 years (25.0%) and 26-30 years (22.5%). With regard to educational status 32.5% had higher secondary educational attainment, 30.0% had primary or secondary schooling, 22.5% were illiterate, and 15.0% were graduates. With respect to occupation, 50.0% were housewives, 40.0% were private employees, while 5.0% each were government employees and self-employed. Most mothers belonged to the Hindu religion (85.0%), resided in rural areas (55.0%), and lived in joint families (60.0%).

In Group 2 (Football Hold), half of the mothers (50.0%) were aged 20-25 years, followed by 26-30 years (30.0%) and below 20 years (20.0%). Educational status showed that 32.5% had higher secondary education, 32.5% had primary or secondary education, 25.0% were illiterate, and 10.0% were graduates. Regarding occupation, 47.5% were housewives, 40.0% were private employees, 7.5% were self-employed, and 5.0% were government employees. The majority were Hindu (77.5%), lived in rural areas (52.5%), and belonged to nuclear families (52.5%) (Table 1).

Comparison of Mean Maternal Comfort and Infant Feeding Behaviour Scores

Comparison of mean maternal comfort and infant feeding behaviour scores between mothers practicing the cradle hold and football hold breastfeeding positions using an independent t-test. Each group consisted of 40 caesarean section mothers. The results indicate that mothers in the cradle hold group had a higher mean score (Mean=51.93, SD=4.99) compared to mothers in the football hold group (Mean=39.15, SD=4.43). The calculated t-value was 12.11, and the obtained p-value was less than 0.05, indicating a statistically significant difference between the two groups (Table 2).

Comparison of Breastfeeding Positions with Levels of Maternal Comfort and Infant Feeding Behaviour

Comparison of the levels of maternal comfort and infant feeding behaviour among caesarean section mothers practicing the cradle hold and football hold breastfeeding positions. The levels were categorized as poor (<Q1), average (Q1-Q3), and good (>Q3) based on the obtained scores.

In the cradle hold group, none of the mothers (0.0%) were found to have a poor level of maternal comfort and infant feeding behaviour. Half of the mothers (50.0%) exhibited an average level, while the other 50.0% rated at a good level, showing a positive outcome with the cradle hold position. However, for the football hold group, 40.0% of mothers were classified under the poor level category, 60.0% had an average level, and none (0.0%) had achieved a good level of maternal comfort and infant-feeding behaviour. b. Chi-square analysis indicated a statistically significant difference between the two groups ($\chi 2=36.36$, $p<0.05$) (Table 3).

Association between Breastfeeding Position and Maternal Characteristics

As for the age of the infant, it is to be noted that the great majority of the babies in the cradle hold group fall within the first week. (55.0%) and the football hold group (50.0%) were 4-7 days old. By chi-square test, no statistically significant association between breastfeeding position and age of the newborn ($\chi 2=0.583$, $p=0.747$). As far as parity, 52.5% of mothers in the cradle hold group and 57.5% in the football hold group were multiparous, while 47.5% and 42.5%, respectively, were Primiparous. The association between breastfeeding position and parity was found to be statistically significant ($p<0.05$), indicating that parity had a significant influence on maternal comfort and infant feeding behaviours, particularly in the cradle hold position. Regarding the gender of the newborn, male and female infants were almost equally distributed in both groups. The chi-square value ($\chi^2=0.450$, $p=0.502$) indicated no significant association between breastfeeding position and newborn gender. With

Table 1: Comparison of Cradle hold and Football hold breastfeeding position with demographic Variables.

Demographic characteristics	Cradle hold Group-1 Frequency	Percentage %	Football hold Group-2 Frequency	Percentage %
Age groups				
<20 yrs	10	25.00	8	20.00
20-25 yrs	21	52.50	20	50.00
26-30 yrs	9	22.50	12	30.00
Education				
Primary/secondary	12	30.00	13	32.50
Higher secondary	13	32.50	13	32.50
Graduate	6	15.00	4	10.00
Illiterates	9	22.50	10	25.00
Occupation				
House wife	20	50.00	19	47.50
Government employee	2	5.00	2	5.00
Private employee	16	40.00	16	40.00
Self-employee	2	5.00	3	7.50
Religion				
Hindu	34	85.00	31	77.50
Muslim	6	15.00	9	22.50
Residence				
Rural	22	55.00	21	52.50
Urban	18	45.00	19	47.50
Family type				
Nuclear	16	40.00	21	52.50
Joint	24	60.00	19	47.50
Total	40	100.0	40	100.0

respect to birth weight, the majority of newborns in both groups weighed 2-3 kg (cradle hold: 67.5%; football hold: 60.0%). The association between breastfeeding position and birth weight was not statistically significant (p=0.739) (Table 4).

DISCUSSION

The study findings revealed a significantly higher mean maternal comfort and infant feeding behaviour score in the cradle hold group compared to the football hold group (p<0.05). This suggests that the mothers practicing the cradle technique felt more comfortable and reported improved infant feeding practices post-caesarean section.

The findings of the present study demonstrate significantly higher maternal comfort and improved infant feeding behaviour among post-caesarean mothers using the cradle hold position compared to the football hold position. This may be attributed to reduced abdominal strain, enhanced mother-infant contact, and easier positioning, which are particularly important following surgical delivery (Raj *et al*., 2018; Ojukwu *et al*., 2022) reported that mothers who practiced the cradle hold experienced reduced shoulder strain and greater confidence during breastfeeding compared with other positioning techniques. Similarly, a randomized trial demonstrated significantly higher maternal comfort scores among post-caesarean women using the cradle hold position (Chooi *et al*., 2012).

Pain and limited arm movement following child delivery cause significant impediments to breastfeeding after caesarean section (Dunn and O'Herlihy, 2005). The cradle hold can prevent unnecessary pressure on the abdomen and enable a more natural posture for feeding once the mothers are stable (Schenkel, 2020), which could account for the increased comfort scores found in the current study.

Analysis of comfort and levels of feeding behaviours showed that there were no mothers in the the cradle hold group experienced poor comfort, whereas 40% of mothers in the football hold group belonged to the poor group. Moreover, 50% of the mothers in the cradle hold group reached a good level of comfort and feeding behavior, accompanied by none in the football hold group achieved this level. The difference was statistically significant (p<0.05).

These findings indicate that the cradle hold is more effective in promoting optimal breastfeeding experiences after a Caesarean section (Disorntatiwat *et al*., 2023). Similar results were observed identified that the mothers with the cradle hold were able to latch their infants better and for longer periods, the duration of the feeding process, and the number of interruptions to the feeding process that occurred when the alternative holds (Dawson *et al*, 2022).

The lack of good-level outcomes in the football hold group can be traced back to difficulties in posture maintenance, arm weakness, and positioning difficulties, particularly amongst first-timers mothers undergoing surgery repairs (Hashizume *et al*., 2018).

The results of the current study point to the important role played by nurses/midwives in teaching post-caesarean mothers how to breastfeed correctly. Training mothers in the "cradle hold" technique in the immediate postpartum period could make a considerable impact in improving the comfort levels of the mother and the infant-feeding practices (Hennessy, 2021). Addition of the structured breast-feeding integration of position counselling into protocols of post-operative nursing care practice has been shown to have a positive effect outcomes and maternal satisfaction (Smyth, 2016).

Table 2: Comparison of Cradle hold and Football hold breastfeeding position with mean maternal comfort and infant feeding behaviour scores by independent *t* test.

Groups	n	Mean	SD	SE	t-value	*p*-value
Cradle hold	40	51.93	4.99	0.79	12.1106	0.05*
Football hold	40	39.15	4.43	0.70		

*p<0.05.

Table 3: Comparison of Cradle hold and Football hold breastfeeding position with levels of maternal comfort and infant feeding behaviour.

Levels	Cradle hold	%	Football hold	%	Total	%	Chi-square	*p*-value
Poor level (<Q1)	0	0.00	16	40.00	16	20.00	36.36	0.005*
Average level (Q1 to Q3)	20	50.00	24	60.00	44	55.00		
Good level (>Q3)	20	50.00	0	0.00	20	25.00		
Total	40	100.0	40	100.0	80	100.0		

p<0.05.

Table 4: Comparison of Cradle hold and Football hold breastfeeding position with maternal characteristics.

Maternal characteristics		Cradle hold	%	Football hold	%	Total	%	Chi-square	*p*-value
Age of new born									
<=3 days	9	22.50	8	20.00	17	21.25		0.5830	0.7470
4-7 days	22	55.00	20	50.00	42	52.50			
>7 days	9	22.50	12	30.00	21	26.25			
Parity									
Primi	19	47.50	17	42.50	36	45.00		0.2020	0.002S
Multi	21	52.50	23	57.50	44	55.00			
Gender of new born									
Male	21	52.50	18	45.00	39	48.75		0.4500	0.5020
Female	19	47.50	22	55.00	41	51.25			
Birth weight									
1-2 kg	9	22.50	12	30.00	21	26.25		0.6050	0.7390
2-3 kg	27	67.50	24	60.00	51	63.75			
>3 kg	4	10.00	4	10.00	8	10.00			
Total	40	100.0	40	100.0	80	100.0			

$p<0.05$.

CONCLUSION

The study concludes that both cradle hold and football hold positions are acceptable breastfeeding techniques for post-caesarean mothers. However, the cradle hold position was associated with significantly higher maternal comfort and improved infant feeding behaviour compared to the football hold position. Structured breastfeeding position counselling by nurses and midwives during the early postoperative period may enhance maternal comfort and breastfeeding outcomes. Further studies with larger samples and randomized designs are recommended. Prenatal training should be provided to mothers on all breastfeeding positions. Further studies with larger sample size are warranted to better understand the relationships between incision pain after cesarean section, breastfeeding positions, and breastfeeding success. The study highlights the crucial role of nurses and midwives in educating post-caesarean mothers on appropriate breastfeeding positions. Early training in the cradle hold technique can enhance maternal comfort, feeding efficiency, and overall breastfeeding satisfaction.

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ABBREVIATIONS

AAP: American Academy of Pediatrics; **IBFAT:** Infant Breastfeeding Assessment Tool; **SD:** Standard Deviation; **SE:** Standard Error; **SPSS:** Statistical Package for the Social Sciences; **t:** *t*-test value; **χ^2:** Chi-square test; **WHO:** World Health Organization.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest. All potential financial as well as non-financial interests which could be relevant to this research have are perceived as sources of bias that must also be disclosed. These include affiliations, sources of funding, or other connections which may have impacted the behaviour, evaluation, or interpretation of the research.

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