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RESEARCH ARTICLE

Comparative evaluation of early postpartum breast feeding patterns in women undergoing caesarean section and vaginal delivery

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ABSTRACT

Objective: This study is a comparative evaluation of early postpartum breast feeding patterns among women undergoing caesarean section & vaginal delivery. Also to study factors affecting initiation of breast feeding in both the group of women. **Methods**: This was a prospective comparative observational study for 6 monthswhich included 314 women. Women who fulfilled inclusion criteria were 236 mothers – infant pairs. Early initiation was defined as breastfeeding within 1 hour of delivery. Mode and time of delivery and initiation of breast feeding within 1 hr of delivery observed and noted. On Day 3 breast feeding was assessed for positioning, latching, suckling and comfort. The relationship between mode of delivery and various aspects breast feeding was analysed based on the direct interview conducted on postnatal day 1 and 3. **Results**: Amongst the 236 women - 148 (62.7%) delivered vaginally and 88 delivered (37.35%) by caesarean section. Early initiation of breast feeding in vaginal delivery and caesarean section were 70.3% and 27.3% respectively ($p<0.001$). Successful establishment of breast feeding on D3 was 86.5% and 39.8% in vaginal delivery and caesarean section respectively ($p<0.001$). Those who initiated breast feeding within 1hr of delivery, all of them established comfortable breast feeding by D3 (n=128; 100%), whereas those who did not breastfeed within 1hr only 32.4%(n=35) established comfortable breast feeding pattern by D3($p=0.001$). Upper middle SES class, previous lactation history of more than 6 months, booked case, normal duration of labour (5-9 hours) and presence of female attender were positively correlated to early initiation of breast feeding and established breast feeding on D3. Post-delivery pain, improper latching, inadequate milk production and flat nipple were significantly more in women undergoing caesarean section. **Conclusion**: Caesarean section is associated with late initiation of breast feeding and they did not have established breast feeding even on day 3. Increasing percentage of vaginal birth after caesarean section and aggressive counselling regarding benefits of breast feeding could positively increase early initiation of breast feeding, leading to various long term benefits.

Keywords: Breast feeding, caesarean section, vaginal delivery, mode of delivery, early initiation.

Breast milk is the first meal of the newborn. It prevents breast cancer, ovarian cancer and delays onset of type 2 diabetes mellitus in mothers. Approximately 20,000 maternal deaths from breast carcinoma could be prevented if exclusive breast feeding is followed [1]. It is an ideal food for the infant providing all the nutrients in right proportion required in the initial months of life [2]. Breastfed children perform better on intelligence tests, are less likely to be obese and are less prone for diabetes in later life [2, 3]. UNICEF and WHO have jointly started "The Global Breastfeeding Collective" which identifies seven actions to be implemented to achieve better breastfeeding practices. These targets have to be achieved by 2030, for which a score card "The Global Breastfeeding Scorecard" is developed to track progress of individual country in implementation of these actions [4]. It examines these indicators at the national and global levels. India falls

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in the mid-range, were 50-70% infants are initiated to BF (breast feeding) <1 hr. Infant and young child feeding (IYCF) is an initiative by WHO gives recommendations for appropriate neonatal feeding practices. Providing mother's breast milk to infants within one hour of birth is referred to as "early initiation of breastfeeding" and ensures that the infant receives the colostrum, or "first milk", which is rich in protective factors. It is proven that early skin-to-skin contact between mother and infant helps to achieve early breast feeding and increases the chances exclusive breast feeding. Bonding between mother and child improves with early skin to skin contact [5].

Government of India has aggressively tried to fight malnutrition in children with numerous welfare schemes. National health mission (NHM), launched by Government of Indiahas adopted a 'Life cycle approach' to reduce undernutrition in children by addressing factors even before delivery like maternal undernutrition, adolescent pregnancy etc. Similarly delayed initiation of breastfeeding and inappropriate feeding practices in the new-born period and first year of life aggravates undernutrition in infants and children. 1000 day window was identified which encompasses time from onset of pregnancy to 2nd birthday of child which has maximum impact on growth of child [6,7]. India new born action plan (INAP) launched in 2014 aimed to attain the goals of "Single digit neonatal mortality rate" and "Single digit still birth rate", by 2030 [8]. A nationwide programme named - 'MAA' (Mothers' absolute affection) was implemented across India in 2016 to improve breast feeding and infant feeding practices. It aims to protect, promote and support breast feeding and child feeding at community and facility levels.

Breast feeding within an hour of birth could prevent 20% of newborn deaths [6]. Breast feeding percentages have shown an upward trend over the years. However, still there is a long way ahead. In India, as per recent survey only 44.6% mothers initiate breast feeding within one hour of birth in spite of the fact that about 78.7% deliver in institutions [6, 9].

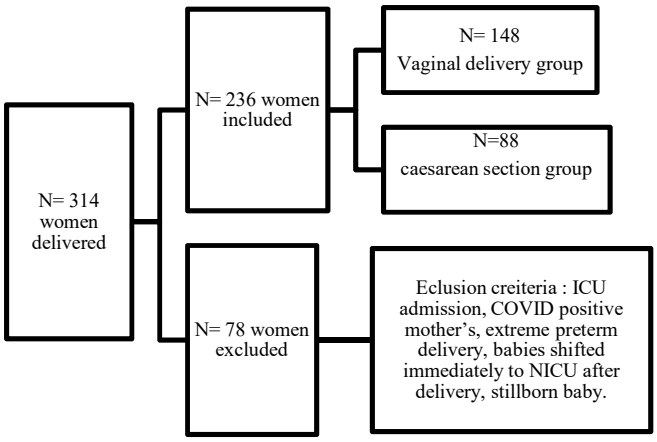
Nationwide rapid survey on children (RSoC) conducted in year 2013-14 by UNICEF and Ministry of Women and Child Development, India stated that 44.6% of children aged 0-23 months in India were breastfed immediately or within an hour of birth which included both rural and urban population. Breast feeding initiation <1hr rates in Karnataka were similar to national average at 45.4% [9]. High exclusive breast feeding rates at 6 months mainly depended on the support given to initiate and establish successful breast feeding at the health facility itself [5]. There are many know barriers to breast feeding, one of them postulated is caesarean section [10-12]. There are also associated factors which hinder early breast feeding initiation in women undergoing caesarean section [13].

In line with global trends, the caesarean section rate in India has increased from 8.5% in 2005-06 to 17.2% in 2015-16. Percentage in private (including non-profit) facilities, which now account for more than 1 in 4 deliveries, has increased from 27.7 to 40.9% [14,15].

Though few studies highlight the effect of mode of delivery on breast feeding, there is limited knowledge regarding problem faced by mothers undergoing caesarean section during early postpartum period in initiating breast feeding. Hence our study was to understand the impact of mode of delivery on early postpartum feeding patterns and determine the factors that affect breast feeding in caesarean section. This study will help us in providing an evidence based information regarding impact of caesarean section on early breast feeding pattern.

Methodology

This prospective comparative observational study was conducted in department of obstetrics and gynaecology at Vydehi Institute of Medical Sciences, Bengaluru, India from July 2020 to January 2021. The study included all the pregnant women who delivered at our hospital. A total 314 women delivered in our hospital during this period, of which 236 mother – baby pairs were included in this study. Institutional ethics committee approval was taken, and informed consent was obtained from all patients included in the study.



Demographic details of the women were collected including

age, region of residence, educational status of mother, occupation of mother, socioeconomic status, and duration of married life. Relevant obstetric details were included like obstetric score, previous pregnancy details, previous breast feeding details (whether breast fed within 1hr, duration of breast feeding in previous pregnancy), any antenatal medical disorder, number of antenatal visits, onset and duration of labour and adequate pain relief (Routine pain relief for vaginal delivery was tablet diclofenac and serrartiopeptidase combination, for LSCS post-operative pain relief was injection paracetamol - any additional pain medication requirement was noted). Mode and time of delivery and initiation of breast feeding within 1 hr (early initiation) of delivery were noted in the case record at the time of delivery itself. Emergency and elective caesarean sections were not noted separately, and instrumental deliveries were included with the vaginal delivery itself.

The relationship between mode of delivery and various aspects breast feeding was analysed based on the direct interview conducted on postnatal day 1 and 3. Mothers were asked whether it was difficult to initiate breast feeding. History of antenatal breast feeding counselling and also willingness to initiate breast feeding was noted in the case sheet.

Mothers were interviewed again on postnatal day 3 to identity if latching and positioning of baby was correct, if baby was breast feeding frequently with no discomfort to mother. When all 4 factors were correct it was termed as established breast feeding on D3. Also it was noted if mother required any additional support to help in breast feeding. Postnatal day 3 was selected as it is the time mothers are usually discharged from hospital.

Mothers were asked regarding overall breast feeding experience as easy, moderate and hard and further the mothers were asked regarding various factors which she felt affected her breast feeding like latching, sleepy baby, breast engorgement, insufficient milk production, cracked nipple, inverted or flat nipple.

Statistical method: Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on mean ± SD (Min-Max) and results on categorical measurements are presented in number (%). Student t test (two tailed, independent) was used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters. Leven`s test for homogeneity of variance was performed to assess the homogeneity of variance. A t-test is a statistical test that is used to compare the means of two groups Chi-square/ Fisher Exact test was used to find the significance of study parameters on categorical scale between two or more groups, non-parametric setting for qualitative data analysis. Fisher exact test used when cell samples are very small. Following values were used as cut off for significance; suggestive significance - P value: $0.05<P<0.10$, moderately significant - P value: $0.01<P \leq 0.05$ and strongly significant - P value: $P \leq 0.01$.

Results

The study population comprised of 236 mother - infant pair. Amongst them 148 delivered had vaginally and 88 women underwent caesarean section. Mean age and mean duration of married life were 26.31 years and 5.07±3.17 years respectively. 36.4% of mothers in our study were staying in urban poor locality and 47.2% were educated only upto school. 41.1 % belonged to Kuppuswamy upper lower socio-economic status (SES) and 59.3% were house wives (table 1). 53.8% were multiparous, rest were primigravida's. 120 women had lactated previously, 116 did not (these included primiparas and women with previous intrauterine deaths or stillbirth). Those who had lactated prior, 63.3% had initiated breast feeding within 1hr among whom 28% continued lactation for more than 6 months (table1).

Table 1: Distribution of study population (N=236)

Baseline data		No. of patients	%
Age	<20 years	11	4.7
	20-30 years	189	80.1
	>30 years	36	15.3
Region	Urban poor	86	36.4
	Rural	79	33.5
	Urban	71	30.1
Education of mother	Illiterate	10	4.2
	School	112	47.5
	Graduate	89	37.7
	Postgraduate	25.	10.6
	Professional	0	0.0
Occupation	Housewife	140	59.3
	Working	96	40.7
Socio-economic status	Lower	9	3.8
	Upper lower	97	41.1
	Lower middle	55	23.3
	Upper middle	72	30.5
	Upper class	3	1.3
Married life	1-5 years	153	64.8%
	6-10 years	65	27.5%
	11-15 years	18	7.6%
Obstetric score	Primi	109	46.2%
	Multi	127	53.8%
Previous lactation initiated <1hr	N/A	116	49.2%
	Yes	76	32.2%
	No	44	18.65
Duration of breast feeding in previous pregnancy	N/A	116	49.2
	<3 months	26	11
	3-6 months	34	14.4
	>6 months	66	28

Table 2 : Descriptive details of present pregnancy based on the mode of delivery

Variables		Mode of delivery			P value
		Vaginal delivery	Caesarean section	Total	
Mode of delivery		148 (62.7%)	88 (37.3%)	236 (100%)	
Age in years		26.26±4.27	26.37±4.41	26.30±4.31	0.848
Married life in years		4.95±3.19	5.26±3.14	5.07±3.17	0.473
Time of birth	Day (8am-5pm)	92(62.2%)	40(45.5%)	132(55.9%)	0.012*
	Night (5 pm -8am)	56(37.8%)	48(54.5%)	104(44.1%)	
Gender	Male	74(50%)	45(51.1%)	119(50.4%)	0.866
	Female	74(50%)	43(48.9%)	117(49.6%)	
Antenatal visits in number	1-5	28(18.9%)	36(40.9%)	64(27.1%)	<0.001
	6-10	50(33.8%)	18(20.5%)	68(28.8%)	
	11-15	61(41.2%)	33(37.5%)	94(39.8%)	
	16-20	9(6.1%)	1(1.1%)	10(4.2%)	
Booked/ referred case	Booked	110(74.3%)	57(64.8%)	167(70.8%)	0.119
	Referred	38(25.7%)	31(35.2%)	69(29.2%)	
Antenatal medical disorders	Absent	87(58.8%)	43(48.9%)	130(55.1%)	0.138
	Present	61(41.2%)	45(51.1%)	106(44.9%)	
Duration of labour in hours	1-4	25(16.9%)			
	5-9	93(62.8%)			
	10-14	15(10.1%)			
	15-19	10(6.8%)			
	20-24	5(3.4%)			

Table 2 shows comparison of mode of delivery to various obstetric parameters. Mean age, married life, gender of infant were similar for both groups. 54.5% caesarean sections occurred at night time and correlation between mode and time of delivery was moderately significant (p=0.012). Significant association was found between type of delivery and number of ANC visits (vaginal delivery - 41.2% had 11-15 ANC visits vs caesarean section - 40.9% had only 1-5 ANC visits), (p=0.001). Majority of women in both groups were booked in our hospital (vaginal delivery – 74.3% vs caesarean section - 64.8%) though caesarean section among referred cases was higher (vaginal delivery - 25.7 vs caesarean section - 35.2%; p=0.119). Number of mothers with associated medical disorders was similar in both groups (p=0.138). Common medical disorders were gestational diabetes mellitus, hypothyroidism and gestational hypertension etc. Majority of women delivering vaginally (62.8%) were in labour for 5-9 hrs.

Table 3: Correlation of various aspect of breast feeding and mode of delivery

Details		Mode of delivery		Total	P value
		Vaginal delivery	Caesarean section		
Initiation <1hr	No	44(29.7%)	64(72.7%)	108(45.8%)	<0.001**
	Yes	104(70.3%)	24(27.3%)	128(54.2%)	
Difficult to initiation	No	91(61.5%)	24(27.3%)	115(48.7%)	<0.001**
	Yes	57(38.5%)	64(72.7%)	121(51.3%)	
Day 3 establishment	No	20(13.5%)	53(60.2%)	73(30.9%)	<0.001**
	Yes	128(86.5%)	35(39.8%)	163(69.1%)	
Adequate pain relief (yes)		116(78.4%)	50(56.8%)	166(70.3%)	<0.001**
Awareness of breast feeding (BF)		113(76.4%)	51(58%)	164(69.5%)	0.003**
Willing to initiate BF immediate after delivery		146(98.6%)	86(97.7%)	232(98.3%)	0.596
During hospital stay was formula feeds given		32(21.6%)	54(61.4%)	86(36.4%)	<0.001**
Trouble in latching		84(56.8%)	65(73.9%)	149(63.1%)	0.008**
Sleepy baby		72(48.6%)	56(63.6%)	128(54.2%)	0.025*
Breast discomfort / engorgement		27(18.2%)	20(22.7%)	47(19.9%)	0.404
Not enough milk		35(23.6%)	35(39.8%)	70(29.7%)	0.009**
Flat /inverted nipple		2(1.4%)	9(10.2%)	11(4.7%)	0.002**
Cracked nipple		31(20.9%)	31(35.2%)	62(26.3%)	0.016*
Difficulty level	Easy	90(60.8%)	21(23.9%)	111(47%)	≤0.001
	Moderate	41(27.7%)	21(23.9%)	62(26.3%)	
	Hard	17(11.5%)	46(52.3	63(26.7%)	

The correlation between the mode of delivery and various aspects of breast feeding are summarized in table 3. Early initiation of breast feeding was noted in 70.3% and 27.3% of vaginal delivery (VD) and caesarean section (CS) group respectively (p = <0.001). Significant association was noted between mode of delivery and difficulty in initiating breast feeding for first time (VD - 38.5% vs CS -72.7%) (p = < 0.001). On D3 established breast feeding was noted in 86.5% and 39.8% of women who delivered vaginally and by caesarean section respectively (p = <0.001). Pain relief was said to be adequate by 78.4% and 56.8% of women in vaginal delivery and caesarean section groups (p= <0.001).

In both groups of mothers were willing to initiate breast feeding early (98.3%) but awareness regarding breast feeding was more in vaginal delivery group (VD-76.4% vs CS- 58%). Most common problem associated with breast feeding was difficulty in latching among both groups (VD-73.9% vs CS - 56.8%) followed by sleepy baby (VD - 63.6% vs CS – 48.6%). In this study there were significant differences across mode of birth and breast feeding difficulty with infant like difficult in latching, inadequate breast milk, cracked nipple and flat nipple. 52.3% women who underwent caesarean section and 11.5% of women who vaginal delivery found breast feeding a difficult experience.

Table 4: Initiation of breast feeding (BF) <1hr

Variables	Response	No	Yes	Total	P value
D3	No	73(67.6%)	0(0%)	73(30.9%)	<0.001**
	Yes	35(32.4%)	128(100%)	163(69.1%)	
Region	Rural	38(35.2%)	41(32%)	79(33.5%)	0.609
	Urban	70(64.8%)	87(67.9%)	157(66.5%)	
Education of mother	Illiterate	7(6.5%)	3(2.3%)	10(4.2%)	0.016*
	School	59(54.6%)	53(41.4%)	112(47.5%)	
	Graduate	36(33.3%)	53(41.4%)	89(37.7%)	
	PG	6(5.6%)	19(14.8%)	25(10.6%)	
	Professional	0(0%)	0(0%)	0(0%)	
Occupation of mother	HW	68(63%)	72(56.3%)	140(59.3%)	0.296
	Not HW	40(37%)	56(43.8%)	96(40.7%)	
SES	Lower	5(4.6%)	4(3.1%)	9(3.8%)	<0.001
	Upper lower	59(54.6%)	38(29.7%)	97(41.1%)	
	Lower middle	26(24.1%)	29(22.7%)	55(23.3%)	
	Upper middle	18(16.7%)	54(42.2%)	72(30.5%)	
	Upper class	0(0%)	3(2.3%)	3(1.3%)	
Previous lactation	N/A	58(53.7%)	58(45.3%)	116(49.2%)	<0.001
	Yes	14(13%)	62(48.4%)	76(32.2%)	
	No	36(33.3%)	8(6.3%)	44(18.6%)	
Duration of breast feeding (previous)	N/A	58(53.7%)	58(45.3%)	116(49.2%)	<0.001**
	<3m	20(18.5%)	5(3.9%)	25(10.6%)	
	3m-6m	17(15.7%)	13(10.2%)	30(12.7%)	
	>6m	13(12%)	52(40.6%)	65(27.5%)	
ANC	Booked case	61(36.5%)	106(63.5%)	167	<0.001
	Referred case	47(68.1%)	22(31.9%)	69	
Duration of labour in hours	1-4	2(4.5%)	22(21.2%)	24(16.2%)	P<0.001
	5-9	18(40.9%)	76(73.1%)	94(63.5%)	
	10-14	9(20.5%)	6(5.8%)	15(10.1%)	
	15-19	10(22.7%)	0(0%)	10(6.8%)	
	20-24	5(11.4%)	0(0%)	5(3.4%)	
Spouse	No	20(18.5%)	15(11.7%)	35(14.8%)	0.143
	Yes	88(81.5%)	113(88.3%)	201(85.2%)	
Female attender	No	44(40.7%)	28(21.9%)	72(30.5%)	0.002**
	Yes	64(59.3%)	100(78.1%)	164(69.5%)	

Sub analysis of factors affecting early initiation of breast feeding is noted in table 4. Early initiation of breast feeding had a significant positive correlation with established breast feeding on D3. Women who initiated breast feeding <1hr followed established BF 100% on D3; those who did not breastfeed within 1hr - 32.4% had established breast feeding pattern by D3. There was no significant relation between region of stay or occupation of mother and early initiation. Educational status had a positive correlation to early initiation (p=0.016), women with graduation and school education were able to start early feeding. Amongst mothers who initiated breast feeding early 42.2% were from upper middle SES (p=0.001). Previous lactational history was a significant positive (p=<0.001) factor in early initiation of breast feeding. Amongst the women who lactated in previous pregnancy for >6mths, 40.6% could achieve early initiation (p=0.001). Booked cases (63.5%) had significantly more early initiation compared to referred cases (31.9%) (p=0.001). Amongst women who delivered vaginally and initiated breast feeding early 74.3% were in labour for 5-9 hrs. Shorter duration of labour was positively associated with early initiation of breast feeding. Among women who initiated breast feeding early 78.1% had a female attender (p=0.002). The same difference was not found with presence spouse (p=0.143).

Single most important factor affecting established breast feeding on D3 was early initiation within 1 hour. Hence, similar to early initiation those who could establish comfortable breast feeding patterns by D3 were women with school education or graduation from upper middle SES who had lactated earlier for more than 6 months. Region of stay or occupation did not have a significant difference. Positive

correlation was seen in booked cases and women labouring for 5-9 hours. Similarly on D3 presence of female attender was significantly associated good established breast feeding patterns (p=0.001) (table 5).

Table 5: D3 breast feeding established

Variables	Response	No	Yes	Total	P value
Region	Rural	24(32.9%)	55(33.7%)	79(33.5%)	0.896
	Urban	49(67.1%)	108(66.3%)	157(66.5%)	
Education of mother	Illiterate	7(9.6%)	3(1.8%)	10(4.2%)	0.002**
	School	41(56.2%)	71(43.6%)	112(47.5%)	
	Graduate	22(30.1%)	67(41.1%)	89(37.7%)	
	PG	3(4.1%)	22(13.5%)	25(10.6%)	
	Professional	0(0%)	0(0%)	0(0%)	
Occupation of mother	HW	46(63%)	94(57.7%)	140(59.3%)	0.440
	Not HW	27(37%)	69(42.3%)	96(40.7%)	
SES	Lower	5(6.8%)	4(2.5%)	9(3.8%)	<0.001**
	Upper lower	44(60.3%)	53(32.5%)	97(41.1%)	
	Lower middle	17(23.3%)	38(23.3%)	55(23.3%)	
	Upper middle	7(9.6%)	65(39.9%)	72(30.5%)	
	Upper Class	0(0%)	3(1.8%)	3(1.3%)	
Previous lactation	N/A	45(61.6%)	71(43.6%)	116(49.2%)	<0.001**
	Yes	5(6.8%)	71(43.6%)	76(32.2%)	
	No	23(31.5%)	21(12.9%)	44(18.6%)	
Duration of breast feeding	N/A	45(61.6%)	71(43.6%)	116(49.2%)	<0.001**
	<3m	15(20.5%)	10(6.1%)	25(10.6%)	
	3m-6m	10(13.7%)	20(12.3%)	30(12.7%)	
	>6m	3(4.1%)	62(38%)	65(27.5%)	
Duration of labour in hours	1-4	0(0%)	24(18.8%)	24(16.2%)	<0.001
	5-9	1(5%)	93(72.7%)	94(63.5%)	
	10-14	4(20%)	11(8.6%)	15(10.1%)	
	15-19	10(50%)	0(0%)	10(6.8%)	
	20-24	5(25%)	0(0%)	5(3.4%)	
ANC care	Booked case	38(22.8%)	129(77.2%)		<0.001
	Referred case	35(50.7%)	34(49.3%)		
Spouse	No	11(15.1%)	24(14.7%)	35(14.8%)	0.945
	Yes	62(84.9%)	139(85.3%)	201(85.2%)	
Female attender	No	35(47.9%)	37(22.7%)	72(30.5%)	<0.001
	Yes	38(52.1%)	126(77.3%)	164(69.5%)	

Discussion

This study was done to evaluate the effect of mode of delivery on early breast feeding patterns. WHO in 2021 stated caesarean section accounts for 21% of all child births but in this study 37.3% women delivered by caesarean section [16].

Vaginal delivery had a significant positive correlation to early initiation of breast feeding similar to findings by Hobbs et al and other authors [13, 17-20]. Hobbs et al noted that 7.4% women who delivered by planned caesarean section had no intention to breast feed requiring additional supportive care [13]. Most women in this group (98.3%) were willing to initiate breast feeding after delivery, which is considered as the most important behavioural aspect in successful breast feeding [13]. On review of literature, Wiklund et al stated that the mode of delivery does not appear to influence the initiation of breast feeding which differs in opinion from this study [21]. Women who initiated breast feeding within1 hr in vaginal delivery group were able to establish good breast feeding pattern by D3, which is similar to finding by Hobbs et al [13]. This is very significant as early initiation was positively associated with exclusive breast feeding at 6 months as noted by Inano et al [22].

This study did not find any difference in early initiation based on region of residence but more women from upper middle SES were able initiated breast feeding early but Paksoy Erbaydar et al and other authors found more women in nonexclusive breast feeding group were from urban area but no relation to wealth index quintile was noted [17,20]. Ndirangu et al found no difference in early initiation of breast feeding among male and female babies, similar to our study [23]. They also noted that women who had 4 or more ANC visit had 86% reduced odds of early initiation of breast feeding (AOR 0.14), like this study where 63.5% of booked cases had early initiation of breast feeding [20].

Women who underwent caesarean section (58%) had significantly less awareness of breast feeding compared to vaginal delivery (76.4%) contributing to delayed initiation.

This could be because they had less number of ANC visits and more referred cases underwent caesarean section. Kalisa et al also found inadequate prenatal guidance (AOR 3.6) along with HIV positive status as a reason for delayed initiation [23]. Also women undergoing caesarean section complained of more pain postoperatively compared to vaginal delivery group. Women with prolonged duration of labour, even with vaginal delivery found it more difficult to initiate early probably due to pain. Both the above scenarios pain could be factor delaying breast feeding initiation and hindering good feeding routines.

Ci Song et al noted amongst the women with medical disorder, there was no significant difference in the mode of delivery and the overall breast feeding experience similar to this study where 44.9% women had medical disorder and no significant difference was noted in mode of delivery ($p=0.138$) [24].

KC Evans et al noted that quantity of milk transferred to babies delivered by caesarean section was significantly less than that transferred to babies born vaginally on days 2 to 5 ($p < 0.05$), similar to this study were more women in caesarean group complained of inadequate milk production [25].

In India, women are traditionally accompanied by their mothers or mother-in law during their hospital stay for delivery and it was associated with positive result in establishing good breast feeding pattern in our study. This is similar to systematic review conducted by Kavle et al who inferred that female attender being a key influencer of feeding practices [18]. Also it was noted that women who breast fed previously especially for more than 6 months were able initiate early and established good breast feeding routine by D3. This is a significant positive correlation.

Though our study had both primis and multigravidas, which could be a confounding factor, Albokhary AA conducted a study only on primigravidas and found women who delivered vaginally were more likely to breast feed within 1 hour and at 24 hours. Pain and separation from mother were noted as reason [26]. Another limitation of our study was that we did not measure maternal weight and correlate its effect on breast feeding, though Jevitt C et al noted that obese women had lowered prolactin response to suckling leading to shorter duration of breast feeding [27].

Conclusion

India has come a long way in decreasing under 5 mortality rate. Still, it has a long way to achieve single digit figures. One the factors which can be aggressively promoted is exclusive breast feeding. This can be achieved more effectively by early initiation and adequate repeated counselling regarding benefits of breast feeding to mother and infant. Identifying barriers and working around them will help us achieve the same. Aggressive counselling and additional support to mothers are undergoing caesarean section and increasing percentage of vaginal deliveries will help in early initiation of breast feeding and in turn lead to exclusive breast feeding up to 6 months.

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