

## The Effect of Mode of Delivery on Breastfeeding Outcomes: A Hospital Based Study

Anil C Mathew<sup>1\*</sup>, Dhanya C<sup>2</sup>, Jibin K Benny<sup>2</sup>, Dona Maria Philip<sup>2</sup>, Ghurupriyan M<sup>3</sup>, Ramesh S<sup>4</sup>,  
Neelakandan K<sup>5</sup>

<sup>1</sup>Professor of Biostatistics, Department of Community Medicine, PSG Institute of Medical Science and Research, Coimbatore, Tamil Nadu, India

<sup>2</sup>Trainee Biostatistician, Department of Statistics and Biostatistics, St. Thomas College, Pala, Kerala, India

<sup>3</sup>MBBS Second year, PSG Institute of Medical Science and Research, Coimbatore, Tamil Nadu, India

<sup>4</sup>Associate Professor of Paediatrics, Department of Paediatrics, PSG Institute of Medical Science and Research Coimbatore, Tamil Nadu, India

<sup>5</sup>Professor of Paediatrics, Department of Paediatrics, PSG Institute of Medical Science and Research, Coimbatore, Tamil Nadu, India

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**ABSTRACT**

**Background:** Some studies suggested that a high rate of caesarean deliveries results in suboptimal breastfeeding outcomes. The relationship between mode of delivery and breastfeeding outcomes has been considered important given the rising prevalence of caesarean deliveries globally. The present study is to examine the relationship of mode of delivery with breastfeeding outcomes. **Materials and Methods:** This study was conducted at PSG Institute of Medical Science and Research, Coimbatore in the month of July 2018. Ethical clearance was obtained from the institution prior to the study. Chi square test was done to assess the association between socio-demographic variables, timely initiation of breastfeeding and exclusive breastfeeding with mode of delivery. The effect of caesarean on duration of breastfeeding was obtained by applying Kaplan-Meier method. **Result:** Prevalence of caesarean delivery was 36.2% and of vaginal delivery was 63.8%. A statistically significant association was obtained between caesarean deliveries and timely initiation of breastfeeding. However mode of delivery was not significantly associated with exclusive breastfeeding and duration of breastfeeding. **Conclusion:** The findings of our study indicates that caesarean deliveries have been associated with lower timely initiation rates compared to vaginal deliveries.

**Keywords:** caesarean delivery, duration of breast feeding, exclusive breastfeeding, initial breastfeeding, vaginal delivery.

**Introduction**

Breastfeeding is a dynamic process comprising regulation between the mother's and infant's interconnected physiological, psychological, and behavioural systems [1]. Optimal infant and young child feeding is crucial for health and development.

Women are recommended to breastfeed exclusively for 6 months and to continue breastfeeding until the child is 2 years. Breastfeeding is widely acknowledged as the best and safest form of infant feeding [2].

The global average caesarean delivery rate is 12.4% with an average annual rate of increase of 4.4%. The use of caesarean delivery has increased in the last few decades particularly in middle- and high-income countries [3]. According to a recent analysis of national health survey data, caesarean deliveries in India has gone up from 10% to 30% raising the country's average caesarean section rates from 5% to 18%. An independent analysis of data from the National Family Health Survey (NFHS) (1992-93 to 2015-16) and Rapid Survey on Children 2013-14, India's caesarean-section rate was at 18 per cent which was higher than the

\*Correspondence

**Dr. Anil C Mathew**

Professor of Biostatistics

Department of Community Medicine

PSG Institute of Medical Science and Research

Coimbatore 641 004, Tamil Nadu, India

**E-Mail:** [anilpsgmet@gmail.com](mailto:anilpsgmet@gmail.com)

Lancet report's estimate of 10 per cent[4]. It is necessary to find whether the mode of delivery affect the breastfeeding outcomes.

The primary aim of the study was to examine the association between mode of delivery and subsequent breastfeeding outcomes – initiation of breastfeeding within one hour of birth, exclusive breastfeeding up to six months and duration of breastfeeding.

### Materials and Methods

This study was conducted at PSG Institute of Medical Science and Research, Coimbatore in the month of July 2018. Ethical clearance was obtained from the institution prior to the study. Informed consent was obtained from all mothers interested in participating. Questions about mode of delivery and breastfeeding were collected using questionnaire. A total of 527 mothers were studied. Eligible mother include those who with the children age below four years attending paediatric outpatient department. Babies with congenital anomalies that interfere with breastfeeding were excluded from the study. Socio economic status was measured using Prasad classification. The classification is done based on the Consumer Price Index (CPI) value of 279 for Coimbatore [5]. Class 1 include people having per-capita income greater than or equal to Rs.6180. Class 2, class 3, class 4 include the people having range of pre-capita income Rs.3090-6179, Rs.1850-3089, Rs.930-1849 respectively and class 4 include people having per-capita income less than Rs.930.

WHO recommends that for those children less than six months of age, who fed only on mother's milk in the 24 hours preceding the survey were considered as exclusive breastfeeding.

Chi square test was done to assess the association between mode of delivery with socio-demographic

variables, initiation of breastfeeding and exclusive breastfeeding. p value<0.05 was considered as statistically significant.

The effect of caesarean on duration of breastfeeding was obtained by using Kaplan-Meier method. The duration of termination of breastfeeding was the outcome event and those mothers who are continuing the breastfeeding during the survey were considered as censored. Total probability of termination of breastfeeding till that time interval was calculated by multiplying all the probabilities of termination of breastfeeding at all time intervals preceding that time. The log rank test was used to assess the equality of survival curves of vaginal and caesarean delivery. The data were analysed using SPSS[5].

### Results

The sample included 527 mothers. 36.2% of mothers were delivered by caesarean and 63.8% of mothers gave birth by vaginal delivery.

Table 1 depicts the various socio-demographic and clinical variables according to mode of delivery. Increased number of antenatal visits (p<0.05) and term delivery (p<0.01) were negatively associated with caesarean delivery.

Table 2 describes the association of mode of delivery with timely initiation of breastfeeding, exclusive breastfeeding and duration of breastfeeding. Timely initiation of breastfeeding was lower among caesarean deliveries compared to vaginal deliveries and the difference was statistically significant (p<0.001).The prevalence of exclusive breastfeeding was 60.1% for vaginal delivery and 55.5% for caesarean. However the difference was not statistically significant (p=0.301).There was no difference between duration of breastfeeding and mode of delivery (p=0.851).

**Table1: Distribution of socio-demographic variables by modes of delivery**

Characteristics		Vaginal delivery (%)	Caesarean (%)	p value
Mother's age	15-24	76(22.6)	32(16.8)	0.190
	25-34	243(72.3)	145(75.9)	
	35-44	17(5.1)	14(7.3)	
Mother's education	Below 12 <sup>th</sup>	82(24.4)	56(29.3)	0.217
	Above 12 <sup>th</sup>	254(75.6)	135(70.7)	
Father's education	Below 12 <sup>th</sup>	79(23.5)	50(26.2)	0.494
	Above 12 <sup>th</sup>	257(76.5)	141(73.8)	

Number of antenatal visits	>8	253(75.3)	126(66.0)	p<0.05
	≤8	83(24.7)	65(34.0)	
Condition of mother after delivery	Well	319(94.9)	180(94.2)	0.731
	Sick	17(5.1)	11(5.8)	
Gestational age	Term	310(92.3)	159(83.2)	p<0.01
	Pre term	26(7.7)	32(16.8)	
Socio economic status	Class 1&2	273(81.2)	153(80.1)	0.748
	Class 3,4 &5	63(18.8)	38(19.9)	
parity	1	242(72)	123(64)	0.068
	≥2	94(28)	68(35.6)	

Table2: Breastfeeding outcomes by of mode of delivery

Breastfeeding pattern		Vaginal (%)	Caesarean (%)	Chi-square	P value
Timely initiation of breastfeeding	Yes	252(75.0)	46(24.1)	1.285	p<0.001
	No	84(25.0)	145(75.9)		
Exclusive breastfeeding	yes	202(60.1)	106(55.5)	1.071	0.301
	no	134(39.9)	85(44.5)		
Duration of breastfeeding	Mean Duration (Months)	18.357	18.680	0.035 *	0.851

\*chi-square mentioned as log rank chi-square.

### Discussion

We found that 56.5% of mothers surveyed reported initiating breastfeeding within one hour of birth and 58.4% reported exclusive breastfeeding for 6 months. The median duration of breastfeeding was 18 months. We observed a negative association between breastfeeding initiation within one hour and caesarean delivery. This contradicts the findings of Sara N K et al 2017[6] and supports the findings of Prior et al 2012 [7] and Hira Palla et al 2017 [8].

Despite the well-known benefits of nourishing infants exclusively with mother's milk, the rates of breastfeeding initiation, continuation and exclusive breastfeeding are still lower in India. Mothers and infants experiences during labour and delivery may affect lactation and breastfeeding outcomes. In this

study we observed that caesarean deliveries have been associated with lower initiation rates compared to undergoing vaginal delivery. This may be due to the delay in mother-infant skin to skin contact, mother's post-surgery physical complications and effects of anaesthesia.

Research evidences showed that delayed onset of lactation is significantly higher among women with caesarean delivery compared to those with vaginal delivery. In addition, early contact with between mothers and infants during the first few hours after birth is important for forming a mother-infant bond that can lead to breastfeeding successful outcomes. Apart from it, operative care routines for post caesarean delivery can delay mothers from holding their infants and disrupt bonding between mother and infant. The mothers who undergo caesarean delivery stay longer in

hospital than mothers who experience vaginal delivery. Therefore a negative impact of surgical procedure delays breastfeeding initiation and babies were used to give formula feed from hospital. We did not find any association between mode of delivery and exclusive breast feeding. This supports the findings of Sara N K et al 2017[6] and contradicts the findings of Emily prior et al [7]. We did not find any association between mode of delivery and duration of breastfeeding which contradict the finding of Perez-Escamilla et al [9] and Amy J. Hobbs [10]. It has been suggested in these studies that lower duration of breastfeeding rates on women with caesarean delivery might be associated with physiologic mechanism that affect lactogens. However, in our study we could not establish a statistically significant association between type of delivery and duration of breastfeeding. The limitation of our study include response bias that contribute inaccurate information due to retrospective reporting. Another limitation is that the region of study has a generally higher socio-economic status and it was hospital based study. Further studies should address the obstacles based on delivery mode and other factors such as medical problems, women's knowledge around breastfeeding benefits, latching, and lifestyle changes on initiation of breastfeeding, exclusive breast feeding and duration of breastfeeding. In addition to mode of delivery, other factors that may influence breastfeeding initiation includes challenges encountered during nursing, availability of support systems, recommendation and attitudes of family, peers and health care professionals. Furthermore, large scale prospective cohort studies can provide more light in this area.

### Conclusion

The findings of our study indicates that caesarean deliveries have been associated with lower timely breastfeeding initiation rates compared to mothers undergoing vaginal delivery.

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