

# Comparison of Two Breastfeeding Positions on Maternal Comfort and Infant Feeding Behaviors through Video Teaching among Postnatal Mothers

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## Abstract

**Introduction** Breastfeeding is not a choice but it is a responsibility. While breastfeeding may not seem the right choice for every parent, it is the best choice for every baby. Antenatal education motivates the mothers who are undergoing Cesarean section to prepare themselves, so as to establish a wonderful efficient latch. The aim of this study was to conclude which breastfeeding position may be the best choice for the mother with Caesarean section. The objectives of the study were (1) to identify the maternal comfort and infant feeding behaviors in groups 1 and 2, (2) to compare the maternal comfort and infant feeding behaviors between the groups, and (3) to find the association between maternal comforts with selected demographic characteristics. The literature also very well supports that especially the mothers with Cesarean section achieve very good maternal comfort, greater satisfaction, and favorable infant feeding behaviors in side-lying position. Thus, the researcher attempts to compare the cradle hold and side-lying breastfeeding position in terms of maternal comfort and efficient latch.

**Materials and Methods** An evaluative research approach was used and the design selected for the study was quasiexperimental for two groups posttest only. Sample comprised of 70 antenatal mothers with elective Cesarean section (35 in each group) admitted at K.S. Hegde Hospital in Deralakatte, Mangalore. Purposive sampling technique was used to select the samples. Data were collected by using demographic proforma, maternal comfort rating scale, and infant behavior checklist.

**Results** The results of the study shows that there was significant difference in the mean posttest scores between cradle hold and side-lying breastfeeding position. Mothers from the side-lying breastfeeding position group showed higher maternal comfort, mean posttest score, and favorable infant feeding behaviors than the cradle hold breastfeeding position. The independent sample *t* test revealed that the calculated *t* value for maternal comfort and infant feeding behaviors within the group and between the group less than the table value *t* (0.05, 68 = -2.042).

**Conclusion** This study explores that mothers with Cesarean section show greater maternal comfort and favorable infant feeding behaviors in side-lying breastfeeding position between the groups and within the groups than the cradle hold.

## Keywords

- ▶ breastfeeding positions
- ▶ maternal comfort
- ▶ infant feeding behaviors
- ▶ postnatal mother
- ▶ Cesarean section

## Introduction

Breastfeeding is the best start, a tender gift to nurture life,<sup>1</sup> a gift that lasts a life time and love in every drop<sup>2</sup> that is needed for the survival and healthy growth of a baby into an adult.<sup>3</sup> Breastfeeding creates a very effective psychosocial bond between the mother and baby that enhances modest cognitive development and it is the underpinning of the infant's wellbeing in the first year of life.<sup>4</sup> Based on the anecdotal and empirical evidence on the benefits of breastfeeding, both to the mother and baby,<sup>5</sup> the World Health Organization (WHO) has recommended that mothers should exclusively breast-feed the baby more than eight times per day for the first 6 months.<sup>6,7</sup>

When a woman has delivered a baby, she is immediately faced with number of decisions and the first priority always falls on making choice to breastfeed her baby. Breastfeeding is an incredible gift that a mother gives to her child and, on the other hand, it is baby's right to receive it without any boundaries.<sup>8</sup> The success of breastfeeding depends upon the preparation of mothers through effective antenatal education that helps them to know and learn breastfeeding techniques, positions, infant care, and parenting skills.

The present study focuses on practicing two breastfeeding positions for maternal comfort and better infant feeding behaviors among mothers with Cesarean section. Cradle hold is commonly used and generally practiced position to breast-feed, which seems to be simple that gives good view of baby's latch on and may be a better choice at first for premature baby or a baby who is having trouble latching.<sup>9</sup>

Based upon observations of mothers who appear to enjoy breastfeeding suggest that there are unexplored physiological perspectives supporting successful breastfeeding. It is more than nipple to nose and tummy to mummy, it is more than an upright or side lying postures, cradle, crosscradle, and clutch or rugby holds; it is more than a correct sucking technique. If the mother is able to achieve a comfortable breastfeeding position, certainly it enhances the proficient latching in the newborn also.<sup>10</sup> Infant feeding behaviors are something that which influences the mother to initiate and maintain efficacious breastfeeding technique.<sup>11</sup>

## Background of the Study

Cesarean mothers usually face more embarrassment, even they may be deprived of rooming in privileges (depending on hospital policies), and mostly relying on hospital staff,<sup>12</sup> also there hospital stay is longer duration than vaginal delivered mothers. The experiences of the mother and the infant, during labor and delivery, may influence lactation in several ways. Cesarean delivery is strongly associated with detain lactogenesis, poor infant suckling, delayed in early breastfeeding, decline success of breastfeeding, more supplementation, and shorter duration of breastfeeding.<sup>13,14</sup> So, the mothers who deliver by Cesarean section and their babies need extended, intense skill and knowledge that enable to form maternity care team to establish and maintain exclusive breastfeeding.<sup>15</sup>

Breastfeeding Promotion Network of India (BPNI) rightly accepts any breastfeeding position is good, as long as, it makes the mother experience comfort to feed her baby, and, in turn, her newborn also establishes appropriate latching and productive breastfeeding.<sup>16</sup> Mothers' optimum attachment and positioning skills should ensure effective milk transfer and also emptying breast and painless feeds.<sup>17</sup> Latching and positioning matter a lot; it depends upon its effectiveness and comfort; so it is said the latch is said to be good provided the baby gets sufficient milk and gains weight well.

Thus, the study wants to identify and compare the maternal comfort and effective infant feeding behaviors in cradle hold versus side-lying position among postnatal mothers with Cesarean section.

## Need for the Study

Efficacious breast feeding is a function of the proper positioning of mother and baby and maintenance of efficient attachment of child to the mother's breast throughout the feed.<sup>18</sup> If a mother experiences comfort throughout breast feeding baby also enjoys being fed.

In which position a mother breastfeeds her baby is not important but on which position a mother with surgical scar feels comfortable to breastfeed and establish affectionate bond with her infant.

Mothers with Cesarean section whether primi or multi has their own uneasiness and inconvenience to breastfeed their infants. Antenatal education impulse the mothers who are undergoing Cesarean section to prepare themselves to breastfeed their babies so as to establish a wonderful efficient latch. Cradle hold is habitual position practiced for breastfeeding but even number of studies also very well support side-lying position, especially to mothers with Cesarean section to attain very good maternal comfort, greater satisfaction, and favorable infant feeding behaviors,<sup>19</sup> preparation of mothers through antenatal education on breastfeeding technique do play a major role to implement right position to breastfeed their babies and prevent issues related to breastfeeding and complications in postnatal period.

Previous research study shows the light on assessing breastfeeding duration and incidents of nipple trauma but as such no studies are conducted to identify the best choice for Cesarean mothers to feed their baby in terms of infant feeding behavior and maternal comfort. In the present study, the investigator trying to identify the best choice of breastfeeding position for Cesarean mothers in terms of infant feeding behavior and maternal comfort.

## Objectives

- To identify the maternal comfort and infant feeding behaviors between group 1 (cradle hold position) and group 2 (side-lying position).
- To compare the maternal comfort and infant feeding behaviors between group 1 (cradle hold) and group 2 (side-lying position).

- To find the association between maternal comfort with selected demographic characteristics (► Fig. 1).

## Materials and Methods

### Research Approach

An evaluative research approach is taken up in this study. The researcher evaluates the extent or the level of maternal comfort and infant feeding behaviors between two breast feeding positions.

### Research Design

In this study, quasiexperimental two groups, with posttest design only, was adapted to compare the two different groups of breastfeeding positions on maternal comfort and infant feeding behavior through video teaching (► Fig. 2).

### Setting of the Study

The study was conducted in a selected hospital at Justice K. S. Hegde Charitable Hospital in Deralakatte, Mangalore. The hospital consists of 1,200 bedded with nine specialties and 13 super specialties. It has intensive care unit with 32 beds, critical care unit with 5 beds, postoperative ward with 16 beds, and 24 hours of trauma center with specialties available round the clock. It also has well equipped maternity ward, labor theater with qualified and experienced obstetricians. Around 80 to 120 per month delivers are conducted both normal and Cesarean at free of cost including the drugs.

### Sample

In this study, the sample consists of 70 antenatal mothers who are undergoing elective Cesarean section with

36 to 40 weeks of gestation who gets admission at Justice K. S Hegde Charitable Hospital in Mangalore.

To calculate sample size, estimation of proportion (practice of comfortable breastfeeding positions) was used. The sample size was calculated by considering the power of 80, at 95% confidence limit with the level of significance at 0.01 and 0.05 levels. The formula <sup>(62)</sup> used for the sample size calculation as follows:-

$$n = \frac{Z_{1-\alpha/2}^2 P(1-P)}{d^2} = (1.96)^2 90(10)/(10)^2$$

Accordingly 70 antenatal mothers who are undergoing for the elective Cesarean section are studied, 35 in each group respectively. Group 1 was cradle hold position and group 2 was side-lying position.

The study included with giving intervention on video teaching on breastfeeding techniques which includes the content on initiation of breast feeding, latching on, establishment of bonding between mother and the infant, and taking baby off from breast and burping the baby. The video teaching was given to mothers undergoing elective Cesarean section on admission to antenatal ward for duration of 10 to 15 days at once. The outcome is measured for 3 days, both in the morning and evening. And the parameters on infant feeding behaviors and maternal comfort were assessed through modified structured observational checklist.

### Protection of Human Patients

- Ethical clearance was obtained from Institution of Ethics Committee after presenting the research proposal.

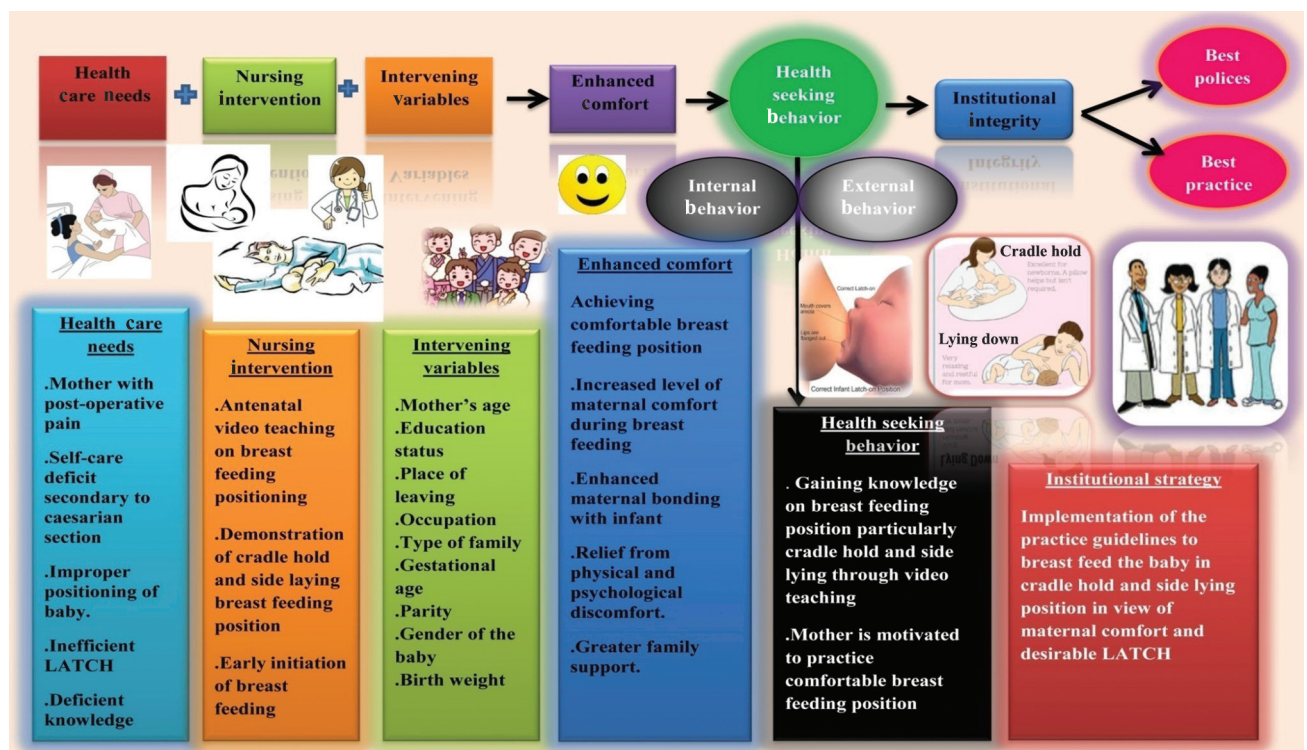


Fig. 1 Conceptual framework based on Katharine Kolcaba.



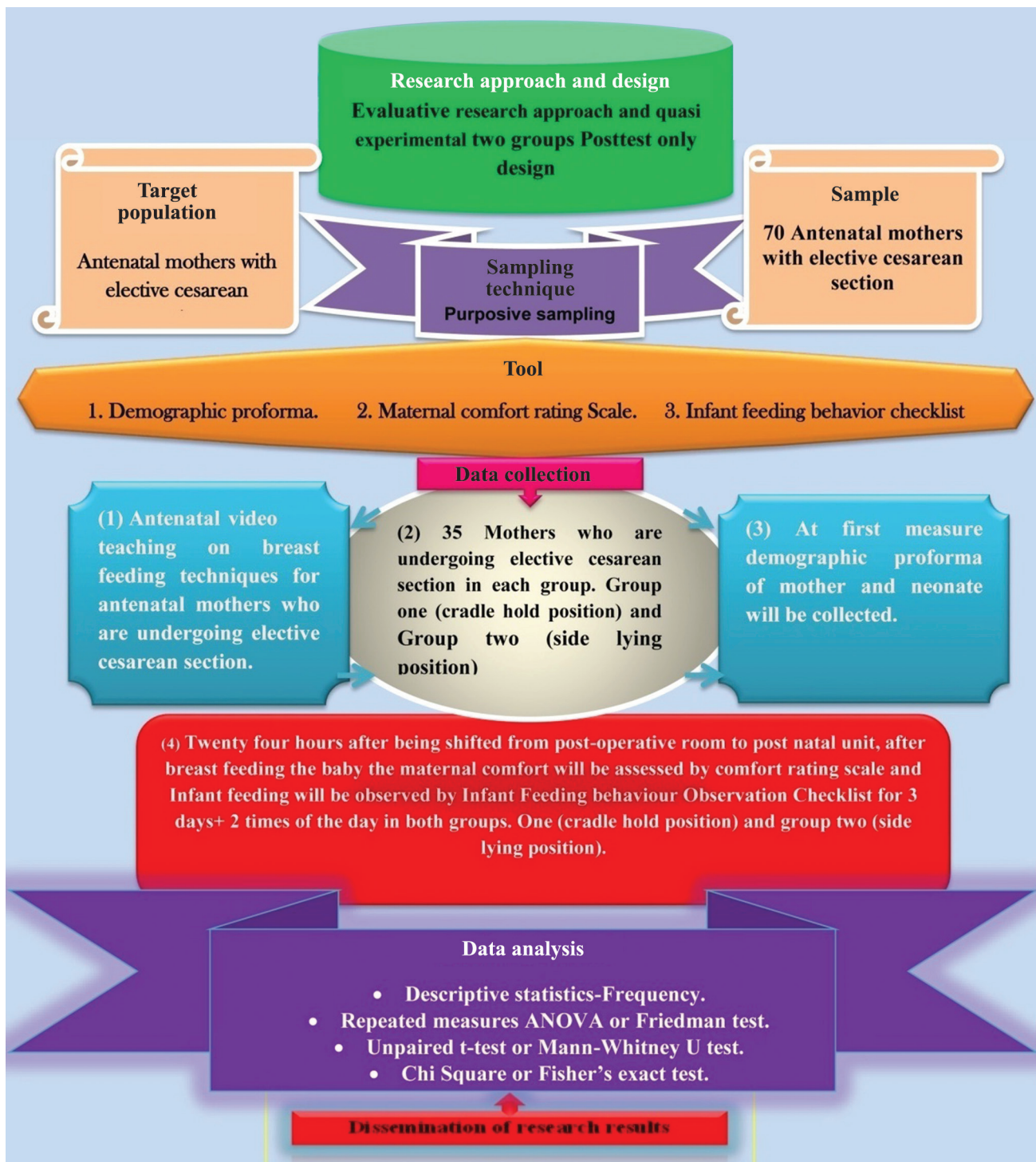


Fig. 2 Schematic representation of the research design.

- Permission for conducting the study was obtained from concerned authority of Nitte Usha Institute of Nursing Sciences College and Justice K.S Hegde Charitable Hospital at Deralakatte in Mangalore.
- Informed consent was obtained from the patients prior to the study. They were explained well in detail about the purpose of the study and methodology.
- Patient information sheet was also handed over to participants and assurance was given regarding confidentiality of personal information and no harm to the participants during the study.

The sampling criteria for the study participants include antenatal mothers with 36 to 40 weeks of gestational age and undergoing elective Cesarean section. Women with an eclampsia, per vaginal bleeding, any medical and psychiatric condition associated with pregnancy, women with high-risk pregnancy, postnatal complications, and women with breast and nipple complications are avoided from the study.

Mothers of babies with cleft lip, cleft palate, preterm, neurological deficit, asphyxia, intracranial stress, and galactocemia are also excluded from the study.

To establish the validity of the tool, it was given to nine experts of professors, associate professors in nursing and medical field. After 1 week, it was received back for scrutiny. The suggestions given were incorporated after a thorough discussion with guide and coguide.

The tools used for collection of data in the study were demographic proforma, maternal comfort rating scale to cradle hold position, maternal comfort rating scale to side-lying position, and modified observation checklist on infant feeding behavior.

To pretest the tool, the data collection instruments were administered to six samples at Justice K.S Hegde Charitable Hospital in Deralakatte, Mangalore.

To establish the reliability, the data collection instruments were administered to 10 participants. Tools 1 and 2 were filled by the participants and tool 3 was filled by the researcher herself. The participants were instructed to fill the tool 1 at first measure once the participant is shifted from postoperative room to postnatal ward and tool 2 is filled by the participant soon after breastfeeding her baby in a particular position, then tool 3 will be filled by the researcher herself twice per day for 3 days.

Interclass testing of the tool was done and then found statistically reliable. Maternal comfort rating scale tool was checked by using test-retest method. The obtained Pearson's correlation coefficient was 0.866 and  $p$ -value was 0.026. The reliability of the infant feeding behavior checklist was checked by test-retest method. The obtained Pearson's correlation coefficient value was 0.857 and  $p$ -value was 0.029 of day 1 and day 2 measurements. Since  $p$ -value was less than 0.05, the tool is said to be reliable. There were no problems encountered during the administration of tool. The data collection period was from October 2 to December 20 in 2017.

## Results

The data were analyzed and presented under the following headings.

**Section 1:** description of demographic and clinical characteristics.

**Section 2:** identification of the maternal comfort and infant feeding behaviors in group 1 (cradle hold position) and group 2 (side-lying position).

**Section 3:** comparison of two breastfeeding position (group 1, cradle hold and group2, side-lying position) on maternal comfort and infant feeding behaviors.

**Section 4:** relationship between maternal comfort and infant feeding behaviors.

**Section 5:** association between maternal comforts with selected demographic variables.

### Section 1a: Description of Demographic and Clinical Characteristics

The distributions of the demographic and clinical characteristics were analyzed by using descriptive statistics, such as frequency and percentage.

Majority of the samples, 40% of the mother belongs to the age group of 26 to 30 years, followed by 28.6% of the mothers were between 21 and 35 years and 22.8% of mothers were greater than 30 years. Majority of the samples (38.6%) of mothers had completed their secondary education, 31.4% were graduates, 22.9% with higher primary education, and around 7.1% with primary education. Majority (60%) of the mothers were from rural areas and 40% were belonged to urban areas. Majority (42.9%) of the mothers are currently unemployed, 31.3% were employed, and 22.8% were self-employed. Majority of the samples (55.7%) of the mother were from nuclear families and 27.1% of the mothers were belonged to joint families.

### Section 1b: Distribution of Clinical Characteristics

All postnatal mothers (100%) had received education on breastfeeding through video teaching. Majority of mothers (54%) were with gestational age between 38-39 weeks. Among them, 31.4% were belonged to 37 to 38 weeks of gestation and 14.3% of mothers were with 39 to 40 weeks of gestational age. Majority (75.7%) of mothers was primigravida and 24.3% of mothers were multigravida. Majority (58.6%) of infants was male and 41.4% of infants were female. Majority (72.9%) of infants had birth weight between 2 to 3 kg, 18.6% of infants were >3 kg, and 8.6% of infants were <2 kg.

### Section 2: Identification of the Maternal Comfort and Infant Feeding Behaviors between Two Breastfeeding Positions

► **Table 1** shows that the identification of maternal comfort and infant feeding behaviors between two breastfeeding positions like cradle hold position and side-lying position. The maternal comfort rating scale consist of 10 items and each items were rated on strongly disagree, disagree, agree, and strongly agree.

### Section 3a: Comparison between Two Breastfeeding Positions on Maternal Comfort and Infant Feeding Behaviors

The data in ► **Table 2** show that mother from the side-lying breast feeding position group showed, higher maternal comfort mean post test score  $29.74 \pm 3.7$  than the cradle hold breastfeeding position  $24.20 \pm 5.0$ .

The independent sample  $t$ -test revealed that the calculated " $t$ " value for maternal comfort between the groups ( $t_{68} = 5.181$ ) which is less than the table value  $t(0.05, 68 = 2.042)$  and  $p < 0.001$ . The difference in the mean of maternal comfort score was (5.54) which indicates mother with Cesarean section experienced maternal comfort during breast feeding more in side-lying position than in the cradle hold breastfeeding position.

The mean value of infant feeding behavior score in side-lying breast feeding position group was higher  $10.82 \pm 2.12$  than in the cradle hold breast feeding position  $9.42 \pm 2.52$ . The independent sample  $t$ -test revealed that the calculated table value ( $t_{68} = 2.512$ ) was less than the table value  $t(0.05, 68 = 2.042)$ , the  $p = 0.014$ , and mean difference in the infant

**Table 1** Identification of the maternal comfort and infant feeding behaviors between two breast feeding positions

Maternal comfort rating questions		Cradle hold n = 35		Side-lying n = 35		Likelihood ratio	p-Value
		Frequency	%	Frequency	%		
1. I feel relaxed right now after breast-feeding my baby	SD	2	5.7	0	0		
	D	19	54.3	2	5.7	26.595	<0.001 <sup>a</sup>
	A	10	28.6	23	65.7		
	SA	4	11.4	10	28.6		
2. I feel confident to hold my baby to breastfeed in cradle hold position/ side lying.	SD	3	8.6	0	0		
	D	17	48.6	3	8.6		
	A	14	40	29	82.9	21.367	<0.001 <sup>a</sup>
	SA	1	2.9	3	8.6		
3. I felt comfortable to breast feed my baby in cradle hold position/side lying position	SD	2	5.7	0	0		
	D	13	37.1	1	2.9	19.260	<0.001 <sup>a</sup>
	A	18	51.4	28	80		
	SA	2	5.7	6	17.1		
4. I didn't feel after pain during breast feeding	SD	2	5.7	0	0		
	D	22	62.9	12	34.3		
	A	10	28.6	21	60.0	10.087	0.018 <sup>a</sup>
	SA	1	2.9	2	5.7		
5. I feel relief from breast discomfort, as I was breast feeding my baby	SD	2	5.7	0	0		
	D	18	51.4	10	28.6		
	A	14	40.0	21	60	8.427	0.0388 <sup>a</sup>
	SA	1	2.9	4	11.4		
6. I am able to breast feed my baby for longer duration without much difficulty in cradle hold position	SD	3	8.6	0	0		
	D	18	51.4	5	14.3	18.304	<0.001 <sup>a</sup>
	A	13	37.1	26	74.3		
	SA	1	2.9	4	11.4		
7. I had no back pain after breast feeding my baby in cradle hold / relief from surgical pain while I was breast feeding my baby in side lying position	SD	3	8.6	0	0		
	D	23	65.7	10	28.6		
	A	8	22.9	20	57.1	17.464	0.001 <sup>a</sup>
	SA	1	2.9	5	14.3		
8. I am able to stretch myself freely during breastfeeding	SD	4	11.4	0	0		
	D	19	54.3	2	5.7		
	A	12	34.3	27	77.1	35.687	<0.001 <sup>a</sup>
	SA	0	0	6	17.1		
9. I felt contented to maintain eye contact with my baby during breast feeding.	SD	0	0	0	0		
	D	12	34.3	12	34.3		
	A	22	62.9	20	57.1	1.142	0.565
	SA	1	2.9	3	8.6		
10. I felt I had good support to breast feed my baby.	SD	1	2.9	0	0		
	D	13	37.1	4	11.4		
	A	18	51.4	22	62.9	9.943	0.019 <sup>a</sup>
	SA	3	8.6	9	25.7		

Abbreviations: A, agree; D, disagree; SA, strongly agree; SD, strongly disagree.

<sup>a</sup>Indicates significance.

feeding behaviors was 1.4. Thus the infant feeding behaviors were better in side-lying breast feeding position was more significant than in the cradle hold breast feeding position.

Hence, the results revealed that mothers experienced increased comfort during breastfeeding and good infant feeding behaviors are also been observed in side-lying breast-feeding position than cradle hold.

On repeated measures of analysis of variance (ANOVA) analysis, it is clear that both maternal comfort and infant feeding behavior within the group and between the groups there was a difference in the mean posttest score.

### Section 3b: Comparison of Maternal Comfort within the Groups

► **Table 3** shows that comparison of maternal comfort within the groups, paired t-test was used. The results shows that the afternoon maternal comfort mean values (day 1, 26.00 ± 4.78, day 2, 30.54 ± 3.53, and day 3, 34.25 ± 3.09) of cradle hold breastfeeding position were higher than that of morning post test mean values (day 1, 24.20 ± 5.07, day 2, 28.88 ± 3.77, and day 3, 32.22 ± 2.99).

The calculated "t" value (day 1,  $t_{69} = -3.899$ , day 2  $t_{69} = -2.683$ , and day 3  $t_{69} = -4.625$ ) are less than the table value  $t$  (0.05, 69 = -2.042) at the 0.05 level of significance which indicates mothers experienced more comfort during breastfeeding in cradle hold position in the afternoon than in the morning.

In side-lying breastfeeding position, maternal comfort posttest mean values (day 1, 0.08 ± 3.7, day 2, 34.56 ± 2.56,

and day 3, 37.17 ± 1.75) were significantly higher than that of morning posttest mean values (day 1, 29.74 ± 3.78, day 2, 32.08 ± 3.20, and day 3, 35.74 ± 2.34). The calculated table value (day 2  $t_{69} = 4.695$  and day 3  $t_{69} = 4.016$ ) are less than the table value  $t$  (0.05, 69 = 2.042) at the 0.05 level of significance except on (day 1  $t_{69} = 0.930$ ,  $p > 0.05$ ) which indicates maternal comfort in the afternoon with side-lying breastfeeding position was greater than the morning except on day 1.

Hence, the results revealed that the mother with cesarean section felt increased comfort in side-lying breastfeeding position especially in the afternoon than in the cradle hold breast feeding position.

### Section 3c: Comparison of Infant Feeding Behaviors between the Groups

► **Table 4** shows, the comparison of infant feeding behaviors between the groups, paired t-test was used. The above table shows that, the afternoon posttest mean values (9.42 ± 2.52, 12.25 ± 1.80, and 13.40 ± 1.11) of infant feeding behavior in cradle hold group at day 1, day 2, and day 3 were higher than the morning mean values (6.62 ± 3.54, 10.65 ± 2.57, and 13.14 ± 1.9).

The calculated  $t$  value ( $t_{69} = 4.438$ , 3.447, and 0.782) was less than table value ( $t_{69} = 2.042$ ) at 0.05 level of significance which indicates that infant feeding behavior posttest mean values (10.82 ± 2.12, 13 ± 2.57, and 13.14 ± 1.9) were significantly were higher in side-lying breastfeeding position in the afternoon than in the morning posttest mean values (10.37 ± 1.68, 12.60 ± 1.76, and 14.22 ± 1.21).

**Table 2** Comparison on maternal comfort and infant feeding behavior according to the groups

	Groups: $n = 70$ (35 + 35)	Mean	SD	t-test	p-Value <sup>b</sup>
Maternal comfort	Cradle hold	24.20	5.0	5.181	<0.001 <sup>a</sup>
	Side lying	29.74	3.7		
Infant feeding behavior	Cradle hold	9.42	2.52	2.512	0.014 <sup>a</sup>
	Side lying	10.82	2.12		

Abbreviation: SD, standard deviation.

<sup>a</sup>indicates significance.

<sup>b</sup>indicates between group  $p < 0.001$  on repeated measures of analysis of variance.

**Table 3** Comparison on maternal comfort within the groups

		Maternal comfort				Paired t-test	
		Morning		Afternoon		t-Value	p-Value <sup>b</sup>
		Mean	SD	Mean	SD		
Cradle hold $n = 35$	Day 1	24.20	5.07	26.00	4.78	3.899	<0.001 <sup>a</sup>
	Day 2	28.88	3.77	30.54	3.53	2.683	0.011 <sup>a</sup>
	Day 3	32.22	2.99	34.25	3.09	4.625	<0.001 <sup>a</sup>
Side-lying $n = 35$	Day 1	29.74	3.78	30.08	3.7	0.930	0.359
	Day 2	32.08	3.20	34.31	2.56	4.695	<0.001 <sup>a</sup>
	Day 3	35.74	2.34	37.17	1.75	4.016	<0.001 <sup>a</sup>

Abbreviation: SD, standard deviation.

Note:  $n = 70$  (35 + 35).

<sup>a</sup>Indicates significance.

<sup>b</sup>Indicates between group p-value <0.001 on repeated measures of analysis of variance.



The calculate table values ( $t_{69} = 1.339$  and  $3.118$ ) was less than table value  $t$  ( $0.05, 69 = 2.042$ ) and calculated table value on day 3 afternoon  $2.266 > t$  ( $0.05, 69 = 2.042$ ) at the 0.05 level of significance, this indicates the infant feeding behavior were comparatively very good in side-lying breast feeding position and in cradle hold infant feeding behavior found to be better on day 3.

**Section 3d: Comparison of Maternal Comfort between Two Breastfeeding Positions**

The data in ►Table 5 shows that the posttest mean difference of maternal comfort at day-1 morning (5.54) was higher than in the afternoon (4.08) between the groups. Likewise at day 2 (3.20 and 3.77, respectively) and day-3 mean difference morning and afternoon (3.51 and 2.91, respectively). The calculated t value ( $t_{68} = 3.98, 5.11, \text{ and } 4.850$ ) which is less than table value  $t$  ( $0.05, 69 = 2.042$ ) at 0.05 level of significance which describes that the maternal comfort between

the groups in three days at two times a day has significant difference.

**Section 3e: Comparison of Infant Feeding Behaviors between Two Breastfeeding Positions**

The ►Table 6, shows that the mean difference of the posttest scores of infant feeding behaviors at day 1 (3.74), day 2 (1.94), and day 3 (1.08) which was more than the afternoon mean difference of posttest score (1.40, 1.02, and 0.40).

The calculated table value in the morning ( $t_{68} = 5.63, 3.67, \text{ and } 2.80$ ) and in the afternoon ( $t_{68} = 2.51$  and  $2.4$ ) was less than the table value “t” ( $0.05, 69 = 2.042$ ) at 0.05 level of significance except on the day 3 ( $t_{68} = 1.84$ ) which indicates the infant feeding behaviors had good positive responses in the morning between the groups than in the afternoon. Hence there is significant difference between the groups on infant feeding behaviors from day 1 to day 3, especially in the morning (►Table 4).

**Table 4** Comparison of infant feeding behaviors between the groups

		Infant feeding behavior				Paired t-test	
		Morning		Afternoon		t-Value	p-Value <sup>b</sup>
		Mean	SD	Mean	SD		
Cradle hold n = 35	Day 1	6.62	3.54	9.42	2.52	4.438	<0.001 <sup>a</sup>
	Day 2	10.65	2.57	12.25	1.80	3.447	0.002 <sup>a</sup>
	Day 3	13.14	1.9	13.40	1.11	0.782	0.440
Side-lying n = 35	Day 1	10.37	1.68	10.82	2.12	1.339	0.189
	Day 2	12.60	1.76	13.28	1.63	3.118	0.004 <sup>a</sup>
	Day 3	14.22	1.21	13.80	0.632	2.266	0.030 <sup>a</sup>

Abbreviation: SD, standard deviation.

Note: n = 70 (35 + 35).

<sup>a</sup>Indicates significance.

<sup>b</sup>Indicates between group  $p < 0.001$  on repeated measures of analysis of variance.

**Table 5** Comparison of maternal comfort between two breast feeding positions were analyzed by using independent t-test

	Maternal comfort					
	Morning			Afternoon		
	Mean difference	t-Value	p-Value	Mean difference	t-Value	p-Value
<b>Day 1</b>	5.54	5.18	<0.001 <sup>a</sup>	4.08	3.98	<0.001 <sup>a</sup>
<b>Day 2</b>	3.20	3.82	<0.001 <sup>a</sup>	3.77	5.11	<0.001 <sup>a</sup>
<b>Day- 3</b>	3.51	5.47	<0.001 <sup>a</sup>	2.91	4.850	<0.001 <sup>a</sup>

Note: n = 70 (35 + 35).

<sup>a</sup>Indicates significance.

**Table 6** Comparison of infant feeding behaviors between two breast feeding position were analyzed by using independent t-test

	Infant feeding behavior					
	Morning			Afternoon		
	Mean difference	t-Value	p-Value	Mean difference	t-Value	p-Value
<b>Day 1</b>	3.74	5.63	<0.001 <sup>a</sup>	1.40	2.51	0.14
<b>Day 2</b>	1.94	3.67	<0.001 <sup>a</sup>	1.02	2.4	0.15
<b>Day 3</b>	1.08	2.80	0.007	0.40	1.84	0.070

Note: n = 70 (35 + 35).

<sup>a</sup>Indicates significance.



#### Section 4: Relationship between Maternal Comfort and Infant Feeding Behavior

Day-1 measurements data show that in cradle hold there was positive linear relationship between maternal comfort and infant feeding behavior both in the morning ( $r = 0.535$ ,  $p \leq 0.001$ ) and afternoon ( $r = 0.568$ ,  $p \leq 0.001$ ) but in side-lying breastfeeding position the relationship between maternal comfort and infant feeding behaviors were observed only in the afternoon ( $r = 0.445$ ,  $p = 0.007$ ).

Day-2 measurements in cradle hold morning there was no relationship between maternal comfort and infant feeding behaviors ( $r = 0.323$ ,  $p = 0.59$ ) but in the afternoon there was relationship ( $r = 0.623$ ,  $p \leq 0.001$ ). In side-lying breastfeeding position there was relationship between maternal comfort and infant feeding behaviors both in the morning ( $r = 0.686$ ,  $p \leq 0.001$ ) and afternoon ( $r = 0.468$ ,  $p = 0.005$ ).

Day-3 measurements show that in cradle hold morning ( $r = 0.419$ ,  $p = 0.12$ ) and afternoon ( $r = 0.293$ ,  $p = 0.087$ ), there was no relationship but in side-lying only in the morning ( $r = 0.414$ ,  $p = 0.013$ ), there was relationship between maternal comfort and infant feeding behaviors and not in the afternoon ( $r = 0.138$ ,  $p = 0.430$ ; ►Table 7).

#### Section 5: Association between Maternal Comforts with Selected Demographic Variables

The data presented in ►Table 8 show that the association between the selected demographic characteristics and maternal comfort score. Likelihood ratio and Chi-square was used that for all selected variables, the obtained  $p$ -values were more than 0.05; hence, there was no association between maternal comforts with selected demographic characteristics.

## Discussion

#### Section 1: Distribution of Demographic and Clinical Characteristics

The present study shows that majority (40%) of the patients belong to the age group of 26 to 30 years, followed by 28.6% of the patients were between 21 and 35 years, and 22.8% of patients were >30 years. Majority (38.6%) of patients had

completed their secondary education, 31.4% were graduates, 22.9% with higher primary education, and around 7.1% with primary education. Majority (60%) of the patients had come from rural areas and 40% had belonged to urban areas. Majority (42.9%) of the patients currently unemployed, 31.3% were employed, and 22.8% were self-employed. Majority of the patients (55.7%) were from nuclear families and 27.1% of them belonged to joint families.

Testing of homogeneity of demographic variables like mother's age, educational status, place of living, occupation and type of family, and clinical characteristics, like gestational age, parity, gender of the baby, and birth weight, according to the groups. The obtained likelihood ratio (LR), as well as chi-square,  $p$ -values were >0.05, and hence the demographic and clinical characteristics are homogenous according to the groups. That is, the distributions of patients in each group according to the demographic and clinical characteristics are same.

The present study strongly supported by a comparative study on maternal comfort between two breastfeeding positions published by Bency and Maria in 2014.<sup>20</sup> It was a quasi-experimental two-group posttest designed study. In this study, majority of the patients' age group (50% in each group) belonged to 26 to 30 years. Around 60% of mothers had done their secondary education and majority (60% of population) was from rural area. Also the majority (40%) of mothers was unemployed and 65.6% mothers were from nuclear family and testing of homogeneity according to the groups was done for demographic and clinical variables, the obtained  $p > 0.05$ . That indicated distribution of demographic and clinical variables according to the groups were same.

#### Section 2: Identification of the Maternal Comfort and Infant Feeding Behaviors between Two Groups

The current study was supported by the article on comparison of breast feeding outcomes between using laid back and side lying positions among mothers with cesarean section by Puapornpong et al,<sup>21</sup> Thailand. The maternal comfort rating scales were assessed along with LATCH score which can also be called as infant feeding behavior. Mothers felt that they

**Table 7** To measure the degree of linear relationship between maternal comfort and infant feeding behavior between two breastfeeding positions the Pearson's correlation ( $r$ ) was used

	Groups $n = 70 (35 + 35)$	Maternal comfort and Infant feeding behaviors			
		Morning		Afternoon	
		Pearson's correlation	$p$ -Value	Pearson's correlation	$p$ -Value
Day-1	Cradle hold	0.535	0.001 <sup>a</sup>	0.568	<0.001 <sup>a</sup>
	Side lying	0.0297	0.83	0.445	0.007 <sup>a</sup>
Day-2	Cradle hold	0.323	0.59	0.623	<0.001 <sup>a</sup>
	Side lying	0.686	<0.001 <sup>a</sup>	0.468	0.005 <sup>a</sup>
Day-3	Cradle hold	0.419	0.12	0.293	0.087
	Side lying	0.414	0.013 <sup>a</sup>	0.138	0.430

Note:  $n = 70 (35 + 35)$ .

<sup>a</sup>Indicates significance.

**Table 8** Association between maternal comforts with selected demographic characteristics

Demographic characteristics	n = 70	Maternal comfort (median)				Statistical test	p-Value
		≤27	%	>27	%		
Mothers age	18–20	4	11.11	2	5.88	1.822 (likelihood ratio)	0.610
	21–25	12	33.33	8	23.52		
	26–30	13	36.11	15	44.11		
	>30	7	19.45	9	26.51		
Educational status	Primary	2	5.55	3	8.84	6.025 (likelihood ratio)	0.110
	Higher primary	12	33.33	4	11.76		
	Secondary	14	38.88	13	38.23		
	Graduate	8	22.24	14	41.17		
1.373 (likelihood ratio)	Rural	24	66.67	18	52.95		0.241
	Urban	12	33.33	16	47.05		
Occupation	Employed	10	27.77	14	41.17	2.862 (Pearson's Chi-square)	0.239
	Unemployed	15	41.66	15	44.11		
	Self-employed	11	30.57	5	14.72		
Type of family	Nuclear	22	61.10	17	50	2.235 (Pearson's Chi-square)	0.327
	Joint	7	19.45	12	35.28		
	Extended	7	19.45	5	14.72		

agreed to majority (70%) statements of maternal comfort semantic scale than the laid back breast feeding position and LATCH score also was better and had 80% positive outcome in side-lying breast feeding position than laid back position. Overall the maternal comfort and infant feeding were good in side-lying position than laid back among mothers with Cesarean section.

### Section 3: Comparison between Two Breastfeeding Positions on Maternal Comfort and Infant Feeding Behaviors

The current study revealed that there was significant difference in the mean posttest score of maternal comfort and infant feeding behaviors between the two groups.

The mean posttest score of maternal comfort ( $29.74 \pm 3.7$ ) was higher in side-lying breastfeeding position than the cradle hold ( $24.20 \pm 5.0$ ). The independent *t*-test revealed that the calculated *t* value for maternal comfort between the groups ( $t_{68} = 5.181$ ) which is less than the table value ( $t_{68} = 2.042$ ) and  $p < 0.001$ . The difference in the mean of maternal comfort score was (5.54), which indicates mother with Cesarean section experienced maternal comfort during breastfeeding more in side-lying position than in the cradle hold breast feeding position.

The mean value of infant feeding behavior score in side-lying breastfeeding position group was higher  $10.82 \pm 2.12$  than in the cradle hold breast feeding position  $9.42 \pm 2.52$ . The independent *t*-test revealed that the calculated table value ( $t_{68} = 2.512$ ) was less than the table value ( $t_{68} = 2.042$ ), the  $p = 0.014$  and mean difference in the infant feeding behaviors was (1.4). Thus the infant feeding behaviors were better

in side-lying breastfeeding position that was more significant than in the cradle hold breastfeeding position.

Within the groups, maternal comfort and infant feeding behaviors were significantly improved on day 3 in cradle hold and side-lying breast feeding position at 0.05 level of significance.

Thus the results revealed there was increased maternal comfort and better infant feeding behaviors significantly in side-lying position than the cradle hold. Repeated measures ANOVA were used to compare the consecutive measurements of maternal comfort and infant feeding behavior. On analysis it is clear that both maternal comfort and infant feeding behavior within group and between the group there was a difference (Greenhouse Geisser's *p*-value was  $< 0.001$ ).

The current study was supported by an article on comparison of breastfeeding outcomes between using laid back and side-lying positions among mothers with Cesarean section by Pawing Puapornpong et al in Thailand, where 152 postpartum mothers delivered by Cesarean section and 76 in each group were analyzed respectively. Demographic and clinical characteristics in both groups follow homogeneity. There were no statistical differences in breast feeding outcomes from both the groups but the mothers expressed (96%) improved comfort in side lying breast feeding position than laid-back and better LATCH scores were observed at second day of postpartum.

Another study on maternal comfort between two breast feeding positions published by Bency and Maria on June 6, 2014 was contradicted to the present study which revealed that there were no significant differences in the comfort scores between cradle hold and football breastfeeding

position. Both the position was equally effective for breastfeeding in terms of increased comfort of primiparous women.

Another observational study on comparison of the breast feeding patterns of mothers who delivered their babies per vaginally and via cesarean section on using LATCH breast feeding charting system. Statistically meaningful differences were found in the first ( $t = 10.48, p \leq 0.01$ ), second ( $t = 7.82, p \leq 0.01$ ), and third day ( $t = 7.12, p \leq 0.01$ ) breast-feeding session in both Cesarean delivered and vaginally delivered mothers and recommends that mothers need to be taught and supported in positioning their babies for improved comfort and efficient latch.

#### Section 4: Relationship between Maternal Comfort and Infant Feeding Behavior

The current study summarizes the analysis data on relationship between maternal comfort and infant feeding behaviors. Day-1 measurements data show that in cradle hold, there was positive linear relationship between maternal comfort and infant feeding behavior both in the morning ( $r = 0.535, p \leq 0.001$ ) and afternoon ( $r = 0.568, p \leq 0.001$ ) but in side-lying breastfeeding position, the relationship between maternal comfort and infant feeding behaviors were observed only in the afternoon ( $r = 0.445, p = 0.007$ ). Day-2 measurements in cradle hold morning, there was no relationship between maternal comfort and infant feeding behaviors ( $r = 0.323, p = 0.59$ ) but in the afternoon, there was relationship ( $r = 0.623, p \leq 0.001$ ). In side-lying breastfeeding position, there was relationship between maternal comfort and infant feeding behaviors both in the morning ( $r = 0.686, p \leq 0.001$ ) and afternoon ( $r = 0.468, p = 0.005$ ). Day-3 measurements show that in cradle hold morning ( $r = 0.419, p = 0.12$ ) and afternoon ( $r = 0.293, p = 0.087$ ), there was no relationship but in side-lying only in the morning ( $r = 0.414, p = 0.013$ ), there was relationship between maternal comfort and infant feeding behaviors and not in the afternoon ( $r = 0.138, p = 0.430$ ).

The research findings were supported by the study conducted in Manipal University, Manipal by Bency G and Maria on June 6, 2014. The objective of the research was to compare the maternal comfort between two breastfeeding positions. The comfort of primiparous women and LATCH score was assessed in three repeated measures (4, 6, and 24 hours of breast feeding) to see the linear relationship between cradle hold and football breastfeeding position. The data revealed that there was difference in the mean scores ( $p < 0.05$ ) of maternal comfort and LATCH score between two breastfeeding positions at different intervals. So there was positive linear relationship between maternal comfort and LATCH score.

#### Section 5: Association between Maternal Comforts with Selected Demographic Variables

To find the association between maternal comfort with selected demographic characteristics, LR and Chi-square was used. The obtained  $p$ -value for all selected demographic characteristics (mothers age = 0.610, educational status = 0.110, place of living = 0.241, occupation = 0.239, and type

of family = 0.327) were more than the 0.05. Hence, there was no association between the maternal comforts with selected demographic characteristics.

This findings were also supported by comparison study on maternal comfort and two different breast feeding position from Manipal university (2014) and also the other comparison study on using laid back and side lying positions among mothers with Cesarean section by Pawing Puapornpong et al (2014) in Thailand. The studies gives clear data that there was no relationship between maternal comforts with selected demographic characteristics, were the research hypothesis was rejected at 0.05 level of significance.

#### Limitations

- In the present study, the mothers with Cesarean section in each group selected using purposive sampling which limits the generalizability of the study.
- Interventions were tested to healthy neonates so findings cannot be generalized to preterm neonates.
- Controlling extraneous variables like personnel characteristics of postnatal women with cesarean section, hours of postnatal period and different activities in the ward was not possible.

#### Conclusion

Antenatal video teaching has played significant role in attaining the good positions and to experience increased comfort during breastfeeding and appreciative infant feeding behaviors. Preparation of mothers for delivery, child care and breastfeeding is an important aspect of health education. The study also reveals that there is no association between the maternal comforts with selected demographic characteristics.

#### Nursing Implications

The findings drawn from the study has implications in various areas of nursing such as nursing education, nursing practice, nursing administration, and nursing research.

#### Nursing Education

Nurse educators can impart education on the following:

- Importance of antenatal education and its scope.
- Methods and ways to provide antenatal education.
- Various methods of breast feeding techniques.
- Different kinds of breastfeeding positions.

#### Nursing Practice

Breastfeeding is an important aspect to be thought seriously for sound cognitive, effective, and psychomotor development of an infant. It is the nurse who comes in contact with the family members from admission to discharge.

#### Nursing Administration

Nurse administrator need to ensure that, nurses are oriented to the protocols of the hospitals regarding breastfeeding. Nurse administrators can work as a team to make hospital as

baby friendly hospital which focus on exclusive breastfeeding and effective, efficient postnatal outcome.

### Nursing Research

Comparative and correlative studies could be encouraged to explore advancements in the breastfeeding techniques, and develop protocols for quality of nursing care in the field of obstetrics, and gynecology, so more researches are needed in these areas. The researches will guide toward the practical difficulties and will provide strategies to overcome them.

### Recommendations

- A similar study can be done on large population with randomization in selection of sample.
- A similar study can be done in community setting.
- A qualitative study can be done to explore the experience of postnatal mothers with cesarean section during breastfeeding.
- A descriptive study can be conducted to assess the effectiveness of video teaching on practice of breastfeeding positions.
- A protocol could be developed to provide side-lying breastfeeding positions in the hospital, especially to mothers with cesarean section.
- A comparative study can be done on breastfeeding status of neonates among primiparous women and multiparous women.
- Comparative study can be done between exclusive breast feeding in different positions.
- A systematic review and meta-analysis on breastfeeding position, exclusive breastfeeding, and role of nurse in antenatal education could be done.

### Conflict of Interest

None declared.

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