

## Original Research Article

# Improvement in maternal child bonding and lactation establishment with antenatal counseling

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**Received:** 11 April 2023

**Revised:** 11 May 2023

**Accepted:** 17 May 2023

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## ABSTRACT

**Background:** Breastfeeding (BF) is best food source for infants to improve child health, maternal health and mother-infant bonding. We aimed to assess the effect of antenatal education in increasing the frequency and duration of breast feeding and helpful in increasing the intimacy of mother and child and further improve the maternal and fetal outcomes.

**Methods:** It is a prospective, randomized and interventional study held at tertiary care hospital for 18 months on 200 pregnant females. The counselled group (n=100) received one session of antenatal breastfeeding education, while the non-counselled group received routine antenatal obstetric care with no special intervention applied.

**Results:** It was observed that the mean age and education of the mothers in the counselled as well as non-counselled group was statistically similar. The mean ANC visits, early initiation of BF, mean BSES and exclusive BF, were significantly higher in the counselled group as compared to non-counselled group. Complications are more in non-counselled group mothers.

**Conclusions:** This study results demonstrate that a meaningful breastfeeding support and clinical health education can improve exclusive BF and BF self-efficacy with lowers the risk of complications.

**Keywords:** Antenatal counseling, Breastfeeding, Child health, Maternal health

## INTRODUCTION

Breastfeeding prevalence varies dramatically across the world, with high-income countries consistently outperforming middle and low income countries on nearly every conventional breastfeeding measure (e.g., "ever breastfed" to "breastfeeding at 12 months").<sup>1</sup> Because of diseases and illnesses such as pneumonia and diarrhea, infant mortality rates are expected to be around 12% higher when babies are not breastfed.<sup>2</sup> As a result, breastfeeding has the well-documented preventive effect of any process.<sup>3</sup>

Furthermore, the beneficial effects of breastfeeding, especially exclusive breastfeeding, on an infant's healthy growth and development have been well reported, and not breastfeeding has been linked to an increased risk of gastroenteritis, respiratory tract infections, obesity, and neuro-developmental behavioral issues.<sup>4</sup> Breast, ovarian cancer, obesity, type 2 diabetes, and postpartum depression are higher risks for mothers who do not breastfeed.<sup>5</sup> It's no surprise, then, that exclusive breastfeeding has been established as a priority region, with global goals recently increased from 50% exclusively breastfed children at 6 months by 2025 to at least 70% by 2030.<sup>6</sup>

Sinha et al, found in a systematic study that treatments that are nuanced and implemented in a variety of environments are more successful (for example, Interventions in health systems, like the BFHI, were highly effective).<sup>7</sup> Breastfeeding counseling is described by the World Health Organization (WHO) as health-care workers assisting mothers and infants in making decisions, addressing challenges, and implementing optimal feeding practises.<sup>8</sup>

A key component is the partnership between a healthcare worker and a mother, which can aid women in their decision-making. Counseling is therefore a form of preventative intervention that emphasizes the dyadic relationship between a healthcare worker and a mother rather than the top-down approach that is frequently associated with education-based interventions. As a result, counseling is a form of care provided directly to mothers and children.

Although all counseling comes under the umbrella of support, not all support interventions provide it. This research excludes studies that focus solely on higher-level approaches, such as expanded preparation for support staff or policy interventions.<sup>9</sup> The aim of this research was to see whether antenatal breast-feeding counseling influenced breastfeeding child bonding and lactation establishment.

## METHODS

This was a prospective, randomized and interventional study conducted at outpatient clinic, Department of Obstetrics and Gynecology, Tertiary Care Hospital, Mumbai, Maharashtra (MH), India for 18 months (February 2019 till July 2020).

### Inclusion criteria

Mothers were willing for participation, if they were more 34 weeks of gestation at the time of delivery, expressed intention for breast feeding, and no illness that will contraindicate breast feeding were included.

### Exclusion criteria

Women not fit to feed due to medical illnesses and multiple pregnancies, and not give consent for the study were excluded.

### Sampling and randomization

Sample size was calculated using the following formula:

$$N = (Z_{\alpha/2} + Z_{\beta}) \times PQ \times 2 / d^2$$

Where, N = Sample size,  $Z_{\alpha/2}$  = Z value at 1% error (2.58),  $Z_{\beta}$  = Z value at 10% (1.28),  $P = (p_1 + p_2) / 2$ ,  $Q = 1 - P$ ,  $P_1$  = Araban et al<sup>10</sup> reported rate of EBF in the counselling group to be 57.1%,  $P_2$  - Araban et al<sup>10</sup> reported rate of

EBF in the non-counselling group to be 38.9%, d-effect size (taken as 0.15).

$$N = \frac{(12.58 + 1.28) \times 0.48 \times 0.52 \times 2}{(0.15)^2}$$

$$N = 85.64$$

So, by rounding off, we will be taking 100 subjects in each group i.e. a total of 200 subjects.

During the study period, two groups were formed of 100 antenatal mothers each. Each eligible consecutive antenatal mother was randomized to either of the two groups. Random allocation was done by an uninvolved person in sampling and data collection processes. Allocation concealment was done by writing the type of allocation on pieces of paper and placing them in consecutively numbered, opaque, sealed packets. Packets were opened in the order of participant entry in the study and they were allocated into either the counseling or non-counselled group. Counselling group was received one session of antenatal breastfeeding education and non-counselled group was women received routine antenatal obstetric care with no special intervention applied.

### Intervention

One session of antenatal breastfeeding education, in which mothers of Group II were shown an educational video entitled about breastfeeding, which introduced the benefits of breastfeeding, demonstrated correct positioning, latch on, and breast care, and discuss common concerns. They were also given printed guides on breast feeding and an opportunity to talk to a lactation counsellor for about 15 minutes.

### Outcome measures

We assessed the association of counseling on the following outcome measures at one week, 3 months and 6 months after delivery: 1) Breastfeeding: a. Initiation of breastfeeding b. Feeding type c. Duration of breast feeding. 2) Complications: a. Breast pain b. Refusal to feed c. Neonatal hospitalization. 3) BSES: It is a 33-item self-report instrument developed to measure breastfeeding confidence. All items are preceded by the phrase "I can always" and are anchored by a 5-point Likert-type scale, with 1= not at all confident and 5= always confident.

### Data collection

Data were collected using a pre-designed semi-structured study proforma. Demographic information of the mothers like age, religion and education level were noted for all participants. Details were obtained about their antenatal care and number of antenatal visits they obtained were noted. We also noted the mode of delivery in each case. After delivery of the baby, information regarding the

breastfeeding outcomes and any maternal or neonatal complications were noted as well. The mothers were asked the item points of BSES. All the post-delivery outcomes were measured at 1 week, 3 months and 6 months, from the date of delivery.

**Statistical analysis**

The analysis included describing the patients based on different demographic, parameters. Descriptive analysis of quantitative parameters was expressed as means and standard deviation. Ordinal data were expressed as absolute number and percentage. Cross tables were generated and chi square test was used for testing of associations student t test was used for comparison of quantitative parameters. BSES measured at 1 week, 3

months and 6 months were compared within the same group using repeat measure ANOVA test. P-value <0.05 is considered statistically significant. All analysis were done using SPSS software, version 24.0.

**RESULTS**

It was observed that the mean age of the mothers in the counselled as well as non-counselled group was statistically similar (25.18±2.97 vs 24.95±1.70 years, p value = 0.72) (Table 1). In addition, the distribution of mothers in the two groups according to their education status was also statistically similar (Table 2). The mean ANC visits were significantly higher in the counselled group as compared to non-counselled group (8.06±2.03 vs 4.4±2.16 visits), p value <0.01) (Table 3).

**Table 1: Distribution of mothers according to their age.**

Age groups (Years)		Study group (counselled)	Study group (non-counselled)	Total	P value
<b>Up to 25</b>	N	49	53	102	0.76*
	%	49.00	53.00	51.00	
<b>&gt; 25</b>	N	51	47	98	
	%	51.00	47.00	49.00	
<b>Total</b>	N	100	100	200	
	%	100.00	100.00	100.00	
<b>Mean age</b>		25.18+/- 2.97	24.95+/- 1.70		0.72**

\*Analyzed using chi-square test; \*\*Analyzed using student's t test

**Table 2: Distribution of mothers according to their education.**

Education		Study group (counselled)	Study group (non-counselled)	Total	P value
<b>Graduate</b>	N	85	80	165	0.45*
	%	85.00	80.00	82.50	
<b>Higher secondary</b>	N	15	12	27	
	%	15.00	12.00	13.50	
<b>Primary</b>	N	0	4	4	
	%	0.00	4.00	2.00	
<b>Secondary</b>	N	0	4	4	
	%	0.00	4.00	2.00	
<b>Total</b>	N	100	100	200	
	%	100.00	100.00	100.00	

\*Analysed using chi-square test

**Table 3: Distribution of mothers according to the number of ANC visits.**

Number of ANC visits		Study Group (Counselled)	Study Group (Non-counselled)	Total	P value
<b>Up to 4</b>	N	7	51	58	<0.01*
	%	7.00	51.00	29.00	
<b>5 to 8</b>	N	47	46	93	
	%	47.00	46.00	46.50	
<b>&gt; 8</b>	N	46	3	49	
	%	46.00	3.00	24.50	
<b>Total</b>	N	100	100	200	
	%	100.00	100.00	100.00	
<b>Mean ANC visits</b>		8.06+/- 2.03	4.4+/- 2.16		<0.01**

\*Analyzed using chi-square test; \*\*Analyzed using student's t test

**Table 4: Comparison of early breast feeding (BF) between the two study groups.**

Early initiation of BF		Study group (counselled)	Study group (non-counselled)	Total	P value
<b>No</b>	N	0	15	15	<0.05*
	%	0.00	15.00	7.50	
<b>Yes</b>	N	100	85	185	
	%	100.00	85.00	92.50	
<b>Total</b>	N	100	100	200	
	%	100	100	100	

\*Analyzed using chi-square test

**Table 5: Comparison of feeding type between the two study groups.**

	Feeding type		Study group (counselled)	Study group (non-counselled)	Total	P value
<b>At 1 week</b>	CF	N	0	11	11	<0.01*
		%	0	11	5.50	
	EBF	N	100	86	186	
		%	100	86.00	93.00	
	No BF, only substitute	N	0	3	3	
%		0.00	3.00	1.50		
<b>At 3 months</b>	CF	N	0	22	22	<0.05*
		%	0	22.00	11.00	
	EBF	N	100	74	174	
		%	100	74.00	87.00	
	No BF, only substitute	N	0	4	4	
%			4	2.00		
<b>At 6 months</b>	CF	N	5	25	30	<0.05*
		%	5	25	15.00	
	EBF	N	95	71	166	
		%	95	71	83.00	
	No BF, only substitute	N	0	4	4	
%		0	4	2.00		
<b>Total</b>	N	100	100	200		
	%	100	100	100		

\*Analyzed using chi-square test

**Table 6: Comparison of duration of breastfeeding between the two study groups.**

	Duration of breast feeding		Study group (counselled)	Study group (non-counselled)	Total	P value
<b>At 1 week</b>	NA	N	0	3	3	<0.05*
		%	0.00	3.00	1.50	
	<5 minutes	N	0	5	5	
		%	0.00	5.00	2.50	
	5 to 10 minutes	N	100	92	192	
%		100.00	92.00	96.00		
<b>At 3 months</b>	NA	N	0	4	4	<0.05*
		%	0.00	4.00	2.00	
	<5 minutes	N	8	16	24	
		%	8.00	16.00	12.00	
	5 to 10 minutes	N	92	80	172	
%		92.00	80.00	86.00		
<b>At 6 months</b>	NA	N	0	4	4	<0.01*
		%	0.00	4.00	2.00	
	<5 minutes	N	6	18	24	

Continued.

Duration of breast feeding		Study group (counselled)	Study group (non-counselled)	Total	P value
5 to 10 minutes	%	6.00	18.00	12.00	
	N	94	78	172	
		%	94.00	78.00	86.00
<b>Total</b>		N	100	100	200
		%	100.00	100.00	100.00

\*Analyzed using chi-square test

**Table 7: Comparison of breast pain between the two study groups.**

Breast pain		Study group (counselled)	Study group (non-counselled)	Total	P value	
<b>At 1 week</b>	No	N	95	83	178	<0.05*
		%	95.00	83.00	89.00	
	Yes	N	5	17	22	
		%	5.00	17.00	11.00	
<b>At 3 months</b>	No	N	94	81	175	<0.05*
		%	94.00	81.00	87.50	
	Yes	N	6	19	25	
		%	6.00	19.00	12.50	
<b>At 6 months</b>	No	N	93	79	172	<0.05*
		%	93.00	79.00	86.00	
	Yes	N	7	21	28	
		%	7.00	21.00	14.00	
<b>Total</b>		N	100	100	200	
		%	100.00	100.00	100.00	

\*Analyzed using chi-square test

**Table 8: Comparison of refusal to feed between the two study groups.**

Refusal to feed		Study group (counselled)	Study group (non-counselled)	Total	P value	
<b>At 1 week</b>	No	N	98	90	188	<0.05*
		%	98.00	90.00	94.00	
	Yes	N	2	10	12	
		%	2.00	10.00	6.00	
<b>At 3 months</b>	No	N	98	91	189	<0.05*
		%	98.00	91.00	94.50	
	Yes	N	2	9	11	
		%	2.00	9.00	5.50	
<b>At 6 months</b>	No	N	100	92	192	<0.05*
		%	100.00	92.00	96.00	
	Yes	N	0	8	8	
		%	0.00	8.00	4.00	
<b>Total</b>		N	100	100	200	
		%	100.00	100.00	100.00	

\*Analyzed using chi-square test

Early initiation of breast feeding was started in 100% of the counselled mothers, while 85% of the non-counselled mothers initiated breastfeeding early (p value <0.05) (Table 4). We observed that exclusive breast feeding was done in significantly higher proportion in the counselled mothers as compared to non-counselled group (Table 5).

We observed that the duration of breast feeding was 5 to 10 minutes in significantly higher proportion of counselled mothers as compared to non-counselled mothers (Table 6).

The incidence of breast pain was significantly higher in the non-counselled mothers as compared to counselled mothers (Table 7). The incidence of feed refusal was significantly higher in the non-counselled mothers as

compared to counselled mothers (Table 8). The incidence of neonatal hospitalization was significantly higher in the non-counselled mothers as compared to counselled mothers at one week, but not at 3 and 6 months (Table 9).

**Table 9: Comparison of neonatal hospitalization between the two study groups.**

	Neonatal hospitalization		Study group (counselled)	Study group (non-counselled)	Total	P value
	No	N				
At 1 week	No	N	100	94	194	<0.05*
		%	100.00	94.00	97.00	
	Yes	N	0	6	6	
		%	0.00	6.00	3.00	
At 3 months	No	N	98	93	191	0.08*
		%	98.00	93.00	95.50	
	Yes	N	2	7	9	
		%	2.00	7.00	4.50	
At 6 months	No	N	99	96	195	0.17*
		%	99.00	96.00	97.50	
	Yes	N	1	4	5	
		%	1.00	4.00	2.50	
Total		N	100	100	200	
		%	100.00	100.00	100.00	

\*Analyzed using chi-square test

**Table 10: Comparison of mean BSES between the two study groups.**

BSES	Study group				P value*
	Counselled		Non-counselled		
	Mean	SD	Mean	SD	
At 1 week	126.76	5.21	102.03	2.68	<0.01*
At 3 months	130.34	2.66	105.06	1.44	<0.01*
At 6 months	134.96	2.05	107.15	2.97	0.23*
P value**	<0.01**		<0.01**		

\*Analyzed using paired t test; \*\*Analyzed using repeat measure ANOVA test

We found that the mean BSES was significantly higher in the counselled group as compared to non-counselled group at 1 week (p value < 0.01) and 3 months (p value <0.01). However, the two study groups had statistically similar mean BSES at 6 months follow up point (p value = 0.23). Within the group, we observed that the mean BSES improved at each subsequent visit for the counselled mothers (p value <0.01) as well as for the non-counselled mothers (p value <0.01) (Table 10).

**DISCUSSION**

This prospective, randomized and interventional study was done by including 200 antenatal mothers. We aimed to assess the effect of antenatal breastfeeding counseling on the breastfeeding child bonding and lactation establishment. The counselled group (n=100) received one session of antenatal breastfeeding education, while the non-counselled group received routine antenatal

obstetric care with no special intervention applied. The following discusses the observations made in the study.

**Baseline characteristics of study participants**

It was observed that the mean age of the mothers in the counselled as well as non-counselled group was statistically similar (25.18±2.97 verses 24.95±1.70 years, p value = 0.72) (Table 1).

In addition, the distribution of mothers in the two groups according to their education status was also statistically similar. Thus both the groups had similar baseline demographics (Table 2). However, the mean ANC visits were significantly higher in the counselled group as compared to non-counselled group (8.06±2.03 verses 4.4±2.16 visits), p value <0.01). The difference between the two study groups with respect to the number of ANC visits could be a chance finding (Table 3).

In a similar study from Iran by Shafaei et al, 108 mothers were randomized to either counselled and non-counselled groups<sup>11</sup>. Mean age of the mothers in the counselled and non-counselled groups was 32.5 and 30.2 years respectively.” University education was obtained by 7.4% in the counselled group and 33.3% in the non-counselled group.

In another study, by Franco et al in Spain, 44 mothers were randomized to receive either brief motivation intervention or standard education (control).<sup>12</sup> Mean age of the mothers was 32.4 and 33.25 years in the counselled and control group respectively. University education was obtained by 26.1% and 34.1% in the counselled and control group respectively.

Piro et al assigned eligible antenatal mothers either into intervention (n = 65) or control (n = 65) group in a random way through generating a random digit number.<sup>13</sup> Both control and experimental groups were similar in age (26.80 vs 26.38 years, p value = 0.724); age at marriage (20.26 vs. 20.94 years, p value = 0.360); education (7.58 vs. 8.25 years, p value = 0.472).

Araban et al from Iran included 110 antenatal mothers and randomized them to either intervention group (n=56) or control group (n=54).<sup>14</sup> They reported mean age of the participants in the intervention group was 24.1±3.5 years and in the control group was 23.12±3.03 years. In their study, intervention mothers had a mean of 5.5 and control mothers had 4.8 ANC visits. Also, the mean birth weight was similar in the two study groups.

In the study by Wu et al, 74 participants were recruited and randomized: 33 in the intervention group and 34 in the referent group completed follow-up.<sup>15</sup> The ages of mothers ranged from 21–35 years, with a mean age of 28.07 years.

We observed that early initiation of breast feeding was started in 100% of the counselled mothers, while 85% of the non-counselled mothers initiated breastfeeding early (p value <0.05) (Table 4).

We observed that EBF was done in significantly higher proportion in the counselled mothers as compared to non-counselled group at 1 week, 3 months and 6 months (Table 5). It is likely that the greater success obtained in our study in terms of the prevalence of EBF could be associated with crucial differences in the design of education given. First, we use a therapeutic approach that focused on improving self-efficacy as recommended by a recent meta-analysis.<sup>16</sup> Second, to enhance the possible effect of this approach, we identified the best moment to perform the intervention, taking advantage of the ‘teachable moment’ that occurs when individuals experience a change in their role, such as when mothers give birth and start to breastfeed.<sup>17</sup> Third, we added phone boosters (first and third months) after discharge as a fundamental part of our intervention.<sup>18</sup>

We observed that the duration of breast feeding was 5 to 10 minutes in significantly higher proportion of counselled mothers as compared to non-counselled mothers at 1 week, 3 months and 6 months (Table 6).

It was found in the present study that the incidence of breast pain, feed refusal was significantly higher in the non-counselled mothers as compared to counselled mothers at 1 week, 3 months and 6 months (Table 7 and 8). The incidence of neonatal hospitalization was significantly higher in the non-counselled mothers as compared to counselled mothers at one week, but not at 3 and 6 months (Table 9).

### **Breastfeeding self-efficacy scale (BSES)**

We found that the mean BSES was significantly higher in the counselled group as compared to non-counselled group at 1 week (p value <0.01) and 3 months (p value <0.01). However, the two study groups had statistically similar mean BSES at 6 months follow up point (p value = 0.23). Within the group, we observed that the mean BSES improved at each subsequent visit for the counselled mothers (p value <0.01) as well as for the non-counselled mothers (p value <0.01) (Table 10).

This study has some limitations. A longer follow up could not be performed. Breastfeeding is strongly influenced by certain cultural factors. Therefore, it is possible that the effect of the intervention on breastfeeding may not be extrapolatable to other populations with substantial sociocultural differences. Subjectivity of mother responses could introduce bias. We could not measure self-efficacy in the prenatal period as BSES is more suitable for measuring self-efficacy in the post-partum period.

### **CONCLUSION**

Based on the results of the present study, we conclude that early initiation of breast feeding, exclusive breast feeding and longer duration of breast feeding was observed significantly more common in mothers who were counselled as compared to those who were not counselled. The incidence of breast pain, feed refusal and neonatal hospitalization was significantly lower in the counselled mothers as compared to non-counselled mothers. BSES was significantly higher in mothers who were counselled as compared to non-counselled mothers at 1 week and 3 months. Our results demonstrate that a meaningful breastfeeding support and clinical health education can improve breastfeeding self-efficacy. It is therefore recommended that nurses and other healthcare staff should provide self-efficacy intervention to educate antenatal mothers about breastfeeding. Further testing of this intervention should be conducted in larger samples and with diverse populations. Additionally, future research is required to identify whether there is an optimal time for the delivering the educational intervention. In particular, future investigators may

consider an extension of the intervention throughout the postpartum period so new mothers receive continued breastfeeding support.

## ACKNOWLEDGEMENTS

Authors would like to thank Dr. Prema Kania, Consultant Obstetrics and Gynaecology, Bombay Hospital Institute of Medical Sciences, Mumbai, Maharashtra, India, Dr. Avinash Giri, Medical Officer, Mechanized Infantry Regiment Centre (MIRC), Ahmednagar, Maharashtra, India for assisting with the study work.

*Funding: No funding sources*

*Conflict of interest: None declared*

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

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**Cite this article as:** Meshram PS, Kania P, Giri AB. Improvement in maternal child bonding and lactation establishment with antenatal counseling. *Int J Res Med Sci* 2023;11:2166-73.