

Child Morbidity and Breastfeeding Status in India

Rajiv Ranjan¹ & Balram Paswan²

Medical and public health experts advocate breastfeeding as the best method of feeding young infants for a wide variety of reasons. It is evident that even the most sophisticated and carefully adapted formulae can never replicate human milk, as human milk has anti-infective properties, and is a 'live' fluid which cannot be mimicked in an artificial formula.

It is well known that breastfeeding practice can have a substantial effect on infant health and mortality in developing countries (Anandaiah and Choe, 2000). There are at least three known mechanisms by which breastfeeding contributes to infant health and survival. First, breast milk is ideally suited to baby's metabolic structure and contains the optimal combination of nutrients. Second, breastfeeding allows the mother to pass on immunities that she herself had acquired to the baby. For example, diarrhoea preventing immunoglobulin (IgA), which does not pass through the placental barrier in sufficient amounts during pregnancy, is passed on to infants through breastfeeding. Third, breastfeeding children receive less of other foods and liquids that could be contaminated with disease-causing agents (Breind, Wojtyniak, and Rowland 1988; Cabigon 1997; Habitch, DaVanzo, and Butz 1986; Huffman and Lamphere 1984; Jelliffe and Jelliffe 1978; Palloni and Tienda 1986; Yoon et al. 1996).

Many studies on breastfeeding have been conducted worldwide during the last sixty years. The World Health Organization (WHO, 1981) conducted a collaborative study on breastfeeding in nine developing countries including India between 1975 and 1978, and found socio-cultural factors such as education, employment, income, and urban residence to be the strongest determinant of the length of breast feeding. Various studies (Thimmayamma and Vidyavati, 1990, and Walia et al., 1974) including WHO (1981) study, have reported that mothers consider breast milk the best food for infants. However, though such a high percentage of mothers think so, the actual practice is in sharp contrast to this belief. Cultural, traditional and scientific studies support breast-feeding as the best food for babies soon after the delivery. The 'suckling reflex' is found to be very active during the first half an hour after birth (Pandit et al., 1994).

In 1990, UNICEF and WHO launched the baby friendly hospital initiative for the promotion of breastfeeding. It recommended that health personnel should help mothers to initiate breastfeeding within half an hour of birth of the child. Breastfeeding has been universal practice in the past. But this situation is fast changing in this age of modernization. Studies reveal that contemporary women are less able to lactate and breastfeed than their predecessors. They also observed that the practice of breastfeeding is on the decline, both in terms of incidence and duration (Reddy, 1995).

¹ Senior Research Scholar, International Institute for Population Sciences, Mumbai - 400 088

² Reader, Department of Population Policies and Programme, International Institute for Population Sciences, Mumbai - 400 088

Data and Methods

This paper tries to look into status of breastfeeding, prevalence of diarrhoea and pneumonia and to examine the casual relationship between breastfeeding infectious disease with environmental, socio-economic and demographic variables. For the present study data has been used of District Level Household Survey under Reproductive and Child Health Project, 2002. Analysis of breastfeeding status is based on the youngest child age 0-35 months , however the prevalence of diarrhoea and pneumonia is based on 65,645 child.

Discussion:

Infant feeding practices have significant effects on both mothers and children. The Baby Friendly Hospitals Initiative, launched by the United Nations Children's Fund (UNICEF), recommends initiation of breastfeeding immediately after childbirth. Breastfeeding improves the nutritional status of young children and reduces morbidity and mortality. Under Reproductive and Child Health Programme, the Government of India recommends that infant should be exclusively breastfed from birth to age four months.

Initiation of breastfeeding immediately after childbirth is important because it benefits both the mother and the infant. The sucking reflex helps the release hormone oxytocin resulting in uterine contraction that facilitate expulsion of placenta and reduces the risk of postpartum hemorrhage. It is also recommended that the first breast milk (colostrums) should be given to the child rather than squeezed from the breast and discarded, because it provides natural immunity to the child (NFHS, India Report, IIPS, Mumbai).

Table 1 shows the percentage of children born during the three years before the survey who started breastfeeding within 2 hours, after 2 hours but same day, within 1-3 days, after 3 days and children whose mothers squeezed the first breast milk from the breast before breastfeeding. Breastfeeding is universal in India. About 28 percent of the children began breastfeeding within 2 hours of birth, 16 percent began breastfeed same day but after 2 hours of birth, 37 percent of children began within 1-3 days after birth, and 19 percent of children began breastfeed after 3 days. The early initiation of breastfeeding is relatively high for age 20-24 and 25-29 years age group, urban women, scheduled tribe women, Christian women, birth order 2, and women with male child. The early initiation of breastfeeding is staidly increasing with increasing the educational level and household standard of living. The practice of late of intimation of breastfeeding i.e. after 3 days of childbirth are found more among women age 40-44 years, birth order 4+, rural women, non-literate women, Muslim women, scheduled caste women, and women with low standard of living household women.

Colostrums is the initial breast secretion and considered to be the nutritionally rich that provides natural immunological protection to the new born. It is a complex food, rich in

nutrients and non-nutritional bioactive components which promote infant health, growth and development.

The custom of squeezing the first breast milk from the breast before breastfeeding a child is widely practiced in India, 57.8 percent is slightly lower than NFHS-2 (62.8 percent). It is most common among women age 40-44 years, women with birth order 4+, rural women, other religion and no caste women and for children whose mothers are non-literate and children living in households with a low standard of living.

Mothers of children born in the three years before the survey were asked child had given any thing other than breast milk and how long are defend as exclusive breastfed.. Results are shown in the Table 2. The introduction of supplementary foods before four months of age may put infants at risk of malnutrition because other liquids and solid foods are nutritionally inferior to breast milk. Consumptions of liquids and solid at an early age also increase children's exposure to pathogens and consequently puts at a greater risk of getting diarrhoea. However, a recent study based on findings of NFHS-1 (Ananddiah and Choe, 2000) concluded that breastfeeding with supplements is more beneficial than exclusive breastfeeding even for children at very young ages (less than four months). That suggests that mothers who are not well nourished and who are in poor health themselves may not able to provide adequate breast milk for their infants. In India, only 53 percent of children under four months of age are exclusively breastfed, 28 percent of children 4-6 months, 10 percent of children 7-9 months and 3 percent of children age 11 months and above are exclusively breastfed. The percentage of infants exclusively breastfed drops steadily 58 percent for children under age 2 months of age to 6 percent for children who are nine months old. Very few older children are exclusively breastfed. However, breastfeeding generally continues for a long period. Almost all children in all age group are any breastfed. An earlier study also shows the incidence of breastfeeding by mothers who ever breastfed their child , was 96 percent in the urban areas of India whereas it was 100 percent in rural India (WHO, 1981).

Table 3 and 4 shows several statistics that describe the duration of breastfeeding. An estimate of median is based on the current proportion of children breastfeeding in each group because information on current status is usually more accurate than information based on mother's recall. The median length of any breastfeeding is 29.6 months, in India. The median duration of breastfeeding is 10 months longer in rural areas than in urban areas. Most children living in rural areas are breastfed for slightly lower than 3 years (34 months). Earlier studies also shows that 97 percent of rural mother breastfed their 15 month-old babies as against only 54 percent of urban mothers who breastfed their babies of the same age. A 1969 study in Delhi 94.5 percent and 41 percent of mothers breastfed their one month-old and one year old infants receptively (Ghosh, Gidwani and Shireen et al, 1976), while a report from Hyderabad found that corresponding rates were only 87 percent and 33 percent respectively (WHO, 1981). The median duration of breastfeeding decreases steadily with increasing educational attainment Earlier studies have also reveals that educated mothers tend to discontinue breastfeeding earlier than their illiterate counterpart (Ghosh, Gidwani and Shireen et al, 1976, Lala and Desai;1978, Walia et. al.; 1980, WHO; 1981). Jain and Bongarrrts , 1981

indicated that women's education and urban residence tend to shorten the duration of breastfeeding. Length of breastfeeding is likely to be negatively association with household standard of living, as women with higher standard of living may view prolonged breastfeeding as a traditional behaviour.

The median duration of breastfeeding is two months shorter for girls than for boys, NFHS-2 also reveals the same pattern. This pattern is often observed in societies where there is a strong preference for sons, since the parents may stop breastfeeding a girl at a younger age to increase their chances of having another child earlier, with the hope that next child will be a boy (IIPS, NFHS-2 , India report). The median length of breastfeeding is long for children in Hindu religion (30.3 months) as compared to Muslim religion (26 months), Christian (25.7 months) and other religion (24.2 months). The median length of breastfeeding particularly long for children in scheduled tribe, and followed by scheduled caste, other caste, other backward class and no caste.

Table 4 shows that median duration of breastfeeding by current age of mother and birth order. There is no pronounced variation in the median duration of breastfeeding form younger age to elder age of mother. However, length of breastfed is steadily increasing from birth order 1 to birth order 4 and above, the median duration of breast feeding increased 26 months from birth order 1 to 36 months to birth order 4 and above, a most recent study by Arokiasamy, 2002 have indicate that age of women and increasing birth order are known to have positive influence, but in multivariate analysis either one of these variables may be significant or the net effect of both of these variables on breastfeed might be small (Smith and Ferry, 1984).

Morbidity

Diarrhoea is the second most important killer of children under age five worldwide, following acute respiratory infections. In DLHS-RCH, 2002 asked mothers of children born during the three years preceding the survey a series of questions about episodes of diarrhoea and pneumonia suffered by their children in the last two weeks before the survey, including questions on feeding practice during diarrhoea and treatment and taken to health facility or provides. Questions were asked that any of the your children born and alive during last three years preceding the survey and had suffered from the diarrhoea and pneumonia. So it is difficult to find out which child has been suffered from diarrhoea and pneumonia. To give correct picture we have considered only those women who have only one living children at the time of survey. Table 5 shows the percentage of children under age 36 months with diarrhoea and pneumonia during the two weeks preceding the survey

Thirteen percent and 16.2 percent of children suffered from diarrhoea and pneumonia during the last two weeks preceding the survey. The prevalence of diarrhoea and pneumonia has to be found more in children age of 6-11 as compared to 12 percent and 14 percent of children age 0-5 months . It may due to children age 6-11 months discontinued the breast feeding. And it declines with increasing the age of children. The prevalence of diarrhoea and pneumonia is more pronounced in male child than female

child. A comparatively high proportion of children birth order 4 and above had suffered from diarrhoea but situation is just reverse in case of pneumonia. Differentials by place of residence, caste and religion are small. As expected and earlier studies also reveals that parents of children with high school and above and children in high standard of living households are somewhat less likely to suffer from diarrhoea and pneumonia, but it can be observed that if mother of children less educated or non-literate than father of children, prevalence of diarrhoea and pneumonia has more pronounced. There are also variations found in relation to environmental variables (water supply and sanitation). Children living in households that use surface water are less vulnerable to diarrhoea and pneumonia than living in household that use other sources of water, and children living in households with using public toilet facility had experienced of diarrhoea and pneumonia 5 and 8 percent more in comparison to own, shared or even no toilet facilities. As many studies have shown that breastfeeding that a significant difference has been found to the prevalence of diarrhoea with breastfeeding. This study also reveals the findings in same way. Children who never breastfeed, did not breastfeed on born days and whose mothers are squeezed out the first milk are more vulnerable to diarrhoea than other children, but in case of pneumonia this pattern did not appeared.

To see the net effect of diarrhoea and pneumonia episode a logistics regression has been used presented in table 6 and 7. After controlling other variables, prevalence of diarrhoea has significant effect on breastfeeding status. Children who did not breastfeed within two hours of birth or even same days, 1.245 times and whose mother has been squeezed out her first breast milk 1.228 times more likely to get infectious disease (diarrhoea) than their counterpart (Model 1). Clemmes et. al. (1999) found that early initiation of breastfeeding was associate with a marked reduction of the rate of diarrhoea throughout the first six months of the life. And when introduced the environmental variables (Model 2), and socio-economic and demographic variables (Model 3), status of breastfeeding has still significant effect on diarrhoea. In Model 2, environmental variables (water supply and sanitation) also show a significant difference on diarrhoea. Surprisingly, source of water supply shows negative effect on prevalence of diarrhoea, children living in household uses water from hand-pump, well and surface water are less likely to suffer from diarrhoea compare to those children living in household uses Tap water for drinking water. It may be one of the reasons that water from tap is not clean-up/purify on certain interval properly before supplying or the pipelines has been rusted. Another environmental variables sanitation is also having association with diarrhoea, children living in household uses public toilet or having no toilet facility are 1.2 times more likely to get diarrhoea than using to own toilet facility (any type). In Model 3, introducing socioeconomic and demographic variables along with breastfeeding status and environmental. After controlling other variables, breastfeeding status, environmental variables, education of mother, sex of the child and birth order has significant association with diarrhoea, but standard of living of household does not show any association in this study, while earlier studies indicate that standard of living of household has association with diarrhoea. Thus findings do imply that breastfeeding is an important factor protecting against intestinal infections, as this has also been conclusively demonstrated by Victora et. al., 1987.

The probability to have pneumonia does not show significant difference between early and late initiation of breastfeeding, however children whose mothers squeeze out milk from breast before feed their children 1.061 times more likely to have pneumonia presented in Model 1. In Model 2, environmental variable like source of drinking water, sanitation facility, type of house and fuel used for cooking has been used as independent variables. After controlling other variables result indicates that except fuel used for cooking all the variables shows significant effect to have pneumonia. Children from those households uses tap water and surface water are 1.149 and 1.160 more likely to have pneumonia than who uses other water. Children from household uses public toilet, 1.245 times more and children living in *kachcha* 1.376 times and semi-*pucca* 1.192 times houses are more likely to have pneumonia than counterparts. In Model 3, socio-economic variables place of residence, education of mother, religion and caste has been added. The result indicate that tap water as source of drinking water, own and public toilet type of fuel used for cooking, type of house, education, caste and religion has shown the significant effect on probability to get pneumonia.

Conclusion:

In India, the practice of breastfeeding is still nearly universal. The study shows that about 99 percent of children born in last three years have been breastfed, and about 44 percent breastfed on the born day. The custom of squeezing the first breast milk from the breast before breastfeeding a child is widely practiced in India. About 58 percent breastfed after squeezing out breast milk slightly lower than NFHS-2 (62.8 percent). About 53 percent of children below four months, 28 percent of children 4-6 months, 10 percent of children 7-9 months and 3 percent of children age 11 months and above are exclusively breastfed. The percentage of infants exclusively breastfed is 58 percent in case of children below 2 months, whereas it is only six percent among the children of nine months old. The median duration of breastfeeding is 29.6 months relatively higher than NFHS 1998-99 (25.4 months).

The prevalence of diarrhoea (18 percent) and pneumonia (18 percent) has found more in children of 6-11 months as compared to 12 percent and 14 percent of children age 0-5 months. This study also reveals the children who never breastfeed, did not breastfeed on born days and whose mothers are squeezed out the first milk are more vulnerable to diarrhoea than other children, but in case of pneumonia this pattern did not appear. Prevalence of diarrhoea has significant effect on breastfeeding status. Children who did not breastfeed within two hours of birth or even the same days, 1.245 times and whose mother has been squeezed out her first breast milk 1.228 times more likely to get infectious disease (diarrhoea). Environmental variables (water supply and sanitation) also show a significant difference on diarrhoea. Surprisingly, source of water supply has negative effect on prevalence of diarrhoea, children living in household uses water from hand-pump, well and surface water are less likely to suffer from diarrhoea compare to those children living in household uses Tap water for drinking water. The probability to have pneumonia does not show significant difference between early and late initiation of breastfeeding, however children whose mothers squeeze out milk from breast before feed their children 1.061 times more likely to have pneumonia. The findings indicate that tap

water as source of drinking water, own and public toilet, type of fuel used for cooking, type of house, education, caste and religion has shown the significant effect on probability to get pneumonia.

Looking at the findings of this study and the earlier studies, an urgent need for extensive community education along with training of health functionaries on the promotion of more appropriate breastfeeding is essential. The proper education to mothers on early initiation of breastfeeding, escaping of pre-lacteals and not throwing away the colostrums. Mother and health workers should have access to the information that children successfully breastfed, do not require any other type of supplements and that keeping exclusively breastfeed is an important way in preventing infectious diseases such as diarrhoea and pneumonia.

References:

Breind, Andre, B. Wojtyniak, and M. Rowland (1988), Breastfeeding, nutritional state, and child survival in rural Bangladesh, *British Medical Journal* 296: 879-92

Cabigon, J . V. (1997) , The effects of birthspacing and breastfeeding on childhood mortality in the Philippines, *Journal of population* 3(1): 1-18

Clemnes, et. al., (1999): 'Early breastfeeding and the risk of infant diarrhoea in rural Egypt, *Pediatrics*, 104(1):3

Habitch, J.P., J. DaVanzo and W.P. Butz (1986) , Does breastfeeding really save lives or are apparent benefits due to biases? *American Journal of Epidemiology* 123:279-386

Huffman, S.L. and B. B. Lamphere (1984) 'Breastfeeding performance and child survival'. In W.H. Mosley and L.C. Chen eds. *Child Survival: Strategies for research, population and Development Review* 10(Suppl.) 93-116

Ghosh, S. Gidwani, Shireen et.al., (1976): 'Socio-culture factors affecting breastfeeding and other infant feeding practice in an urban community' *India Pediatrics*, 13:827-33

International Institute for Population Sciences (IIPS), 1999, *National Family Health Survey, India 1998-99*, Mumbai:IIPS

Jelliffe, D.B. and E. F.P. Jelliffe (1978), 'Human milk in the modern world' Oxford: Oxford University Press

Lala, V.R., and Deasi, A.B.(1970); 'Feeding of newborns and Infants', *Pediatrics clinic of India*, 32:191-97

Palloni, A., and Tienda , M (1986), 'The effects of breast feeding and pace of childbearing on mortality at early ages. Demography 23:31-52

Pandit N, Yeshwanath M and Albuquerque S Respondents (1994): 'Factor influencing breastfeed in an urban setup', Indian journal of pediatrics 31 (12) 1558-1560

Ravilla Anandiah and Minja Kim Choe (2000), Are the WHO guidelines on breastfeeding appropriate for India, NFHS subject report, Number 16

Sunita Reddy, (1995): 'Breastfeeding - Practice, problems and prospects' : The Journal of Family Planning, vol 41, No. 4

Thimmayamma, BVS, and Vidyavati M (1980): ;Infant feeding practice of working women in an urban area' Indian Journal of Medical Research 72:834-39

Victoria, C.G., P.G. Smith, J.P. Vaughan et.al., (1989); 'Infant feeding and deaths due to diarrhoea: A case control study. Journal of biosocial Science 21:145-60

Victoria, C.G., P.G. Smith, J.P. Vaughan , L.C. Nobore et.al., (1987); 'Evidence for protection by breast-feeding against infants deaths from infectious diseases in Brazil. Lancet 2:319-22

Yoon, Paula W, R,E. Black, L.H. Moulton, and S. Becker (1996) 'Effect of not breastfeeding on the risk of diarrheal and respiratory mortality in children under age 2 years of age in Metri Cebu, the Philippines. American Journal of Epidemiology 143(11): 1142-8

Walia, BNS, Ghambhir, SK, and Bhatia , U (1974): Breastfeeding and weaning practice in urban population' Indian pediatrics, 11:133-141

World Health Organization Collaborative study on breastfeeding, a report, WHO Geneva, 1981