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Tracking the Progress in Breastfeeding after Implementation of MAA Programme in India

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Abstract

Background: Early initiation of breastfeeding and exclusive breastfeeding are the most effective interventions to ensure the survival, health, and development of children. This paper analyses the relative change in early initiation of breastfeeding and exclusive breastfeeding over the last four years among children born after January 2016 and its significant cofactors at the district level. Results are expected to contribute to tracking the efficacy of the MAA programme initiated by GOI in 2016 to strengthen the country's breastfeeding programme.

Methods: The analysis of this study is based on two recent rounds of NFHS: NFHS-4 and NFHS-5, which were conducted during the periods between 2015-16 and 2019-20, respectively. Bivariate and multivariate analysis was done to achieve the desired objectives. The analysis has been carried out at a district level incorporating information from 342 districts across 22 phase-I States/UTs.

Results: The study reveals a relative increase in exclusive breastfeeding (9 per cent), whereas there was a relative decline in early initiation of breastfeeding (-7 per cent) from 2015-16 to 2019-20. Moreover, women's educational status, four or more antenatal care visits, institutional delivery, and deliveries through cesarean section were significantly associated with exclusive breastfeeding. Still, their association with early breastfeeding initiation was not significant.

Conclusion: The MAA programme seems to be effective for rendering positive results for exclusive breastfeeding; however, early initiation of breastfeeding is a cause of concern as its percentage declined significantly from 2015-16 to 2019-20.

Keywords: Breastfeeding; Mother's absolute affection; National Family Health Survey; India.

Background

As per WHO (2016), breastfeeding is considered the most effective intervention to ensure child survival and health. WHO estimates if breastfeeding were made universal, about 820,000 child lives could have been saved every year. Only about 40 per cent of infants (under age six months) were exclusively breastfed (WHO, 2016). Only 42 per cent of newborns globally were put at the breast within the first hour of birth (WHO, 2019). In India, there was a significant improvement in EBF and EIBF from 2005-06 to 2015-16, i.e., EBF increased from 46 per cent in 2005-06 to 55 per cent in 2015-16, whereas EIBF rose from 23 per cent in 2005-06 to 42 per cent in 2015-16 (Nguyen et al., 2018). Early Initiation of Breastfeeding (EIBF) and Exclusive Breastfeeding (EBF) followed by continued breastfeeding for two years with appropriate complementary food is the most appropriate feeding practice strategy (IYCF, 2016).

Breastfeeding prevents newborns from infectious diseases such as lower respiratory tract infection (Ip et al., 2007), pneumonia (Chantry, Howard, & Auinger, 2006), bronchiolitis (Quigley, Kelly, & Sacker, 2007), otitis media (Ip et al., 2007) etc. Moreover, the risk of sudden infant death syndrome (Vennemann et al., 2009) gets reduced among babies who were breastfed. Further, breastfeeding lowers the risk of mental disorders, overweight, and obesity, diabetes, and malnutrition (Harding, Aguayo, & Webb, 2018) among children. It was found that breastfeeding duration had a significant impact on reducing the risk of child mortality (D. C. Nath, Land, & Singh, 1994). Partial breastfeeding was significantly associated with the development of any illness among neonates, in comparison to neonates who were exclusively breastfed (Srivastava & Awasthi, 2016).

Lower maternal education and awareness about the benefits of breastfeeding was one of the significant factors for not practising exclusive breastfeeding (EBF) (Nishimura et al., 2018; Pang et al., 2016). Moreover, the mother's feeling of not having enough milk to feed their child was another factor for not exclusively providing the child (Nishimura et al., 2018). It was previously found that babies who were breastfed solely had lower weight gain, whereas babies who were partially breastfed had higher weight gain, which may put them at the risk of obesity in the future

(Kajale, Chipkar, Khadilkar, & Khadilkar, 2016). It was hypothesised in the previous study that breastfeeding women must have a nutritional advantage over non-breastfeeding women in India. In contrast, the findings suggest that breastfeeding women had no significant dietary advantage over non-breastfeeding women (Fledderjohann, Vellakkal, & Stuckler, 2016). Breastfeeding status was associated with gains in educational outcomes among adolescent children (Nandi, Lutter, & Laxminarayan, 2017).

Early breastfeeding termination was associated with increasing maternal age, residing in urban areas, and higher wealth quintile (Malhotra, Noheria, Amir, Ackerson, & Subramanian, 2008). Termination of breastfeeding among women from higher wealth quintile was due to other supplementary feeding material to feed the child (Dilip C. Nath & Goswami, 1997). A study from rural West-Bengal, India, points out the cultural restrictions of breastfeeding in Indian society. The study put light on the belief of impurity and the polluting effect of childbirth (Bandyopadhyay, 2009). Moreover, breastfeeding initiation was delayed for 2-3 days postpartum, and colostrum was discarded for putting the child to breastfeed (Bandyopadhyay, 2009). Mothers who had frequent contacts with health service professionals and those with educational attainments reported higher EIBF practices. The study also found rural-urban and regional differentials in India's EIBF (Senanayake, O'Connor, & Ogbo, 2019). It was argued that socio-economic status was one of the essential factors for BF practices which include EBF and EIBF (Nguyen et al., 2018). India's urban slum population had limited breastfeeding practices and had many misconceptions (Tiwari, Mahajan, & Lahariya, 2008).

To promote breastfeeding Indian government launched Mothers' absolute affection (MAA) on 5th August 2016 (Ministry of Health and Family Welfare, 2016). The goal of the 'MAA' Programme is to revitalise efforts towards promotion, protection, and support of breastfeeding practices through health systems to achieve higher breastfeeding rates. The following are the objectives of the programme to accomplish the following mentioned goal: 1. To build an enabling environment for breastfeeding through awareness generation activities, targeting pregnant and lactating

mothers, family members, and society to promote optimal breastfeeding practices, breastfeeding is an essential intervention for child survival and development. 2. Reinforce lactation support services at public health facilities through trained healthcare providers and skilled community health workers. 3. To incentivise and recognise those health facilities that show high breastfeeding and processes in place for lactation management (Ministry of Health and Family Welfare, 2016).

There was the dearth of study focusing on how MAA programme would help in promoting BF practices among lactating women in India. The study aims at tracking the progress in breastfeeding as it has been the first such opportunity after initiation of MAA programme to examine its progress at the national and sub-national levels. The study investigates the relative change in EBF and EIBF status from 2015-16 to 2019-20. Moreover, the present study aims to determine the important factors responsible for the shift in breastfeeding status from 2015-16 to 2019-20. The study hypothesised no change in EBF and EIBF level from 2015-16 to 2019-20.

Methods

This study's analysis is based on two recent rounds of NFHS: NFHS 4 and NFHS 5, which were conducted during the periods between 2015-16 and 2019-20, respectively. The NFHS series is a nationally representative cross-sectional survey conducted under the stewardship of the Ministry of Health and Family Welfare (MoHFW) of India. The NFHS provides information on population, health, nutrition, abortion, sexual behavior, and domestic violence for India and each state/union territory (IIPS and ICF, 2017).

The NFHS-5 sample is designed to provide national, state/UT, and district level estimates of various indicators critical to monitoring the SDGs on population, health, nutrition, and gender equality. However, some indicators like sexual behavior; women's work; HIV/AIDS knowledge, attitudes, and practices; domestic violence; and men's health are provided only at the state/union territory (UT) and national levels. The contents and definitions are similar to other rounds to allow comparisons over time. However, NFHS-5 has been expanded to include new issues such

as the extent of preschool education, disability, access to a toilet facility, death registration, bathing practices during menstruation, and methods and reasons for abortion. The scope of clinical, anthropometric, and biochemical (CAB) testing has been expanded to include measurement of waist and hip circumferences and malaria testing. However, there is no change in the early initiation of breastfeeding and exclusive breastfeeding.

The sampling design of NFHS-5 has been developed considering NFHS-4 as the benchmark and the need to provide estimates of population, health, and family welfare indicators at district, state/UT, and national levels with a reasonable level of precision. A stratified two-stage sampling design was adopted in rural and urban areas of the 707 districts (31st March 2017). Within each rural stratum, villages were selected from the sampling frame using probability proportional to size (PPS) with explicit stratification based on the percentage of SC/ST population and female literacy. NFHS-5 covers 609,120 households with eligible women aged 15-49 and eligible men aged 15-54 from a subsample of PSUs/households in 30,456 primary sampling units (PSU), comprised of villages in rural areas and census enumeration blocks (CEBs) in urban areas. The selection of households is based on the sampling frame prepared from mapping and listing households in all PSUs identified across 707 districts. NFHS-5 uses four survey schedules—Household, Woman's, Man's, and Biomarker—canvassed in local languages using Computer Assisted Personal Interviewing (CAPI). The analysis has been carried out at a district level incorporating information from 342 districts across 22 phase-I States/UTs.

Outcome variables

Exclusive breastfeeding and early initiation of breastfeeding were the two outcome variables selected to evaluate the MAA programme's progress. EIBF is defined as the initiation of breastfeeding within one hour of birth. In contrast, exclusive breastfeeding is established as breastfeeding for the first six months after childbirth, i.e., a baby is given nothing but breastmilk.

Predictor variables

The selected explanatory variable was chosen to analyse the progress, for instance, women with ten or more years of schooling, illiterate women, and women aged 20-24 years married before age 18 years, women with four or more ANC institutions delivery and delivery from a cesarean section. All the variables were tabulated in percentages at the district level for the analytical purpose.

Statistical analysis

The relative change was measured for the outcome and selected predictor variables to account for the level change in India's indicators of development.

$$Relative\ change = \frac{A_{2019-20} - A_{2015-16}}{A_{2015-16}}$$

Change in percentage of breastfeeding and colostrum feeding will be assessed from 2015-16 and 2019-2020.

Quintile regression was further used to analyse the indicators at the district level. Suppose we have a sample of n observations on some continuous outcome y_i , $i = 1, \dots, n$, and an n -dimensional vector of the covariate $x_i = \{x_{1,i}, \dots, x_{s,i}\}^T$. The quintile regression model is

$$y_i = x_i^T \beta_p + \varepsilon_i$$

Where the $\beta_p = \{\beta_{p1}, \dots, \beta_{ps}\}^T$ indicate the unknown regression parameters. For any given $p \in (0, 1)$, we assume that $P(\varepsilon_i \leq 0 | x_i)$ or, equivalent, that $P(y_i \leq x_i^T \beta_p | x_i) = p$. The p quintile of the conditional distribution of y_i , given x_i is defined as

$$Q_y(p) = x_i^T \beta_p$$

If $p = 0.5$, then $Q_y(0.5)$ is the conditional median, the value that splits the conditional distribution of the response variable into two parts with equal probability. No other assumptions are required on the distribution of the regression residual ε_i .

Results

Table-1 represents the change in the percentage of children who had early initiation of breastfeeding and exclusive breastfeeding in India from 2015-16 to 2019-20. It was found that there was a relative decline of seven per cent in EIBF and a corresponding increase of nine per cent in EBF. In the case of EIBF, the highest relative decline was witnessed in Dadar and Nagar Haveli (52 per cent,) followed by Sikkim (50 per cent) and Assam (23 per cent). Moreover, the highest relative increase was witnessed in Lakshadweep (34.5 per cent,) followed by West Bengal (30 per cent) and Andhra Pradesh (30 per cent). EBF saw a relative increase of nine per cent from 2015-16 to 2019-20. Moreover, the highest relative increase in EBF was witnessed in Meghalaya (63 per cent), followed by Maharashtra (24 per cent) and Bihar (19 per cent). The steepest relative decline was seen in Sikkim (45 per cent). The results depicted were significant after applying the proportion test at a 95 per cent confidence interval.

Table-2 represents the change in the percentage of C-section deliveries, institutional delivery, and four or more ANC visits in India from 2015-16 to 2019-20. C-section deliveries saw a relative increase of 40 per cent from 2015-16 to 2019-20. The highest corresponding increase was witnessed in Ladhak (137 per cent), followed by Sikkim (72 per cent) and Bihar (63 per cent), whereas the highest relative decrease was seen in Lakshadweep (18 per cent). Institutional deliveries saw a relative increase of 13 per cent from 2015-16 to 2019-20. The highest relative increase was witnessed in Nagaland (37 per cent) followed Dadra & Nagar Haveli and Daman & Diu (37 per cent) and Manipur (36 per cent). Four or more ANC visits in India showed a relative increase of five per cent from 2015-16 to 2019-20. The highest relative increase was witnessed in Bihar (79 per cent) followed by Dadra & Nagar Haveli and Daman & Diu (20 per cent), and Assam (15 per cent). In contrast, the highest relative decrease was witnessed in Sikkim (20 per cent), followed by Kerala (13 per cent) and Andhra Pradesh (10 per cent).

Figure-1, 2, and 3 represents the trend of C-section deliveries, institutional, and four or more ANC visits across selected states from 2015-16 to 2019-20 in India. Improvement in indicators was visible from 2015-16 to 2019-20 in India.

Figure-4 represents the percentage of women who initiated early breastfeeding after having C-section and non-C-section deliveries in India's selected states in 2019-20. It was found that almost 40 per cent and 50 per cent of women in India initiated early breastfeeding after having C-section and non-C-section delivery in India. It is clear that women with C-sections had lower EIBF, and women with non-C-section had higher EIBF.

Table-3 represents the mean estimates for children under age three years breastfed within one hour of birth and children under age six months exclusively breastfed by selected women characteristics in India. It was found that in districts where women with ten or more years of schooling were more than 40 per cent, and the illiteracy rate was less than 10 per cent, the mean EIBF and EBF were high in those districts. Moreover, in districts, where women age 20-24 years married before age 18 years were less than 23 per cent, the mean of EIBF was high. In districts where Mothers who had at least four antenatal care visits were more than 50 per cent, the mean EIBF and EBF were high. Interestingly districts with less than 50 per cent institutional delivery and less than 10 per cent of C-sections had a higher mean of EIBF and visa-versa for EBF.

Table-4 represents the coefficient of children under age three years breastfed within one hour of birth and children under age six months exclusively breastfed by selected women characteristics in India. It was revealed that illiterate women, who had institutional delivery and delivery through C-section, were having a lower likelihood for EIBF. In contrast, women with 10 or more years of schooling and four or more ANC visits had a higher likelihood of EIBF. Moreover, for EBF estimates, it was found that women with 10 or more years of schooling had a higher chance of EBF; however, results were significant for q90 only. Interestingly women aged 20-24 years

married before age 18 years were having a higher probability of EBF. However, the results were insignificant.

Discussion

The study reveals a relative increase in exclusive breastfeeding (9.4 per cent), whereas surprisingly, there was a relative decline in early initiation of breastfeeding (-6.9 per cent) from NFHS 2015-16 to 2019-20. However, other significant correlates showed the relative increase from NFHS 2015-16 to 2019-20, i.e., C-section deliveries increased by 40.3 per cent, institutional delivery by 12.8 per cent, and four or more ANC visits by 4.7 per cent.

As previous literature found, the percentage of EBF is higher in southern India and lowest in parts of north-east India (Ogbo et al., 2019). Even in the present analysis, apart from Meghalaya, the output from EBF and EIBF was not satisfactory in the other states of north-eastern India. Sikkim witnessed a massive relative decline in the percentage of EBF (-45 per cent) and EIBF (-50 per cent) over the last four years. The reason for the decrease is ambiguous and needs further research to look into the underlying factors. At the community level in India, standard traditional infant feeding practices associated with the early introduction of water and other water-based fluids before six months of age have hindered interventions from promoting EBF (Ogbo et al., 2019). Even though in rural areas, people live together in a village and their beliefs and religious practices may have a strong influence on their behavior and social habits, including focusing on child health care and well-being. A significant association that infants in the urban area as compared to the rural area are less likely to be breastfed (Tan, 2011).

Previous literature argued that the higher maternal education level was positively associated with EIBF and inversely associated with EBF (Tang et al., 2019). The result in our study is also consistent with finds that districts with a higher percentage of women with 10 or more years of schooling had a higher likelihood for EIBF and EBF. The positive association shows that education plays a vital role in the implementation of breastfeeding awareness in India.

Findings reveal that C-sections are significantly associated with reduced odds of breastfeeding. Moreover, women who went for emergency C-sections had more difficulty breastfeeding their child at delivery or discharge (Zanardo et al., 2010). The finds from the present paper were also paralleled with the previous literature that there was a significant difference for EIBF among those who had a delivery through C-section and vice-versa. Moreover, from adjusted analysis also, it was found that districts with a higher percentage of C-section deliveries had a lower likelihood for EIBF. The reasons cited by literature are that lactogenesis might equally be affected by the insult of abdominal surgery in C-sections because of which breastfeeding is not possible in the early hours after delivery (Hobbs, Mannion, McDonald, Brockway, & Tough, 2016).

The present study provides evidence that districts with a higher percentage of four or more ANC visits had a higher likelihood of EIBF. However, the association of four or more ANC visits with EBF was ambiguous in the present study. The result was consistent with earlier findings that having ante-natal care was positively associated with exclusive breastfeeding practices (Biks, Tariku, & Tessema, 2015). ANC from a health institution is a good source of knowledge and information for feeding practices for women's (Bahemuka, Munyanshongore, & Birungi, 2013). Women who gave birth in a health facility higher odds to practice exclusive breastfeeding than those who deliver at home (Seid, Yesuf, & Koye, 2013). This reason could be the fact that women who provide birth at institutional health facility had more opportunities to obtain immediate obstetric and postnatal care information and knowledge, such as nutritional education and counselling on the benefit of exclusive breastfeeding and early initiation of breastfeeding, correct positioning and attachment, and breast care. It has been noted that postnatal care counselling on exclusive breastfeeding is an important determinant factor for increasing EBF practice in general (Yeneabat, Belachew, & Haile, 2014). However, the results from the present study oppose the results from previous studies. The present study revealed that districts with higher institutional deliveries had lower EIBF. The reason could be the interaction effect of institutional

deliveries with higher C-sections, i.e., possibly districts with higher institutional delivery may have higher C-sections rates.

The study had certain limitations though which cannot be ignored. The results were analysed at district level only. Additionally, only 342 districts were included during the study as data for 342 districts were released for NFHS 2019-20. However, study has its own strengths as it provides a macro level estimates for BF practices and effectively tracks the progress MAA programme at district level.

Conclusions

The present paper concluded that MAA programme seems to be effective for rendering positive results for exclusive breastfeeding; however, early breastfeeding initiation is a cause of concern as its percentage decreased significantly from 2005-16 to 2019-20. The percentage increase is primarily associated with increased ANC visits and institutional deliveries. However, due to increased C-section deliveries, the percentage of EIBF has decreased significantly. Moreover, increased institutional deliveries in India now pose a risk for increased C-section, which poses a considerable risk towards implementing the MAA programme in India. Higher C-section deliveries are surely going to hinder the progress of the MAA programme in India.

Abbreviations:

NFHS: National Family Health Survey

BF: Breastfeeding

EIBF: Early initiation of breastfeeding

EBF: Exclusive breastfeeding

MAA: Mother's absolute affection

ANC: Ante-natal care

C-section: Caesarean section

Declarations

Ethics approval and consent to participate: The data is freely available in public domain and survey agencies that conducted the field survey for the data collection have collected a prior consent from the respondent. Local ethics committee of International Institute for Population Sciences (IIPS), Mumbai, ruled that no formal ethics approval was required to carry out research from this data source.

Consent for publication: Not applicable

Availability of data and materials: The study utilises secondary source of data which is freely available in public domain through <http://iipsindia.org>.

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Author's Contribution: The concept was drafted by SKS; SS contributed to the analysis design, SKS and SS advised on the paper and assisted in paper conceptualization. SS contributed in the comprehensive writing of the article. All authors read and approved the final manuscript.

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Table-1. Change in the percentage of children exclusively breastfeed and breastfeed within one hour of birth in India (342 districts) from 2015-16 to 2019-20

States	EIBF				EBF			
	2015-16	2019-20	Relative change	p<0.05	2015-16	2019-20	Relative change	p<0.05
India	52.0	48.4	-6.9	*	58.5	64.0	9.4	*
Andaman & Nicobar Islands	40.6	45.8	12.9		66.8	75.7	13.2	
Andhra Pradesh	39.5	51.4	30.0	*	74.0	69.8	-5.7	
Assam	64.8	49.8	-23.2	*	64.8	65.9	1.7	
Bihar	35.5	32.1	-9.4	*	51.1	60.7	18.8	*
Dadra & Nagar Haveli And Daman & Diu	52.8	25.4	-51.9	*	70.3	78.5	11.6	
Goa	71.7	62.2	-13.2		60.9	67.1	10.3	
Gujarat	51.1	37.2	-27.1	*	57.1	67.4	18.0	*
Himachal Pradesh	42.6	47.2	10.6		68.5	70.3	2.7	
Jammu & Kashmir	45.2	54.9	21.6	*	63.7	64.3	0.9	
Karnataka	56.5	48.2	-14.8	*	57.1	64.8	13.5	
Kerala	63.0	66.7	5.9		53.3	61.1	14.7	*
Ladhak	60.1	58.0	-3.5		59.3	72.2	21.8	
Lakshadweep	57.7	77.6	34.5	*	54.8	69.2	26.4	
Maharashtra	56.9	54.5	-4.1		61.9	76.8	23.9	*
Manipur	66.1	55.0	-16.8	*	71.5	74.4	4.1	
Meghalaya	56.8	71.7	26.3	*	28.7	46.7	63.1	*
Mizoram	73.3	60.1	-18.1	*	62.3	68.3	9.7	
Nagaland	53.5	56.6	5.9		43.9	44.3	0.9	
Sikkim	67.3	33.6	-50.1	*	57.4	31.6	-45.0	*
Telangana	36.9	36.0	-2.4		67.0	71.8	7.2	
Tripura	47.7	34.6	-27.4		70.8	64.9	-8.4	
West Bengal	45.6	59.5	30.4	*	58.4	57.0	-2.4	

Table-2. Change in the percentage of in four or more ANC, institutional delivery and C-section deliveries India (342 districts) from 2015-16 to 2019-20

States	C-section				Institutional delivery				Four or more ANC Visits			
	2015-16	2019-20	Relative change	p<0.05	2015-16	2019-20	Relative change	p<0.05	2015-16	2019-20	Relative change	p<0.05
India	19.5	27.4	40.3	*	54.8	61.9	12.8	*	60.9	63.7	4.7	*
Andaman & Nicobar Islands	15.3	25.4	65.9		92.9	89.4	-3.7		86.4	81.2	-6.0	
Andhra Pradesh	40.5	43.7	7.8		38.2	49.6	29.8	*	76.4	68.5	-10.4	*
Assam	14.2	19.4	36.4	*	62.1	74.7	20.3	*	45.8	52.5	14.5	*
Bihar	6.2	10.2	63.3	*	49.6	57.9	16.8	*	14.6	26.0	78.6	*
Dadra & Nagar Haveli And												
Daman & Diu	17.8	24.6	38.7		50.5	69.2	37.1	*	71.3	85.2	19.5	*
Goa	31.2	39.5	26.5	*	58.1	56.2	-3.2		88.1	93.3	5.9	
Gujarat	15.1	19.5	29.9	*	36.7	44.9	22.5	*	67.1	77.6	15.5	*
Himachal Pradesh	16.7	20.4	22.2		61.7	71.0	15.0	*	67.4	71.9	6.7	
Jammu & Kashmir	32.3	40.2	24.6	*	76.8	86.9	13.1	*	80.1	79.8	-0.3	
Karnataka	24.5	33.5	36.5	*	63.4	66.9	5.5		74.0	72.4	-2.1	
Kerala	36.9	40.3	9.4		39.7	36.0	-9.4		89.6	78.1	-12.8	*
Ladakh	16.5	39.1	137.2	*	89.8	95.2	6.1	*	87.6	78.5	-10.3	*
Lakshadweep	38.4	31.6	-17.5	*	64.3	69.7	8.4		82.3	89.2	8.4	*
Maharashtra	18.9	24.1	27.2	*	51.9	60.8	17.2	*	72.4	71.0	-1.8	
Manipur	16.5	22.7	37.5		40.2	54.5	35.6	*	59.9	73.2	22.3	
Meghalaya	8.9	7.5	-16.6		50.4	55.8	10.8		53.7	48.3	-10.1	
Mizoram	9.5	9.3	-2.9		63.6	74.8	17.5	*	56.6	55.4	-2.2	
Nagaland	5.2	5.1	-1.6		25.8	35.4	37.3	*	14.2	19.7	38.7	
Sikkim	18.3	31.8	73.6	*	86.7	81.2	-6.3		77.1	61.4	-20.3	*
Telangana	57.7	61.6	6.7		30.5	49.3	61.5		74.9	70.0	-6.5	
Tripura	14.4	24.7	71.9		70.6	78.5	11.3		65.3	51.3	-21.5	
West Bengal	23.1	32.5	40.5	*	60.2	72.3	20.2	*	75.1	75.2	0.1

Figure-1. Trend of C-section deliveries among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure-2. Trend of Institutional deliveries among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure-3. Trend of four or more ANC visits among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure-4. Percentage of women who initiated early breastfeeding after having C-section and non-C-section deliveries in selected states of India, 2019-20.

Table-3. Mean estimates for children under age three years breastfed within one hour of birth and children under age six months exclusively breastfed by selected women characteristics at district level in India (342 districts) (NFHS 2019-20)

Variables	Mean (EIBF)	Mean (EBF)
Women with 10 or more years of schooling		
Less than 20 per cent	36.2	60.2
20-40 per cent	46.9	62.9
Above 40 per cent	50.4	65.9
Illiterate women		
Less than 10 per cent	57.5	64.2
10-20 per cent	50.6	63.1
Above 20 per cent	44.7	64.2
Women age 20-24 years married before age 18 years		
Less than 23 per cent	52.4	63.9
23-50 per cent	43.6	64.2
Above 50 per cent	44.8	61.8
Mothers who had at least four antenatal care visits		
Less than 25 per cent	41.5	53.1
25-50 per cent	43.3	61.9
Above 50 per cent	50.0	66.3
Institutional delivery		
Less than 50 per cent	63.8	50.0
50-70 per cent	51.5	55.7
Above 70 per cent	47.6	65.8
Births by caesarean section		
Less than 10 per cent	49.5	58.5
10-20 per cent	46.4	65.2
More than 20 per cent	49.0	66.5
Total	48.4	64.0

per cent: Percentage

Table-4 Coefficient of children under age three years breastfed within one hour of birth and children under age six months exclusively breastfed by selected women characteristics at district level in India (342 districts) (NFHS 2019-20)

Quartile	q25	q50	q75	q90
Children under age three years breastfed within one hour of birth				
Women with 10 or more years of schooling	0.24*	0.09	-0.03	-0.14
Women who are illiterate	-0.39**	-0.40**	-0.41***	-0.50**
Women age 20-24 years married before age 18 years	0.10	-0.00	-0.03	-0.01
Mothers who had at least 4 antenatal care visits	0.17*	0.27***	0.28***	0.40***
Institutional delivery	-0.39***	-0.36**	-0.30*	-0.41**
Births by caesarean section	-0.09	-0.12*	-0.10	-0.04
Constant	62.31***	72.34***	78.98***	93.82***
Children under age six months exclusively breastfed				
Women with 10 or more years of schooling	0.04	0.22	1.20	0.42*
Women who are illiterate	-0.32	-0.67	-2.21	-0.15
Women age 20-24 years married before age 18 years	0.03	0.41	2.40	0.48
Mothers who had at least 4 antenatal care visits	-0.25*	-0.27	-0.61	-0.02
Institutional delivery	-0.06	-0.31	-0.67	0.27
Births by caesarean section	0.04	0.30	0.77	-0.074
Constant	-44.52**	-22.7	57.09	24.13

Note: * p<0.05, ** p<0.01, *** p<0.001

Figures

Figure 1

Trend of C-section deliveries among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure 2

Trend of Institutional deliveries among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure 3

Trend of four or more ANC visits among women in selected states from 2015-16 to 2019-20 in India (342 districts).

Figure 4

Percentage of women who initiated early breastfeeding after having C-section and non-C-section deliveries in selected states of India, 2019-20.