

## Effectiveness of educational intervention on breastfeeding among primi pregnant women- a longitudinal study



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### ABSTRACT

**Background:** Breast milk is a unique source of nutrition. All mothers can adequately and appropriately breastfeed when they have accurate information and skilled practical help.

**Objectives:** 1. To assess the knowledge and attitude of breastfeeding among primi Pregnant women attending antenatal clinic. 2. To assess the effect of educational intervention on knowledge, attitude and practice among women after delivery.

**Materials and methods:** a prospective intervention study was conducted involving 70 primigravidae women attending the antenatal clinic of JSS Hospital, Mysuru. Baseline knowledge and attitude towards Breastfeeding was assessed, and socio-demographic details were collected. Breastfeeding Education was given through a printed booklet in local language for this study purpose. The women were followed up for three times post-delivery, within one week, at the end of 3rd month and 6th month of delivery.

**Results:** Pre-intervention knowledge was found to be poor in all the participants; the statistically significant difference in knowledge and attitude level was found between three follow up. After the delivery, 58.6% of mothers initiated breastfeeding within 1 h, 17.1% gave prelacteals and 90% of mothers fed colostrum. At six month exclusive breastfeeding, complementary feeding and bottle feeding was followed by 45.7%, 48.6% and 35.7% of mothers respectively.

**Conclusion:** knowledge of breastfeeding benefits and correct method has to be given to the women during pregnancy itself to empower and encourage them to follow the exclusive Breastfeeding and proper infant feeding practices.

### 1. Introduction

“Breast milk is the best milk” an age-old saying holds good even today.

Breastfeeding is a unique source of nutrition; it provides adequate and essential nutrients for infant's growth and development, protects the infants against infections and ensures chances of survival. The benefits of Breastfeeding, especially exclusive Breastfeeding, are well established.<sup>1,2</sup> It provides numerous immunologic, psychological, social, economic and environmental benefit.<sup>3</sup>

Breast-milk has a significant positive impact on child growth and development and decreases the risk for many acute and chronic diseases.<sup>4</sup> including infections such as diarrhoea and respiratory tract infections during infancy.<sup>5</sup> It also imparts benefits on the mother, such as reduced post-partum bleeding and early uterine involution, coupled

with decreased risk of breast and ovarian cancers and hip fractures later in life.<sup>6</sup> The beneficial effects of Breastfeeding depend on breastfeeding initiation, its duration and age at which complementary feeding is started.

WHO recommends exclusive Breastfeeding for the first six months followed by the introduction of semisolid & solid foods to complement breast milk and to continue breastfeeding until at least two years of age or more.<sup>7</sup>

Though Breastfeeding is universal in India, despite its countless benefits to children, mothers and community at large, exclusive breastfeeding rate in our country remains below the desirable level, 46.3% (National Family Health Survey-3).<sup>8</sup>

Breastfeeding is a natural act and also a learned behaviour. Unfortunately, many mothers and newborns do not receive the help they need to initiate Breastfeeding within 1 h, and to practice exclusive

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Breastfeeding during the first six months. All mothers can adequately and appropriately breastfeed when they have accurate information, skilled practical help and support through their families, communities and health care system. The practical advice can build mothers' confidence, improve feeding technique and prevent/resolve breastfeeding problems; in turn prevents breast conditions like sore nipples and mastitis, which usually arise due to lack of correct breastfeeding techniques.

Lack of confidence in mothers' ability to breastfeed, problems with the infant latching or suckling, breast engorgement/soreness, perceptions of insufficient milk supply, and lack of individualised counselling in the antenatal period and early post-partum period are some of the factors that result in reduced breastfeeding rate. Some of these problems can be overcome if the woman is informed during the antenatal period about the proper technique.<sup>9,10</sup>

Therefore, the present study was conducted to know the impact of educating pregnant women about breastfeeding practices during the antenatal period.

## 2. Objectives

- 1 To assess the knowledge and attitude of breastfeeding among primi Pregnant women attending antenatal clinic.
- 2 To assess the effect of educational intervention on knowledge, attitude and practice among women after delivery.

## 3. Methodology

### 3.1. Design

It was a prospective interventional study. Education regarding Breastfeeding was given to the pregnant women through a written booklet which was developed in local language Kannada for this study followed by a post-delivery assessment of breastfeeding education for the adequate and appropriate feeding of the newborn and infant.

### 3.2. Setting

The study was conducted in the outpatient Department of Obstetrics and Gynecology, JSS Medical College and Hospital, Mysuru, Karnataka state of India.

### 3.3. Sample size

Considering the prevalence of exclusive Breastfeeding given by Dhandapani<sup>9</sup> prevalence of Exclusive Breastfeeding among mothers who got antenatal counselling regarding breastfeeding as 78%. At 95% confidence level and allowable error of 10%, and taking 10% as buffering, a total of 73 people were included in the study.

### 3.4. Sample

Primigravida, gestational age of  $\geq 28$  weeks and having singleton pregnancy and who were able to read the Kannada language were included, and women with high-risk pregnancy were excluded from the study.

### 3.5. Data collection

After obtaining informed written consent from the participants, their socio-demographic details and pre interventional knowledge and attitude on Breastfeeding were assessed using pre-tested structured questionnaire. The questionnaire included questions regarding time of initiation of Breastfeeding after delivery, prelacteal feeds, colostrum feeding, and benefits of breastfeeding for mother and child, duration of exclusive Breastfeeding and introduction of complementary feeding.

Questions were also asked to know their attitude for insufficient milk secretion, bottle feeding, food fads, etc. In the same visit, the educational material about Breastfeeding, which was developed in local language Kannada for the purpose of this current study, was given to the pregnant women. They were also explained about the subsequent three follow-ups. For this purpose information about contact details of participant, her husband and father/mother, expected delivery date was collected.

### 3.6. Health education material/booklet

The booklet was in local language Kannada. It includes information regarding.

- 1 Benefits of breastfeeding to the baby and to the mother.
- 2 Exclusive breastfeeding.
- 3 Importance of feeding colostrum.
- 4 Pre-lacteal feeds: ill effects of feeding pre-lacteal feeds.
- 5 Correct way of latching (with pictures) and position of mother and baby during breastfeeding (with pictures).
- 6 Adverse effects of bottle feeding.
- 7 Ways to identify that the baby is fed adequately.
- 8 ways to feed Expressed milk: helping working mothers.
- 9 Table with pictures showing when to initiate Complementary feeding: foods preferred, amount of food to be given, consistency of food, hygiene to be followed during feeding.

Fig. 1 shows the steps in educational intervention and data collection during successive follow up.

### 3.7. Data analysis

For assessing the effect and statistical significance of written educational material on knowledge and attitude scores between pre-test to the post-test level throughout three follow up, a non-parametric test Friedman test was used. For assessing the practice level proportions were used for three follow up. Socio-demographic details were assessed using percentages. Statistical significance was considered at p level < 0.05.

## 4. Results

A total of 73 people were included in the study. Three women were lost for follow up during the study; therefore, the total women added for the final analysis was 70.

Table 1 shows Among the study participants, the majority of women, i.e. 38 (54.3%) were in the age group of 21–25 years. 21 (30.0%) belonged to middle socio-economic class according to Modified B.G. Prasad classification. All mothers in the study were literate, and 32 (45.7%) had studied up to high school, and 23 (32.8%) had studied up to PUC. Among the study participants, 62 (88.6%) of them were homemakers. Majority of them, 39 (55.7%) belonged to joint family and most of them, 63(90%) were Hindu by religion.

Table 2 shows the knowledge regarding Breastfeeding among pregnant women, 68.7% of them did not know when to start breastfeeding after birth, and only 2.8% knew it must begin within 1 h after birth. 22.8% of women knew that exclusive Breastfeeding for six months. 5.7% said that colostrum food should be given to babies. 77.1% of women did not know about feeding the colostrum. Regarding the duration of Breastfeeding, 7.1% of mothers said it must continue till two years of age, and 5.7% of the mother said to continue as many years as possible, but 57.1% of women did not know about duration. 48% of women stated at least two benefits of breastfeeding for mothers, 55.7% of women reported at least two advantages for children. 30.0% of women said prelacteal food should be given to the baby. 22.8% of pregnant women knew that they must start complementary feeding at

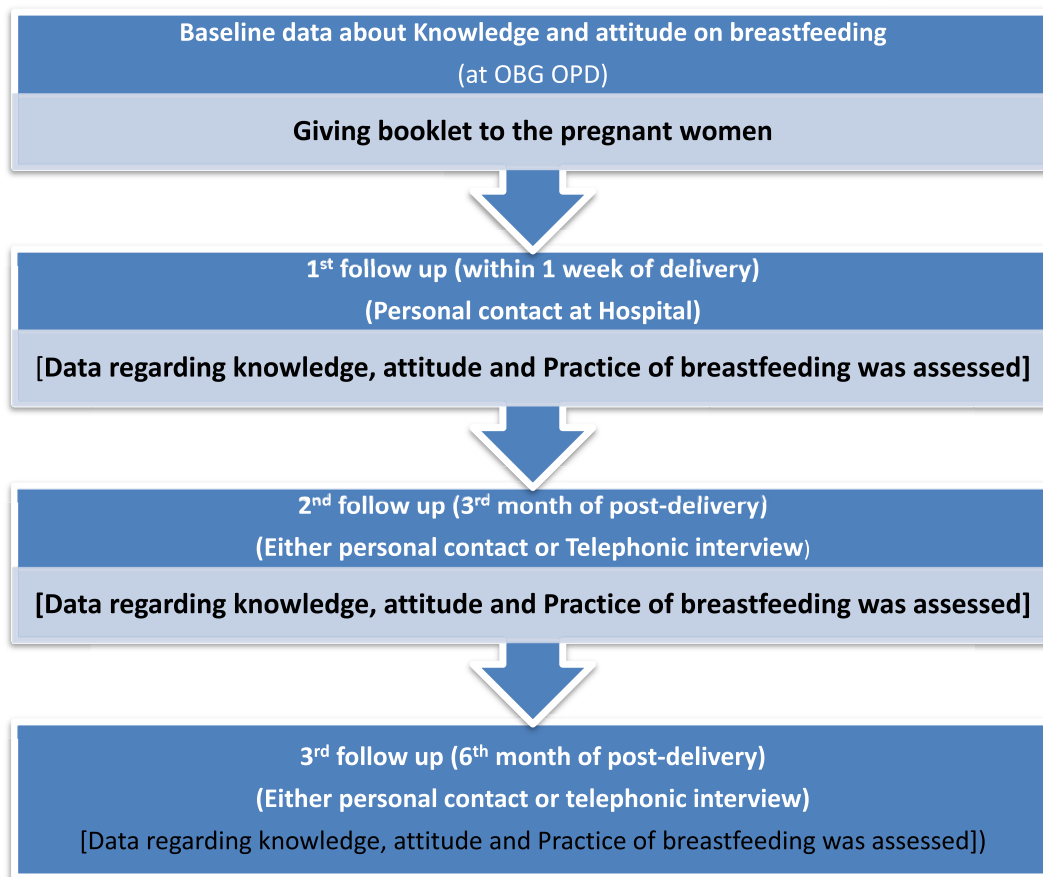


Fig. 1. Flow diagram of Data collection.

**Table 1**  
Socio-demographic characteristics of the study participants (n = 70).

Variables	Frequency(No)	Proportion (%)
<b>Age (in Years)</b>		
15–20	31	44.3
21–25	38	54.3
26–30	01	01.4
<b>Socio-Economic Class</b>		
Upper	11	15.7
Upper middle	13	18.6
Middle	21	30.0
Lower middle	19	27.1
Lower	06	08.6
<b>Education</b>		
Primary school	03	04.2
Middle school	10	14.3
High school	32	45.7
PUC	23	32.8
Graduate	02	02.8
<b>Occupation</b>		
Working	08	11.4
Homemaker	62	88.6
<b>Family type</b>		
Nuclear family	31	44.3
Joint family	39	55.7
<b>Religion</b>		
Hindu	63	90.0
Muslim	05	07.1
Others	02	02.9

six months.

Table 3 shows, 42.8% of pregnant women believe that insufficient milk secretion is the reason for baby not getting milk while sucking. 12.8% agree that bottle feeding is better than breastfeeding. Majority of

the women feel that mother and child bonding will be better with breastfeeding. 40% women strongly agree and 45.7% agree for restriction of certain foods during breastfeeding. Around 23% of women agree and 11.4% of women strongly that prolonged breastfeeding disfigures the breast.

Fig. 2 shows that, pretest knowledge of pregnant women regarding breastfeeding was poor. After the educational intervention at first follow up 80% of women had good knowledge. At second and third follow up 87.1% and 85.7% of the women had good knowledge respectively.

In Table 4 The knowledge scores obtained were classified as good if more than seven and poor if less than or equal to seven. The baseline knowledge at 1st visit, of all the women in the study, was poor regarding Breastfeeding before the intervention. At first, follow up during the hospital stay- 56(80%) of women had good knowledge, At second follow up at three months after delivery, the knowledge level was good in 61(87.1%), at third follow up at the end of sixth months following delivery, knowledge level was good among 60(85.7%) of mothers, In Table 5 shows among study participants, 87.1% had positive attitude regarding Breastfeeding. 92.9%, 85.7%, 75.7% of mothers had a positive attitude towards Breastfeeding during the 1st, 2nd and 3rd follow up, respectively.

Table 6 shows 41(58.6%) mothers initiated breastfeeding within 1 h after delivery. 12(17.1%) of babies were given prelacteal feeds. Colostrum was fed to 63(90%) babies.

Majority of mothers 58(82.9%), 55(78.6%) and 49(69.7%) followed Exclusive Breastfeeding at one week, three months and six months respectively. Demand feeding was followed by 54(77.1%), 55(78.6%), 58 (82.9%) mothers respectively at 1st,2nd and 3rd follow up. Majority of mothers (74.3%) followed the correct position during Breastfeeding, and 65.7% of mothers followed the correct position as well as latching

**Table 2**  
Pretest Knowledge status of Pregnant women regarding Breastfeeding (n = 70).

Sl. No	Particulars	Number	Percentage (%)
1.	When to start breastfeeding after birth		
	a) < 1hr	02	02.8
	b) 1–6 h	10	14.3
	c) 6–12 h	06	08.6
	d) 12–24 h	02	02.8
	e) > 24 h	02	02.8
	f) don't know	48	68.6
2	Duration of exclusive Breastfeeding		
	a) 6 months	16	22.8
	b) < 6 months	21	30.0
	c) > 6 months	23	32.6
	d) don't know	10	14.3
3	Colostrum should be given at birth to the baby		
	a) Yes	04	05.7
	b) No	12	17.1
	c) Don't know	54	77.1
4	How long baby should be breastfed?		
	a) < 2year	21	30.0
	b) 2 years	05	07.1
	c) Continue as long as possible	04	05.7
	d) don't know	40	57.1
5	Benefits for mother from Breastfeeding (at least two)	28	40.0
6	Benefits for baby from Breastfeeding (at least two)	39	55.7
7	can you give Prelacteals to the baby?		
	a) Yes	21	30.0
	b) No	08	11.4
	c) Don't know	41	58.6
8	Is using katori or spoon-feeding is better than bottle feeding?		
	a) Yes	08	11.4
	b) No	04	5.7
	c) Don't know	58	82.8
9	If the mother is working, can expressed breast milk be given?		
	a) Yes	05	7.1
	b) No	04	5.7
	c) Don't know	61	87.1
10	at what age we can start Complementary feeds?		
	a) 6 months	16	22.8
	b) < 6months	33	47.1
	c) > 6 months	10	14.3
	d) Don't know	11	15.7

of the baby to the breast. Regarding complementary feeding 18(25.7%) of mothers started it at 3rd month and 21(30.0%) mothers practised bottle-feeding practices at 3rd month and 25(35.7%) mothers at six months.

## 5. Discussion

Breastfeeding is a cost-effective public health measure that has a significant impact on infant morbidity and mortality. In a country with limited healthcare resources like India, developing an effective breastfeeding promotion and support intervention that is easily replicated across various settings becomes a priority. The present study would provide a generalizable model to improve breastfeeding promotion efforts and contribute to improved child health.

In the present study, 58.6% of women were in the age group of 21–25 years. Majority of them belonged to the Hindu religion.

Even though all the pregnant women in the study had more than four antenatal checkups before enrolling into the study, their knowledge regarding Breastfeeding was found to be poor. This implies a failure on the part of the health system, creating a missed opportunity to educate women about breastfeeding at their most receptive antenatal visits. Similar observations were seen in a study by Ekambaram et al.<sup>11</sup>

Majority of mothers did not know when to start breastfeeding after birth and for how many months the baby should be exclusively breastfed. The women also did not know whether to feed colostrum to

**Table 3**  
Pretest Attitude of Pregnant women regarding Breastfeeding (n = 70).

Sl. No	Particulars	Number	Percentage
1.	If the baby is not getting the breast milk on sucking, it is always due to insufficient milk secretion in the mother.		
	a) Strongly agree	06	8.5
	b) Agree	30	42.8
	c) Neither	23	32.8
	d) Disagree	11	15.7
	e) Strongly disagree	–	–
2	Bottle feeding is better than Breastfeeding		
	a) Strongly agree	–	–
	b) Agree	09	12.8
	c) Neither	24	34.3
	d) Disagree	30	42.8
	e) Strongly disagree	07	10
3	Mother and child bond is better with Breastfeeding		
	a) Strongly agree	24	34.3
	b) Agree	28	40
	c) Neither	17	24.3
	d) Disagree	01	1.4
	e) Strongly disagree	–	–
4	Certain foods have to be avoided during Breastfeeding		
	a) Strongly agree	28	40
	b) Agree	32	45.7
	c) Neither	06	8.5
	d) Disagree	03	4.2
	e) Strongly disagree	01	1.4
5	Prolonged Breastfeeding disfigures the breast		
	a) Strongly agree	08	11.4
	b) Agree	16	22.8
	c) Neither	34	48.5
	d) Disagree	12	17.1
	e) Strongly disagree	–	–

baby and same with prelacteal feeds.

The study by Ekambaram et al. similarly reports about inadequate knowledge of mothers regarding the time of initiation of Breastfeeding (92%), colostrum feeding (56%), duration of exclusive Breastfeeding (38%), knowledge on expressed breastmilk (51%) and continuation of Breastfeeding while the baby is sick.<sup>11</sup> 80%, 87.1% and 85.7% of mothers had good knowledge at 1st, 2nd and 3rd follow up respectively. The knowledge score after the intervention has increased, and the change is statistically significant. A study was done in Puducherry also reports that women who had received antenatal counselling about Breastfeeding, had better awareness regarding Breastfeeding compared to non-counselled mothers.<sup>9</sup>

In the present study, before the intervention, 87.1% of women had a positive attitude regarding Breastfeeding. Even though knowledge of the women was poor, but they had a positive attitude towards Breastfeeding, which indicates the majority of women want to breast-feed their children. Still, there exists a lack of access to the right information and awareness about breastfeeding in the community closer to pregnant women. In the present study, we can observe that mothers with a positive attitude are decreasing from 1st follow up through the 3rd follow up, despite having a better knowledge at baseline visit. The most common reasons quoted for their change in attitude towards Breastfeeding was feeling of insufficient milk secretion, the baby would not be healthy, the baby would not gain sufficient weight with breastfeeding alone until six months. The other reasons cited were the influence of the elderly in the family and the complications like breast engorgement, sore nipples during feeding.

Therefore there is a need for timely reinforcement of information of breastfeeding to the mothers and family and regular post-partum visits for addressing the problems of the mother and the baby.

In our study, 58.6% of mothers initiated Breastfeeding in less than 1 h, which is high compared to the national average of 31.1% according

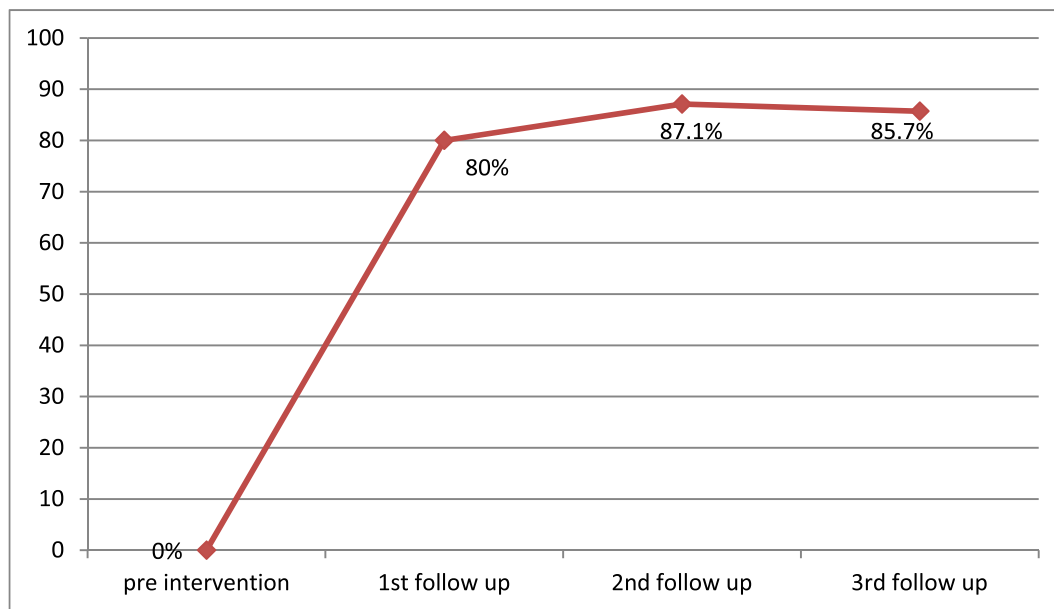


Fig. 2. Comparison of Good Knowledge of breastfeeding before and after the intervention(n = 70).

**Table 4**  
Association of Knowledge status during Pre and Post-intervention (n = 70).

Visits	Knowledge status		
	Median	Interquartile Range	P <sup>a</sup>
Pre-intervention (Baseline Knowledge)	01	0–3	< 0.001
1st follow up(Within one week)	10	8–11	
2nd follow up(Third month)	10	8–11	
3rd follow up(Sixth month)	10	9–11	

<sup>a</sup> Friedman Test.

**Table 5**  
Association of Attitude status during Pre and Post-intervention (n = 70).

Visits	Attitude status		
	Median	Interquartile range	P <sup>a</sup>
Pre intervention (Baseline attitude)	11	10–12	0.01
1st follow up(Within one week)	12	10–13	
2nd follow up(Third month)	12	10–13	
3rd follow up(Sixth month)	12	9.7–13	

<sup>a</sup> Friedman Test.

**Table 6**  
Breastfeeding practice during three follow up (n = 70).

Variables	1st follow up	2nd follow up	3rd follow up
Time of Initiation of Breastfeeding < 1 h	41 (58.6%)	NA	NA
Prelacteal feeds given	12(17.1%)	NA	NA
Colostrum is given	63(90%)	NA	NA
Exclusive Breastfeeding followed	58(82.9%)	55(78.6%)	49(69.7%)
Demand feeding practised	54(77.1%)	55 (78.6%)	58 (82.9%)
Correct Position of the mother followed	52(74.3)	55(78.6%)	56(80.0%)
Correct Position and latching of the baby	46(65.7%)	56(80.0%)	55 (78.6%)
Complementary feeding started	0	18(25.7%)	34(48.6%)
Bottle feeding practised	0	21(30.0%)	25(35.7%)

to NFHS-3 data.<sup>12</sup> A study conducted by Mria Sandor and Koustuv Dalal showed that the Education level, economic status, place of delivery and prenatal visits to health care facilities are essential factors influencing time of initiation of breastfeeding.<sup>19</sup> A study conducted by Owais shows that mothers who got antenatal counselling, 96% of them initiated breastfeeding within 1 h and those did not get the counselling 84% them initiated within 1 h.<sup>13</sup>

In our study, the magnitude of colostrum feeding to babies was 90%. A study done on the promotion of Breastfeeding showed that colostrum was given by 97% of mothers in the intervention group compared to the control group (30%).<sup>14</sup> In yet another study on the effect of breastfeeding education programme, significantly more experimental mothers (p < 0.001) reported giving colostrum to study infants compared to their previous children.

In the present study, 17.1% of mothers had given prelacteal feeds to their babies, Ghutti, honey, and animal milk were the commonly used pre-lacteal feeds in the present study. Honey and water were commonly used as a pre-lacteal feed in rural West Bengal as reported by Mandal et al. <sup>15</sup>

In the present study, Exclusive breastfeeding prevalence was 82.9%, 78.6%, 69.7% in the first week after birth, 3rd month and 6th month, respectively. According to NFHS-3 data, Children who were exclusively breastfed (0–5 months) in national level is 46.3% and in Karnataka state was 59%.<sup>15</sup> A study on breastfeeding practices in villages of central Karnataka which studied 1050 infants aged between 0 and 24 months found that Exclusive Breastfeeding was noted in 94% at 1st month, 83.5% at 2nd month, 72.5% at 3rd month, 61.2% at 4th month, 43.4% at 5th month and 26.8% at 6th month of age.<sup>16</sup>

A systematic review study on intervention studies shows that compared to lactation consultation plus a Breastfeeding booklet with the provision of a BF booklet alone reported no significant differences between the two groups in EBF rates at three months (RR 0.85, 95% CI 0.68 to 1.08).<sup>17</sup> According to another study, there was a marginally significant increase in exclusive BF at six months in a group receiving a booklet plus video plus lactation consultation (LC) compared with the booklet plus video group. A BF booklet plus video plus LC was significantly better than no formal BF education for exclusive BF at three months (RR 2.23,95% CI 1.01 to 4.92)<sup>17</sup>. Similar to the present findings in a study conducted by Rajesh K Chudasama et al. reported that Prevalence of Exclusive Breastfeeding at three months was 97% which declined to 62% by six months of age of infants. Bivariate analysis



revealed no significant association between the interruption of exclusive Breastfeeding before six months of age and various demographic, socio-economic, maternal and infant characteristics.<sup>18</sup>

In the present study, 2.9% of mothers started complementary feeds like formula feeds and animal milk to the babies, within the first week of birth. The reason was the babies had low birth weight and were kept in NICU for a prolonged period after which the mother failed to lactate. At 3rd month and 6th month, 25.7% and 48.6% of mothers started complementary feeds respectively. In a Randomised control study of antenatal preparation for improving Breastfeeding, found that the mean age at which infants were complemented with solids was 17.24 weeks. In the group received a breastfeeding hand out, video and one session of lactation counselling started complement any feeding at 17.04 ± 3.6 weeks, mothers who received only hand out and video started solids at 17.75 ± 4.6 weeks, and infants in the group who did not receive any intervention started solids at 16.95 ± 3.1 weeks. The difference in these groups was not statistically significant ( $P = 0.313$ ).

In the present study, bottle feeding practice was not seen at the end of the first week but its seen in 30%, and 35.7% at 3rd month and 6th month respectively. According to NFHS-3 data, the prevalence of bottle feeding in the country is 14.8%.<sup>15</sup> Over one-third of study participants using bottle feeding at the end of the third and sixth month in spite of good knowledge about hazards of bottle-feeding calls for reinforcing that component in education to ensure that none use bottle feeds except when it's necessary on any medical conditions.

## 6. Conclusion

The educational intervention has clearly made improvement in the initiation of breastfeeding within 1 h after birth and colostrum feeding practice. It has shown a little improvement in the practice of exclusive Breastfeeding, increasing the age of introduction of complementary feeds.

Even with poor knowledge of the women before the intervention they had a positive attitude towards the Breastfeeding, which indicates the majority of women want to breastfeed their children, but there is lack of access to the right information and awareness about breastfeeding to the pregnant women. Therefore there is the need for regular antenatal education on breastfeeding to the pregnant women.

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## Declaration of competing interest

None.

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