

Effect of antenatal breastfeeding counselling done in-hospital prior to delivery on breast feeding outcomes amongst mothers admitted at a tertiary care hospital in middle India

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Abstract

Introduction: Antenatal counseling and postnatal support aided early initiation and exclusive breastfeeding ensure optimum childhood nutrition and reduced morbidity/mortality. **Objective:** To evaluate the effect of immediate antenatal counselling on breastfeeding outcomes in terms of early initiation and establishment. **Methods:** This study was conducted over one-year period including pregnant women with term gestation admitted for anticipated delivery and excluding mothers delivering baby with orofacial or multiple anomalies or babies who required hospitalization within 24 hours. All expectant mothers (irrespective of prior antenatal counseling status) were counseled before delivery after hospitalization. Controls were those who could not be counseled before delivery due to reasons like emergency delivery/LSCS. **Sample size-** taking power of 80% with 95% C.I., we required 1884 subjects. Data collected on Microsoft Excel sheet was analysed using SPSS software. **Results:** Out of 1884 mothers enrolled irrespective of prior antenatal breastfeeding counseling, 1328 cases (70.4%) were counseled prior to delivery and rest 556(29.6%) could not be counseled (considered as control). Among freshly counseled mothers, 65.5% initiated early (within 1hr after NVD or within 4hours of LSCS) and 89% established adequate breastfeeding within 24 hours compared to 46% early initiation (EI) and 54% early establishment (EE) in non-counseled group. Mean hours taken foradequately established breastfeeding was also lower in subjects who received immediate counseling prior to delivery. **Conclusion:** Antenatal breastfeeding counseling including that done in-hospital prior to deliveryhelps in early initiation and establishment of breastfeeding.

Key words: Breastfeeding, Antenatal counseling, Early initiation, Establishment, Exclusive

Introduction

Breast milk is considered as the ideal food for newborns and infants. The two most common childhood illnesses responsible for childhood mortality are diarrhea and pneumonia. Breast milk contains antibodies that help to protect infants from such infections and thus is an effective means of reducing infant illness and mortality at the community level. Breast milk also helps in quick recovery in case of illnesses [1]. Breast milk contains appropriate amount of nutrients including protein, carbohydrate, fat, minerals and vitamins required for the optimal growth of the infant [2]. Along with short-term benefits, breastfeeding has some long-term benefits too.

A systematic review conducted by WHO suggests that there is causal effect of breastfeeding on Intelligence Quotient (IQ). Longer duration of breastfeeding may provide some protection against obesity and type-II diabetes mellitus [3].

Exclusive breast-feeding means that the infant receives only breast milk and no other solid or liquid diet including water during first six month of infancy, with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines [4]. Despite the fact that the overall rate of exclusive breastfeeding is not high, a study by Mullany et al indicated that there has been a lot of improvement in exclusive breastfeeding in between 1990 to 2004 [5]. Yet again another data from NFHS-3(2005-06) showed

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that the recommendations on breastfeeding is not being achieved optimally, which is highly influenced by the socio-demographic determinants, feeding practices on the maternity wards, education level of parents and number of children [6]. Similarly, other factors like lower breastfeeding knowledge, attitudes towards breast feeding and number of children also affected the confidence regarding breastfeeding among mothers [7].

Breastfeeding counseling is the process of counseling the women to exclusively breastfeed their baby so as to enhance positive breastfeeding outcome. Counseling is very important in developing mothers' confidence also [8,9]. Effective counseling and adequate information about breastfeeding received during pregnancy period influences the initial breastfeeding intentions resulting in the favorable and longer breastfeeding outcome [10,11].

Most of the previous studies on antenatal breastfeeding counseling have included usually routine counseling during 2nd and/or 3rd trimesters, but in our study we tried to include in-hospital counseling intervention prior to delivery to assess the impact of immediate antenatal counseling and also that after both occasions-immediate plus past counseling.

Material and Method

This prospective observational study was conducted over one year period including all pregnant women with term gestation admitted in the department of Obstetrics and Gynecology at Dr Bhim Rao Ambedkar Memorial Hospital associated with Pt JNM Medical College, Raipur (CG, India) for anticipated delivery and excluding mothers delivering baby with orofacial or multiple anomalies or babies who required hospitalization within 24 hours. All expectant mothers (irrespective of prior antenatal counseling status) were counseled before delivery after hospitalization. Controls were those who could not be counseled before delivery due to reasons like precipitous labour/emergency delivery/caesarian. *Sample size*- as calculated by taking power of 80% with 95% C.I. using G-Star power software, we required total 1884 subjects. Data collected on Microsoft Excel sheet was analysed using SPSS© for windows™ Version 17, IBM™ Corp NY and Microsoft excel™ 2007, Microsoft® Inc USA.

Results

We could recruit total 1884 mothers during the study period. Demographically, maximum number of subjects were in the age group 18-30 years (98.8%) and 1.1% subjects were >30 years, while only 0.1% mothers were <18 years group. Common educational qualification in our literate subjects was upto high school (in 25.3%) and higher secondary (in 19.3%), but maximum of mothers we had enrolled were illiterate (33.8%). More than half (52 %) subjects were

Data Collection and study methodology: Prior consent was obtained from all participants/ eligible mothers. Antenatal breastfeeding counseling was done by us preferably within 6 hours before delivery to all expectant mothers (irrespective of prior ANC counseling status) explaining benefits of early initiation and exclusive breastfeeding and correct methods of feeding by using posters, pictures and written counseling materials (from WHO training material). Mothers whose baby needed NICU admission within 24 hours of birth were excluded from study (even if counseled as study subject).

Outcome Measures: Initiation of breastfeeding within first hour after normal delivery or within four hours after Caesarian section was considered as 'Early Initiation', while establishment of adequate breast feeding within 24 hours of delivery was taken as 'Early Establishment'.

Primary outcome was evaluated as difference on frequency of early initiation and established breast feeding in two study groups (in-hospital counseled and non-counseled before delivery). Another major objective was to detect association between same outcomes (early initiation & early establishment) and counseling at both occasions (immediate prenatal plus previous ANC visits).

Secondarily, we calculated the percentage of mothers who initiated breastfeeding timely (even at least by 24 hours of delivery) and the mean time required for establishment of breastfeeding with and without pre-delivery breastfeeding counseling in both occasions (immediate and past ANC visits).

Statistical Analysis

- Data was expressed as percentage and mean \pm S.D.
- Student's t test was used to check the significance of difference between two parameters in parametric data and Mann Whitney U test was used to check the significance of difference in non parametric data
- Fischer's exact test or Chi square test was used to analyze the significance of difference between frequency distribution of the data.
- P value <0.05 was considered for statistical significance.

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housewives; while 18.3% subjects were health care workers by occupation, 17.6% subjects were labourer and 8.6% study subjects were involved in farming. Maximum number of subjects were having 2nd gravida (35.2%) during this study followed by primigravida (30.5%) and 3rd gravida (26.4%). Majority of our subjects were primi and 2nd gravida, who actually need counseling more than mothers having multiple child birth and breastfeeding experience with/without repeated hospital visit. Pre-counseling knowledge regarding breast feeding benefits and practices was found to be satisfactory in 67% mothers, however lack of this knowledge was evident in 33% mothers. Among our study subjects, 95.5% mothers showed positive attitude towards breast feeding while 4.5% had pre-counseling negative attitude too. Normal vaginal delivery occurred in 52.5% subjects while 47.5% subjects needed to undergo Caesarean/LSCS. Out of total 1884 singleton babies born to our study subjects, percentage of male among babies born was marginally high (51.1%) compared to 48.8% female babies.

Following were major observations in our study- (represented here as tables followed by text):

Table-1: In-hospital Breastfeeding counseling prior to delivery.

Breastfeeding counseling prior to delivery (immediate/in-hospital)	Frequency	Percent
YES (study group)	1328	70.4
NO (control group)	556	29.6
Total subjects	1884	100.0

Breastfeeding counseling immediately prior to delivery was done in 70.4% of subjects, however no such in-hospital counseling could be performed in 29.6% enrolled mothers. Out of our study subjects, 35% were first time counseled by us in-hospital during this delivery only and rest 35.4% of total subjects received our immediate prenatal counseling as a second or repeat occasion.

Table-2: Prior antenatal breastfeeding-counseling status.

Prior antenatal breastfeeding-counseling status (during previous ANC visits or during 2 nd and/or 3 rd trimester)	Frequency	Percent
NO	1134	60.2
YES	750	39.8
Total	1884	100.0

Around 40% of all mothers enrolled were already counselled during 2nd and/or 3rd trimester of present pregnancy or ever before during previous ANC visits, but above 60% had no prior antenatal counselling in our subjects.

Table-3: Early Breastfeeding initiation within 1 hour after NVD or 4hr of LSCS in all study subjects

Early Breastfeeding initiation (within 1 hr after NVD or 4hr of LSCS) in all subjects	Frequency	Percent
YES	1234	65.5
NO	650	35.5
Total	1884	100.0

Early breastfeeding initiation within 1 hour of NVD or within 4hr of LSCS (timely initiation) was observed in 65.5% subjects, however more than a third subject (35.5%) had delayed initiation.

Table-4: Breastfeeding established within 24 hours of delivery (among all study subjects)

Breastfeeding established within 24hrs of delivery	Frequency	Percent
NO	267	14.2
YES	1617	85.8
Total	1884	100.0

In this study, 85.8% subjects could establish adequate breast feeding within 24 hour of delivery, while it was delayed beyond 24 hours in 14.2% of subjects.

Table-5: Breast feeding established by duration (in Hours) in all subjects

Breastfeeding established by duration (in Hours)	Frequency	Percent
≤ 12	961	51.0
13-24	659	35.0
>24	264	14.0
Total	1884	100.0

More than 50% mothers could establish feeding in ≤ 12 hrs and 86% of all mothers established it within 24 hours of child-birth. Only 14 % of all subjects had delayed establishment of breastfeeding.

Table-6: Association between Early Breastfeeding- Initiation and immediate in- hospital BF counseling prior to delivery.

Early Breastfeeding- Initiation (within 1 hr after NVD or 4hr of LSCS)	In-hospital breastfeeding counseling prior to delivery		Total
	NO	YES	
NO	300	350	650
	54.0%	26.4%	34.5%
YES	256	978	1234
	46.0%	73.6%	65.5%
Total	556	1328	1884
	100.0%	100.0%	100.0%

Significant association was found between early initiation of breastfeeding and in-hospital counseling as analyzed by Fisher Exact test ($p=0.0005$) indicating higher rate of timely initiation in subjects counseled prior to delivery irrespective of previous antenatal counseling and knowledge status.

Table-7: Association of Early Breastfeeding-initiation with frequency of ANC Visits

No. of ANC Visits	Early Breastfeeding- Initiation		Total
	NO	YES	
≤ 3	444	790	1234
	68.4%	64.1%	65.6%
>3	205	442	647
	31.6%	35.9%	34.4%
Total	649	1232	1881
	100.0%	100.0%	100.0%

Significant association between above two parameters was found (Exact test significant, p value=0.035) indicating higher frequency of timely initiation of BF in subjects with more ANC visits.

Table-8: Association of Early Breastfeeding-Initiation with Counseling at both occasions (Immediate/In-hospital and prior antenatal visits).

Early Breastfeeding- Initiation	Counseling at both occasion		Total
	NO	YES	
NO	591	59	650
	46.3%	9.7%	34.5%
YES	685	549	1234
	53.7%	90.3%	65.5%
Total	1276	608	1884
	100.0%	100.0%	100.0%

Significant association was found between two parameters in both Pearson chi-square test as well as Fischer's Exact test with 2-sided significance ($p= 0.000$) indicating higher timely initiation of BF rate in subjects counseled in two or more occasions (immediately prior to delivery and previous antenatal visits).

Table-9: Association of Breastfeeding-Establishment within 24hours of delivery with Counseling at both occasions

Established breastfeeding within 24 of delivery	Counseling at both occasions		Total
	NO	Yes	
NO	182	85	267
	14.3%	14.0%	14.2%
YES	1094	523	1617
	85.7%	86.0%	85.8%
Total	1276	608	1884
	100.0%	100.0%	100.0%

Association of timely breastfeeding-establishment by 24hrs and counseling at both occasions was performed using Chi square test but no significant association was detected.

Table-10: Comparison of time taken in hours for established breastfeeding amongst subjects who were counseled at both occasions (immediate plus past antenatal).

Time taken to have established breastfeeding (in Hrs)		N	Mean (Hours)	Std. Deviation	Std. Error Mean	T	P value
Counseling at both occasions	NO	1276	21.3009	12.23971	.34265	.309	.757
	YE	608	21.1184	11.84020	.48018		

Analysis was performed using student's unpaired t test. Although the difference failed to reach statistical significance, the breastfeeding-establishment time was found to be lower in subjects who received counseling in more than one occasion or got counseling awareness in multiple sessions including fresh in-hospital counseling and breastfeeding support.

Discussion

While breast feeding practices in India have improved over time, some of harmful practices are still continuing like use of prelacteals, non-use of colostrum, early top feeding and weaning etc. In this study, it was investigated whether antenatal breastfeeding counseling prior to delivery improves outcomes of breast feeding in terms of early initiation, establishment of breast feeding, and role of various other factors affecting timely initiation/ establishment/exclusivity of breastfeeding.

Out of 1884 mothers, maximum were in age group 18-30 yrs (98.8%) with only 0.1% being under 18 yrs amongst our study subjects. Maximum number of subjects had second gravida (35.2%) followed by primigravida (30.5%) and rest were already multipara mothers. One third of mothers were illiterate (33.8%), while about 45% were educated upto high or higher school. Over half of subjects were housewives, around 25% were labourer or farming laborers by occupation,

and 18.3% subjects were themselves health care workers. Most of them belonged to lower socio-economic status (>58%). Nearly 60% subjects were from joint families. Normal institutional vaginal delivery was performed in 52.5% subjects, while 47.5% of mothers delivered their baby after elective LSCS. Percentage of male babies born was marginally higher (51% versus 49% females) in this study group.

More than 3/4th subjects were ANC booked and around 20% mothers had never attended ANC clinic, most being primipara. Prior antenatal counseling during 2nd or 3rd trimester was already received by only 40% subjects, while rest of 60% were never formally counseled ever before. Immediate breastfeeding counseling before delivery could be performed in 70.4% of our subjects.

Early initiation of breastfeeding (within 1 hour of NVD and within 4hrs of LSCS) was observed in 65.5% of all

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subjects; however, as more as 85% of mothers could initiate breastfeeding within 24 hours of birth and at least by this time limit, exclusive breast feeding can be more assured. In context of early establishment of breastfeeding, overall as high as 86% of subjects could establish adequately within 24 hours, although more than half (51%) mothers established it even earlier within ≤ 12 hours of child birth, that was another rewarding observation in this study conducted in a so called backward state in middle India.

Mean time of adequately established breastfeeding in our study was 21.2hrs, with no statistically significant difference between counseled and non-counseled groups.

Mullany et al in their study from Nepal reported that despite all (100%) mothers adopting breastfeeding practice, the initiation of breastfeeding within one hour (only in 3.4% of mothers) and the practice of exclusive breastfeeding for adequate duration (observed in 28%) were disappointing (i.e. 72% of the infants were partially breastfeed) [5]. The status of breastfeeding and complementary feeding practices is very dismal in India too. According to the NFHS- 3(2005-06), the initiation of breastfeeding within one hour of birth was only 24.5% [6]. However, more recent data from the DLHS-3 (2007-08) shows slight improvement up to an average of 40.2% [7]. An analysis of data of 534 districts, revealed that rate of initiation of breastfeeding within an hour was between 0-29% in 138 districts, 30-49% in 197 districts, 50-89% in 194 and above 90% rate was seen only in 5 districts.

According to DLHS-3, in 485 districts exclusive breastfeeding for the first six month is below 50% [7]. The NFHS-3 also reported exclusive breastfeeding up to the age of six month to be only 46.4% in India. Further analysis of age wise data also reveals that exclusive breastfeeding rapidly declines from first month to sixth month, and only about 27.6 % children continue it by six month, giving a real low figure of exclusive breastfeeding [6].

Setgen et al in their study reported that timely initiation of breastfeeding was significantly associated with place of residence, educational status, institutional delivery, and post-natal advice on breast feeding. Urban mothers were more likely to initiate breastfeeding early as compared to their rural counterparts which was 73.5% and 47.3%, respectively ($P < 0.001$). Mothers who had formal education were 1.4 times as likely to initiate breastfeeding within the first hour after delivery as compared to those mothers who had no formal

education. Mothers who delivered in health institutions were twice as likely initiate breastfeeding as compared to those delivered at their home. Setgen also reported that mothers counseled on postnatal period were about 52% more likely to initiate breastfeeding within the first hour of delivery [12].

Wolde et al too reported findings similar to us stating that advice given to mother on breast feeding during antenatal care visits and knowing importance of colostrum were positively associated with timely initiation of breastfeeding [13].

Association between early initiation and immediate counseling before delivery was found to be highly significant ($p=0.0001$) indicating high timely initiation in our freshly intervened/counseled group. Similarly, higher initiation rate was observed in subjects receiving counseling in both past and immediate occasions i.e. who had also been counseled during previous ANC visits before our immediate counseling ($p=0.000$). Greater number of ANC visits revealed significant association with early initiation.

Bimerev et al also reported that timely initiation of breastfeeding was significantly associated with the presence of four and more antenatal appointments during the last pregnancy [14]. Tilahun Get al reported that age of the mothers, educational status, religion, husbands' education, child sex, parity, mode of delivery, history of Antenatal care (ANC) visit, place of delivery, having information/advice on timely initiation of breast feeding during ANC visits and having information/advice on timely initiation of breast feeding (TIBF) immediately after delivery had shown association with timely or early initiation [15].

With respect to establishment of breast feeding by 24 hours, our immediate counseling alone had no significant impact, and even though counseling in two occasions (including prior antenatal and our counseling) resulted in slight lower mean time taken for established feeding (21.1hrs versus 21.3 hours in counseled versus not counseled), but that was not statistically significant.

Among factors affecting our major outcomes of early initiation and established breastfeeding, only number of ANC visits and thus multiple (immediate plus past visits) counseling occasions significantly improved timely initiation rate; while feeding establishment within 24 hrs period was favored by other factors as well like mothers' education, occupation, gravida/parity, family type and pre-counseling knowledge about breastfeeding practice.

On comparing with other studies, we can conclude that apart from maternal education, occupation, parity/gravida, number of ANC visits, socioeconomic or cultural factors and previous knowledge/attitude, repeated antenatal counseling specifically along with immediate prenatal (or in-hospital) counseling before delivery can be reliably associated with appropriate timely initiation and establishment of breastfeeding.

Conclusion

Immediate in-hospital breastfeeding counseling of mothers before delivery was associated with significantly higher rate of timely or early breastfeeding initiation. Early initiation was observed in case of 65.5% mothers and overall 85% babies were initiated at least within 24 hrs of delivery.

Adequate number of ANC visits (≥ 3) showed higher rate of early initiation suggests even formal antenatal counseling sessions at multiple occasions could ensure timely initiation and early establishment of breastfeeding. Thus counseling at both occasions (prior ANC visits and immediate in-hospital counseling) may definitely improve rate of early initiation and establishment of exclusive breast feeding practices.

What this study adds to existing knowledge/practice:

This study supports and strengthens the favorable outcome of repeated antenatal breastfeeding counseling in regards of early initiation and early establishment of exclusive breastfeeding along with indirect stimulation for adequate duration of exclusive as well as total breastfeeding.

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