

Breastfeeding & Infant Feeding Practices in India - A review of Demographic and Health Surveys and National Family Health Surveys

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Background

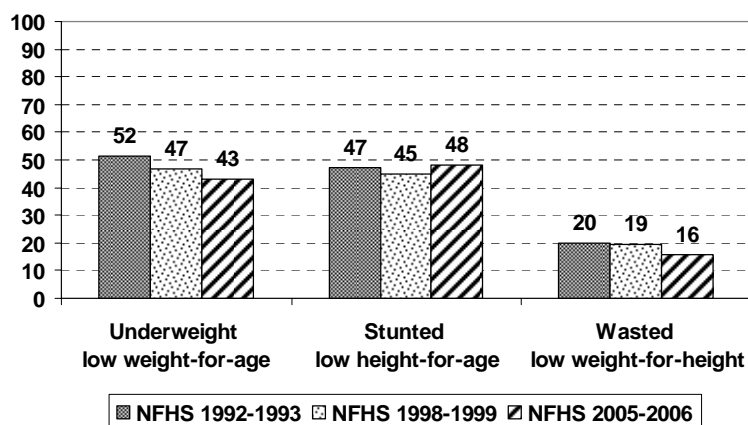
The 4th Millennium Development Goal aims to achieve a two thirds reduction in global under-five deaths by 2015 of which 38% occur in newborns. Inappropriate breastfeeding significantly increases the risk of all cause mortality as compared to appropriate breastfeeding practices (Table 1). Childhood malnutrition also remains an important public health problem in India. The prevalence of underweight, wasting and stunting of under-five children are all high with little change between the three National Family Health Surveys (NFHS, Figure 1).

Table 1. Increased risks of all cause mortality (Inappropriate vs. appropriate breastfeeding)

	0-5 months			6-23 months
	Predominant BF	Partial BF	No BF	No BF
RR	1.48	2.85	14.0	3.68
95% CI	(1.23-1.92)	(1.99-5.10)	(6.09-34.05)	(1.46-9.29)

Black et al. Lancet 2008; 371: 243-60

Figure 1. Prevalence of underweight, stunted and wasted under-five children in India



India's goal is for early initiation of breastfeeding to reach 80% in its 10th five year plan, thus reducing childhood morbidity and mortality. In India breastfeeding is almost universal, however the rates of early initiation, exclusive breastfeeding and timing complementary feeds are far from desirable. Also there are substantial differences in breastfeeding and infant feeding practices between regions and the 29 states of India.

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The NFHS of India conducted over the last 14 years provides a valuable source of data about infant and young child feeding. However this data has not been analyzed using standard WHO infant and young child feeding indicators nor has it been presented in ways that make the information readily available to health policy makers and program managers. The present analysis of NFHS data aims to fill this information gap about the current situation and trends with infant and young child feeding indicators in India.

Characteristics of the sample

The analysis presented have been based on the available NFHS data collected in India in three surveys in 1992-93, 1998-99 and in 2005-06. These data sets were downloaded from the public access website. Each data set was inspected for quality of data, completeness of information, and comparability of variables required for the analysis. The required variables from each data set were selected and files constructed. In contrast to the published reports of NFHS data, we reanalyzed the data sets only for the WHO defined breastfeeding indicators of the last born children less than 24 months who were living with the respondent, from six regions namely, North, Central, East, North-East, West and South. (Table 2)

Table 2. Database

Year of NFHS	1992-93	1998-99	2005-06
No. of households interviewed	88,562	91,196	109,041
No. of women interviewed	89,777	89,199	124,385
No. of last born children <2 yr	22,784	20,149	20,108

National Family Health Surveys, IIPS, Mumbai

Infant and young child feeding indicators and trends across three surveys

Figure 2 shows the breastfeeding according to age in 2005-6 and Table 3 the frequency of different indicators in three surveys. Although timely initiation of breastfeeding significantly increased from 9 to 24 % over 14 years, it is still suboptimal. Exclusive breastfeeding (EBF) rates and bottle feeding rates were unchanged. Timely complimentary feeding increased so substantially in the last survey raising questions about the difference in methodology of estimating this indicator between surveys. (Figure 3)

Figure 2. Breastfeeding Status According to Age

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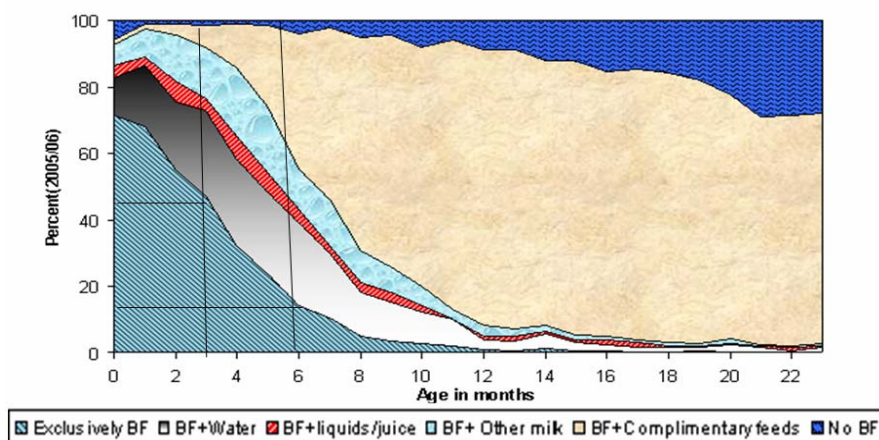


Table 3. Comparison of breastfeeding indicators among children 0-23 months of age in India between 1992-93, 1989-99, and 2005-06

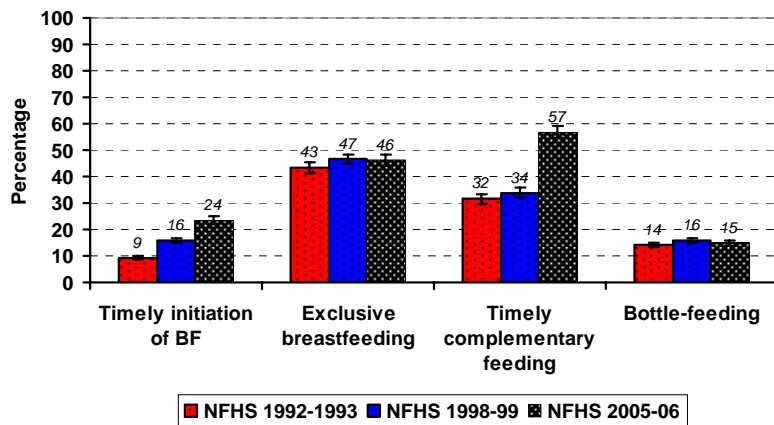
<i>Indicator</i>	<i>1992-1993</i>			<i>1998-99</i>			<i>2005-06</i>		
	<i>Rate (%)</i>	<i>95% CI</i>		<i>Rate (%)</i>	<i>95% CI</i>		<i>Rate (%)</i>	<i>95% CI</i>	
Timely first-suckling rate^a	9.3	8.6	10.1	15.8	14.9	16.8	23.5	22.3	24.8
Ever breastfed rate^a	98.8	98.5	99.0	98.9	98.7	99.1	99.2	99.0	99.4
Current breastfeeding rate^b	90.0	89.5	90.5	90.9	90.4	91.4	89.8	89.2	90.4
Continued breastfeeding rate (1 year)^d	89.1	87.9	90.2	90.3	89.1	91.4	89.4	87.9	90.7
Continued breastfeeding rate (2 year)^e	73.1	71.1	75.0	75.3	73.2	77.3	73.1	70.9	75.3
Exclusive breastfeeding rate^c	43.4	41.4	45.3	46.8	45.0	48.5	46.4	44.4	48.5
Predominant breastfeeding rate^c	31.4	29.8	33.1	27.5	25.9	29.1	27.4	25.6	29.3
Full breastfeeding rate^c	74.8	73.2	76.2	74.2	72.7	75.6	73.9	72.1	75.5
Bottle-feeding rate^a	14.0	13.2	14.9	15.8	14.9	16.7	14.8	13.8	15.9
Timely complementary feeding rate^f	31.5	29.8	33.3	34.0	32.1	35.9	56.7	54.4	59.0

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a - Infants under 12 months, b - Children under 24 months, c - Infants below 6 months, d - Children 12-15 months, e - Children 20-23 months, f - Infants 6-9 months
National Family Health Survey 2005-2006, IIPS, Mumbai

Figure 3. Trends across three surveys of breastfeeding indicators.

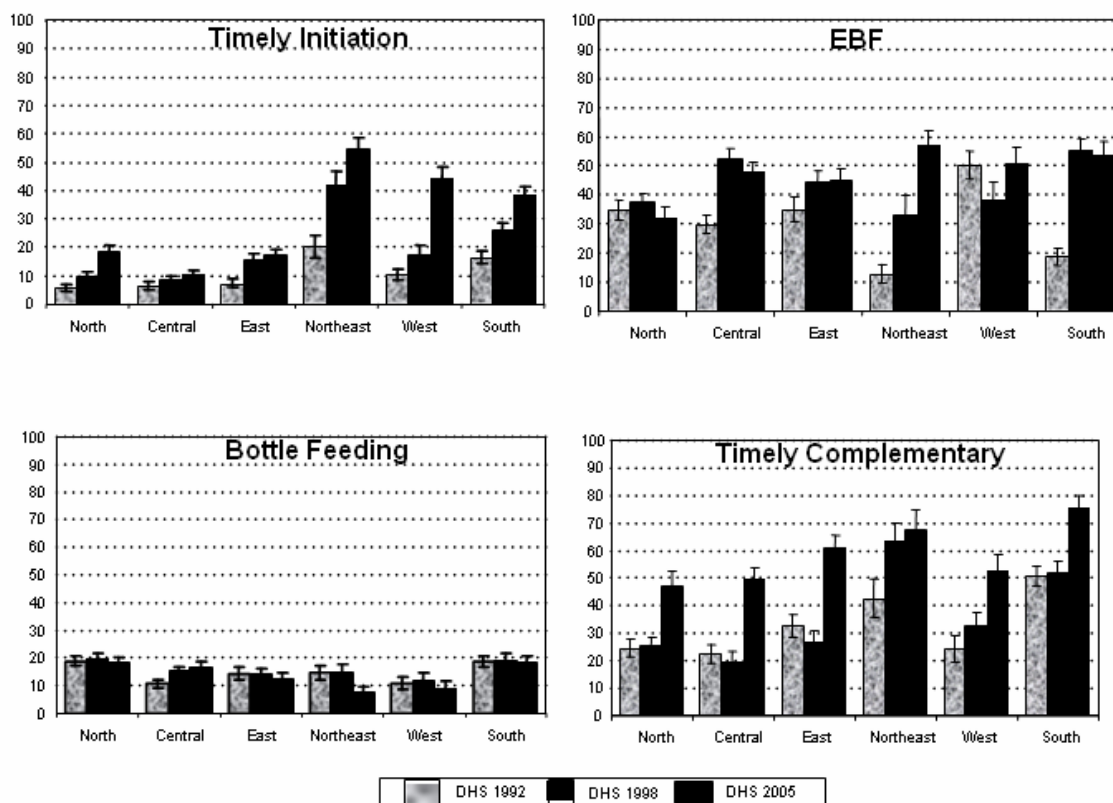


The regional trends of timely initiation, EBF, bottle feeding and timely complementary feeding are shown in Figure 4. Out of six regions, EBF rates were increased (between 1998-99 and 2005-6 surveys) in Northeast (33.1% to 56.8 %) and West regions (38.4% to 50.9 %). This was offset by decrease in North (37.2% to 32%), Central (52.5% to 47.9%), and South (55.3% to 53.6%). Timely initiation and timely complimentary feeding rates increased in all regions in 2005-6. Bottle feeding rates remained unchanged.

Figure 4. Comparison of regional Timely Initiation, EBF rates, Bottle Feeding and Timely Complementary for 1992-93, 1998-99 and 2005-06 NFHS

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Amongst the states, six demonstrated an improvement and six a decline between the two surveys, and the remaining states were unchanged, thus leaving the national EBF rates between 1998-99 and 2005-06 unchanged. In the Northeast region the states of Arunachal Pradesh, Assam and Mizoram showed increased EBF rates. In the West region, the increase was due to improvements observed in Maharashtra state. In the Northern region, Delhi improved whereas Jammu and Kashmir showed a decline. In the East, improvement in West Bengal was offset by a decline in Bihar. Decreased EBF rates were seen in Andhra Pradesh and Tamil Nadu from the South region, Gujarat from the West region, and Madhya Pradesh (including Chhattisgarh) from the Central region.

Determinants of selected feeding indicators (2005-6)

Unadjusted and adjusted odds ratios (OR) were calculated to estimate the strength of association between independent variables and four infant feeding outcomes: (1) lack of timely initiation of breastfeeding or first suck; (2) not exclusively breastfeeding; (3) bottle-feeding; and (4) not given timely complementary feeds. The results of these logistic model analyses are shown in Table 4. Educated women, working women, with more ante natal visits and not exposed to media such as newspaper, radio and television had improved rates of timely first suck. Babies by caesarean section were least likely to receive timely first suck. There were no differences between urban and rural regions. There was a monthly increase in the odds of not EBF by 60%. Women from higher quintiles of wealth and those delivered in a health facility had less likelihood of EBF. Antenatal visits had a positive impact on EBF. The rates of bottle feeding were higher in women who were working, more educated, of urban areas, in higher quintiles of wealth, those who watched television, babies delivered by health professionals, in babies born by caesarean section, older babies and in women with no post natal check ups. As compared to North region,

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Central region had higher rates of bottle feeding whereas Northeast and West had lower rates. Timely complementary feeding rates increased if antenatal visits were more than 7 and if women watched television.

Table 4. Comparison of individual factors impacting on improved or decreased breastfeeding indicators in surveys 1998-99 and 2005-6

Factors associated with timely first suck		
	1998-99	2005-06
Higher rates	Health facility Age Reading newspaper Husband education North east South West	Health facility Age Antenatal visit Listen to radio Watches television North east South West
Lower rates	Caesarean Watching television	Caesarean Preceding birth interval Central
Factors associated with exclusive breastfeeding		
	1998-99	2005-06
Higher rates	Central South	Central South North East West East Formerly married Antenatal clinic visit
Lower rates	Age Health facility Wealth index Urban Maternal education Watching television	Age Health facility Wealth index Urban
Factors associated with bottle feeding		
	1998-99	2005-06
Higher rates	Health professional delivery Higher wealth index Age Maternal or partner education Antenatal clinic visit	Health professional delivery High wealth index Age Mother Education Caesarean No postnatal check-up Working mothers Watches television Urban Central
Lower rates	Average baby size Female child West	Average and large baby size North east West

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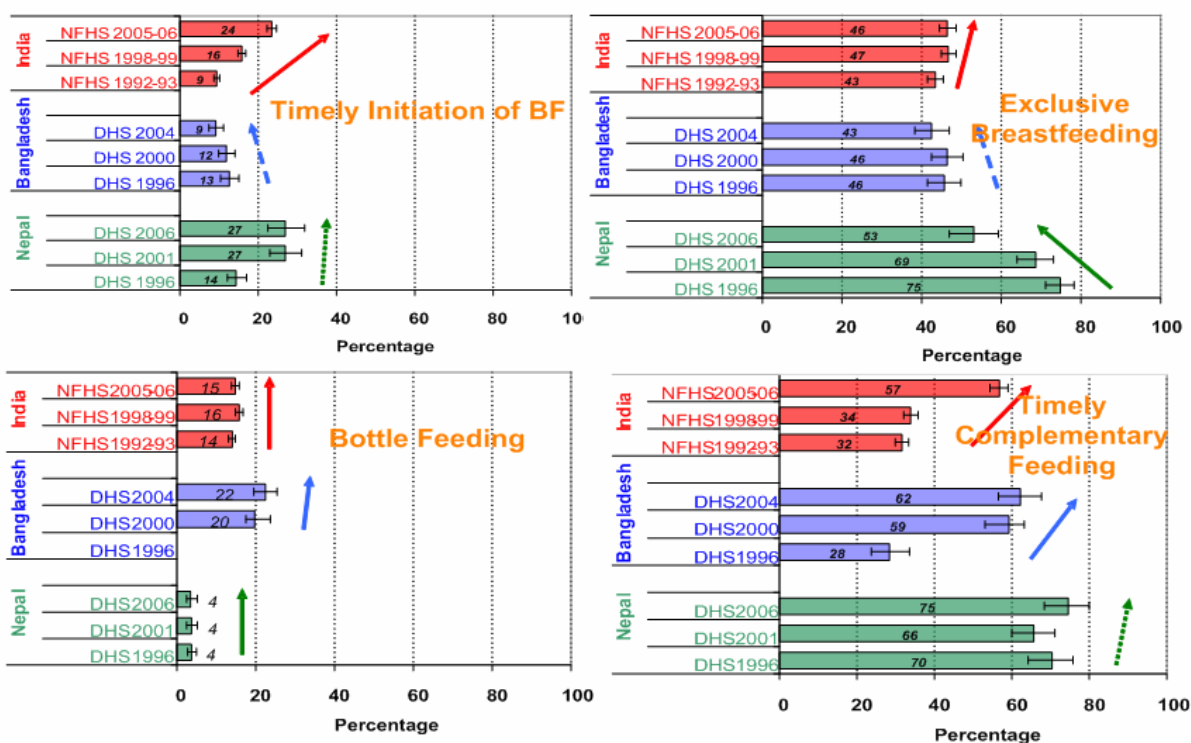
	South	Rural
Factors associated with timely complementary feeding		
	1998-99	2005-06
Higher rates	Age of infant Watches television Antenatal clinic visits Formerly married North East, South	Age of infant Watches television Antenatal clinic visits >7 East, North East, South, Central
Lower rates	Health facility	Preceding birth interval 9-14m

National Family Health Surveys, IIPS, Mumbai

Comparison of India with other South Asian Countries (Bangladesh, Nepal, Sri Lanka)

There was marked differences in prevalence of indicators by country (Figure 5). Although improved over the years, timely initiation was low except for in Sri Lanka (2000) which was twice as high (56%). The bottle feeding rates (27%) were also higher than in the other countries and majority (93%) of children aged 6-9 months received complementary foods. Nepal had the highest rate of EBF in all surveys, but with a declining trend over the years. The infant feeding indicators have improved more in India than in other countries where trend data is available.

Figure 5. Cross country trends



Conclusions:

Breastfeeding in India is almost universal, however the rates of early initiation, exclusive breastfeeding and timely complementary feeding are well below desirable targets and need improvement. Although health facility delivery and higher household wealth quintiles were

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associated with early initiation, they were also associated with bottle feeding and less EBF. Babies delivered by caesarean sections were least likely to receive timely first suck and most likely to be bottle fed. Antenatal clinic attendance improved timely initiation and EBF in 2005-06, complimentary feeding and also accounted for the trends in states which improved their EBF rates between the last two surveys. Between the three surveys, rates of EBF and bottle feeding remain unchanged but rates of timely first suck and complementary feeding increased. Health facility delivery showed an increasing trend in EBF, but were still lower than in home deliveries and also were associated with higher bottle feeding rates indicating that 'Baby Friendly Hospital Initiatives' at health centers needs revitalization and strengthening.

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