

# The Effect of Modes of Delivery on Infants' Feeding Practices

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## Abstract

Breast feeding has a great impact on the infant morbidity and mortality. According to Pakistan Demographic and Health survey (PDHS) infant mortality rate is 78 deaths per 1,000 live births. World Health Organization recommends that exclusive breast feeding for six months can decrease infant mortality rate by one-third. The objective of the study was to find out how the mode of delivery had impact on the practice of breast feeding. Data were collected for 2500 consecutive patients during a period of two years, and it was seen that maternal initiative to breast feed was low and problems with lactation were much more in cases delivering their babies via cesarean sections than those delivering theirs by normal delivery. Vaginal and cesarean section deliveries took place in 54% and 46% of the case, respectively. Thirty percent of the women studied felt that they had no problems regarding breastfeeding, but 70% of them had some sort of problems with breastfeeding their babies. When the women were matched for the mode of delivery, 58% of women who had breastfeeding problems belonged to the cesarean delivery group and 42% of complaining mothers were from women with normal delivery. The relative risk of having problems with breastfeeding for women subjected to cesarean was 1.38 and the odds ratio was 0.61. The findings of the present study indicate that more in depth counseling sessions are required for women undergoing operative delivery to improve breast feeding among them.

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**Keywords** • Infant diseases • counseling • exclusive breast feeding • infant feeding

## Introduction

Many pregnant women around the world eat diets that are nutritionally inadequate, and result in undernourished infants who are at greater risk for health problems later in life.

Adequate nutrition during infancy is essential for lifelong health and well-being. Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods, while continue to be breastfed for up to two years or more. The 2006-2007 Pakistan Demographic and Health survey (PDHS) was designed to provide data for monitoring the health situation in Pakistan. The survey,<sup>1</sup> showed that the infant mortality rate in Pakistan was 78 deaths per 1,000 live births,

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which was higher than those in Nepal (48 in 1,000 live births), India (57 in 1,000 live births) and Bangladesh (65 in 1,000 live births). The leading causes of infant death were sepsis and infections (38%) followed by asphyxia (22%).<sup>1</sup> Breast feeding plays an important role in the life of an infant as it is not only a source of nutrition, but also derives and strengthens the baby's immunity and response. The survey,<sup>1</sup> also highlighted that in Pakistan exclusive breast feeding for 6 months was only 37% of which only 55% continue to breast feed for 2 years. World Health Organization stresses the need of breast feeding by reiterating that about 33% of infant deaths are preventable with the introduction of exclusive breast feeding initiated within an hour of delivery and continued for at least 6 months.<sup>2</sup>

With improvement in neonatal survival, the age of viability is being pushed back to 24 weeks. Due to obstetricians' choice and failure of induction at early gestations the common mode of delivery at these gestations is cesarean. These factors along with newer surgical and anesthetic skills have made cesarean to be a safer method of delivery than previously thought. The safety of cesarean has resulted in a rise in the rates of cesarean delivery, and more and more patients and doctors feel more comfortable with it.<sup>3</sup> Operative delivery has great psychological impact, and not only the patient and her family, but sometimes even the doctor becomes less motivated to initiate breast feeding. Prolonged periods of separation between babies and mothers, which are due to anesthesia, baby being kept in nursery, or mother being sedated for pain and unable to feed can lead to poor maternal milk surge. Poor maternal milk surge results in a vicious cycle of less milk, baby being hungry and irritable, and mother too exhausted to put in an extra effort. These factors lead to the failure of breast feeding rates, and in a larger perspective, result in infant morbidity, mortality and malnutrition.

The objective of the present study was to evaluate the effects of mode of delivery on maternal initiative to breast feed.

## Materials and Methods

This study was conducted in a period of two years (2008-2009) in the Department of Obstetrics and Gynecology at Shifa International Hospital and Shifa Foundation Community Health centre, Islamabad, Pakistan. All mothers delivering live babies irrespective of gestation, mode of delivery, and babies' weight were included in the study.

Women who were extremely sick including those with acute heart failure or eclampsia, those who delivered a dead baby or the babies who required ventilatory support, because they were very sick or severely malformed, were excluded. Two lady health visitors (LHVs) trained as lactation counselors, routinely saw all mothers delivering in the hospital within two hours of their delivery. After obtaining participants' consent and through interview the counselors filled in a questionnaire containing questions regarding the mothers, their modes of delivery, problems with feeding their baby along with time taken to resolve the problem.

A total of 2583 deliveries took place in the Hospital during the study period. Applying the inclusion and exclusion criteria, the data of 2500 women were entered in Statistical Package for Social Sciences (SPSS, version 14) for analysis. A comparative analysis between feeding problems of women delivering vaginally was done with those undergoing cesarean delivery. Frequencies were calculated for different variables. Chi square test was used to calculate odds ratio and compare various demographic factors between the groups. A p value of  $\leq 0.05$  was considered statistically significant.

## Results

Vaginal delivery took place in 54% of the cases and was inclusive of vaginal vertex, breech delivery and instrumental (vacuum and forceps) delivery. The rate of cesarean section was 46% (table 1). Thirty percent of the women studied felt that they had no problems regarding breastfeeding. But 70% of women had some sort of problems with feeding their babies. When they were matched for the mode of delivery, 58% of women with feeding problems belonged to the cesarean delivery group and 42% of complaining mothers had vaginal delivery. The relative risk of cesarean to have problems with breastfeeding was 1.38 and the odds ratio was 0.61.

Women coming from rural background comprised of about 40% of the total cases and the overall educational status of the study group showed that 58% mothers had attained education above secondary school (table 2).

When the various lactation problems were analyzed, it was seen that the two most common maternal complaints regarding feeding were problem with position of the baby inside the womb (52.6%) and a feeling that not enough milk for baby was being produced (25.3%) (table 3).

**Table 1:** The number and (rate) of women with and without feeding problems of their babies based on the mode of delivery of their babies.

	Lactation problem	No problem	Any problem	Total
Mode of delivery	Vaginal	615 (45.5%)	738 (54.5%)	1353 (54.2%)
	Cesarean	128 (11.2%)	1019 (88.2%)	1147 (45.8%)
Total		743	1757	2500

**Table 2:** The characteristics of women whose babies were delivered vaginally or by cesarean section.

Factors		Vaginal delivery	Cesarean delivery
Background	rural	485 (48.2%)	521 (51.8%)
	urban	868 (58.1%)	626 (41.9%)
Parity	primipara	404 (49.4%)	413 (50.6%)
	2-5	831 (55.0%)	681 (45.0%)
	>5	118 (69.0%)	53 (31.0%)
Maternal education	<primary education	582 (98.5%)	9 (1.5%)
	secondary education	422 (93.8%)	28 (6.2%)
	>secondary education	349 (31.4%)	1110 (68.6%)
N		1353 (54.1%)	1147 (45.9%)

The odds ratio and 95% confidence interval for mode of delivery (vaginal versus cesarean), cohort of no lactational problem and cohort of any lactational problem are presented in table 4.

## Discussion

In our study we saw that despite adequate analgesia and the patient subjectively feeling pain free and comfortable, there was a statistically significant difference between the breast feeding rates of women delivering vaginally as compared to those delivered through cesarean section.

Fifty eight percent of women with feeding problems belonged to the cesarean delivery group and 42% of complaining mothers had vaginal delivery. The relative risk of cesarean to have problems with breastfeeding was 1.38 and the odds ratio was 0.61. (In our hospital as

per policy all women are encouraged to breast feed as soon after delivery as possible.) After excluding cases that had complications causing mother baby separation, the group we studied was divided on the basis of their mode of delivery as rest of the characteristics were the same. After obtaining participants' consent and through interview the counselors filled in a questionnaire containing questions regarding the mother, her mode of delivery, problem with feeding her baby along with time taken to resolve the problem. This showed that the women who had cesarean had more complaints, needed greater counseling, and even than the prevalence of breast feeding in that group was lower as compared to the vaginal delivery group.

Women delivering their babies by cesarean section run a 1.38 fold greater risk of having

**Table 3:** The number and (rate) of lactation problems stratified based on the modes of delivery.

		Lactation problems							
		none	NEM	BDTF	CN	IN	EB	PWP	MNITF
Mode of delivery	vaginal	513 (70.0%)	232 (52.0%)	27 (40.0%)	87 (75.7%)	18 (75.0%)	3 (25.0%)	370 (66.7%)	4 (2.5%)
	cesarean	131 (30.0%)	213 (48.0%)	46 (60.0%)	28 (24.3%)	6 (25.0%)	12 (75.0%)	555 (32.3%)	155 (97.5%)
Number		744	445	73	115	24	15	925	159

NEM; Not Enough Milk, BDTF: Baby Doesn't Take Feed, CN: Cracked Nipples, IN: Inverted Nipples, EB: Engorged Breast, PWP: Problem With Positioning, MNITF: Mothers Not Inclined To Feed

**Table 4:** Risk estimate (odds ratio with 95% confidence interval) for the mode of delivery (cesarean vs. vaginal), the cohort of no lactation problem and cohort of any lactation problem.

	Odds ratio	95% confidence interval	
Mode of delivery (vaginal versus cesarean)	6.634	5.363	8.206
Cohort of no lactation problem	4.073	3.425	4.844
Cohort of any lactation problem	0.614	0.582	0.647
Number of valid cases	2500		

problems with breastfeeding in comparison to women delivering theirs vaginally.

The rate of cesarean was quite high (46%) in the present study. One of the factors affecting this rate is the improvement of neonatal survival at earlier gestations (26 weeks pregnancy and more), which has resulted in increased number of pre-mature births. These premature births may be triggered by fetal factors including severe oligohydramnios, reversed Doppler flows or hydrops fetalis, or maternal factors such as eclampsia, antepartum hemorrhage or cardiac diseases. It is well-understood that vaginal delivery at gestations with a compromised baby or mother, similar to such situations, may become difficult, and lead to increased proportion of cesarean sections. Cesarean section in turn effect the maternal initiative to breast feed, as 97.5% of women who did not feel inclined to breast feed in our study was from the cesarean group.

A Norwegian study,<sup>4</sup> reported that the increased rate of caesarean sections depended on both medical and non-medical factors. Among the medical factors were increases in maternal age and body mass index, as well as changes in obstetric practice and technology. Non-medical factors included caesarean section requested by the mother, fear of litigation among caregivers, and inappropriate organization of maternity care. Caesarean sections were associated with maternal postpartum morbidity, child postpartum respiratory morbidity, less breastfeeding and possibly more atopic diseases.<sup>4</sup>

The findings of the present study showed that women with cesarean deliveries had a definitely greater chance of having problems with breastfeeding. The odds ratio for women with cesarean deliveries was 0.61 for having any problem with feeding the baby. Similarly, Qiu et al.<sup>5</sup> concluded that the adjusted odds ratio for exclusive breastfeeding in caesarean section deliveries in urban and suburban mothers was 0.64 (95% CI: 0.46-0.88). Caesarean section was increasingly being used for routine deliveries in China, and mothers who had an operative delivery had lower rates of exclusive breastfeeding on hospital discharge.<sup>5</sup>

This study did not find a statistically significant difference between women delivering their babies by vaginal delivery or cesarean in terms of the problem of "not enough milk" (n=232 vs n=213). Wang and colleagues found that there was a significantly lower postpartum serum prolactin (PRL) levels in the caesarean group (8.48 nmol/L, 95% CI: 7.80-9.21 nmol/L) com-

pared with the vaginal delivery group (9.61 nmol/L, 95% CI: 8.99-10.26 nmol/L). Caesarean section was an important hazard for a shorter duration of breastfeeding (RR=1.21; 95% CI: 1.10-1.33) within one year after childbirth.<sup>6</sup>

The present study also showed that there was a greater degree of apprehension among patients and her relatives in the cesarean group as it is regarded as an abnormal form of delivery, which leads to lower rates of breastfeeding. The problems recorded by the lactation assistants in the cesarean group were most commonly being unable to position herself and the baby correctly (54.6%) followed by the problem of not enough milk for the baby (21%) and mother not inclined to feed (15.2%). The problems with positioning were basically as the patient felt that sitting for too long will hamper healing in her stitches and the fear that the baby might kick and spoil her stitches. We felt that even in the educated women, in whom 44.4% of the cesarean deliveries had more than secondary education, there was a need for repeated and longer counseling to overcome their issues related to breastfeeding in the cesarean group. The mean counseling time for cesarean deliveries was 35 minutes as compared to 18 minutes for vaginal deliveries. The women delivering vaginally had the confidence that every thing had gone normally, and were more keen to initiate immediate feeding and handling of their babies.

## Conclusion

The mode of delivery has a statistically significant impact on infant feeding practices. There is a proportionately increasing trend of bottle feeding with the increases in the rates of caesarean section. In developing countries infant feeding practices play a crucial part in the health and immunity of the baby. There is a need to re-emphasize the role of breastfeeding in woman undergoing caesarean delivery to improve infant health and nutrition.

**Conflict of Interest:** None declared

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