

Original Research Article

Feeding practices and knowledge regarding vaccination in mothers of under 5 children: a questionnaire based study in a metropolitan city hospital of India

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ABSTRACT

Background: India has a high burden of under five mortality. Faulty feeding practices and mortality due to vaccine preventable diseases is a major hurdle. Objective was to assess breast feeding practices and vaccination status of children of less than 5 years by age and its correlation with socio-demographic profile.

Methods: This was a cross-sectional descriptive study involving children of nine months to five years.

Results: Health seeking behavior in terms of adequate antenatal checkup and institutional deliveries was quite high; but only one third of children had early initiation of breast feeding and the main reason was delay in rooming-in. Early breast feeding had significant correlation with the greater duration of breast feeding and the duration of exclusive breast feeding was significantly associated with the literacy status of mother. Only 34% of children were vaccinated on time and frequent migration was the cause of delay in 25%. Ground level workers were the main source of information regarding vaccination in this study population.

Conclusions: Feeding practices were not satisfactory. Institutional fallacies also came into focus such as delayed rooming-in. Awareness regarding vaccination was inadequate and was incomplete in majority of children. General awareness and health seeking behavior of our community still need enhancement to a great extent.

Keywords: Breast feeding, Feeding practices, Under 5 year, Vaccination awareness, India

INTRODUCTION

Healthcare system of India is rapidly evolving with lots of emphasis on providing primary health care to all. With the programs like Janani suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), Navjaat Shishu Suraksha Karyakram (NSSK) and Mission Indradhanush, India is determined to provide comprehensive primary care to the masses by improving the health care seeking

behavior and by making healthcare affordable.¹ Information, education and communication (IEC) through electronic media and health care personnel plays a key role in improving the basic health related behavior of the general population. Vaccination is one of the most cost effective measures for improving the health status of a population by decreasing the incidence of some of the major diseases in under five years age group. As per the National Family Health Survey- 4 (NFHS – 4) data, only

62% children aged 12 - 23 months are fully immunised in India, which is much less than the stated objective of universal immunisation program in India. Anthropometric parameters also shows sub-optimal level of nutrition in under 5 age group with over one-third (35 per cent) children being underweight, 38 per cent being stunted and 7 percent being severely wasted.² Thus, there is an urgent need to find ways to improve the awareness of health enhancing behaviors and practices including feeding practices and vaccination coverage in children to achieve the target age specific mortality rate and to improve the health status of the population as a whole.

Present study analyses some of the health indicators in an urban population and the impact of the existing health services, education level and occupation of the mothers of under-five children on her feeding practices and health care seeking behavior in the form of institutional delivery, timely immunisation in baby, hospital visits during illness were taken into consideration.

METHODS

A questionnaire based cross sectional descriptive study was conducted at the outpatient Department of a government hospital in a metropolitan city of India. Study was completed in duration of three months. (August 2016 to October 2016). All children aged between nine months to five years, who presented to the Immunisation clinic and accompanied by their mothers, were included in the study.

Exclusion criteria

Children not accompanied by their mother or whose mother didn't provide informed consent were excluded from the study.

Aims and objective

Aims and objectives of the study were to assess breast feeding practices and vaccination status of under 5 children attending immunisation clinic, to correlate socio-demographic profile of the mothers of under 5 children to their knowledge and practice regarding breast feeding and vaccination.

Procedure

After reviewing the relevant literatures, a questionnaire based performa was made to collect data pertinent to this study. The questionnaire was semi-structured and pre-tested before data collection. Data was collected by client exit interviews of mothers of under 5 children who attended the immunisation clinic. Interviews were conducted by one of the two Paediatricians posted in the clinic. The participants were consecutively selected for interview for the purpose of this study. Weight of all the children were recorded and appropriate dietary advice was given irrespective of their participation in the study

as part of normal services. Any deficits in the knowledge on the part of mother identified during the interview were also addressed accordingly.

Informed written consent was taken from participants after explaining the purpose of the study. Data confidentiality and anonymity was maintained throughout the study.

Statistical analysis

Data was entered in Microsoft excel sheet and data was analysed using Epi Info 7.2.2 software. For descriptive analysis frequencies and or proportions for categorical variables and means for quantitative variables have been reported. Statistical testing was done where appropriate and the chi square or fisher exact test results with exact p values have been reported in the article.

RESULTS

Current study is a cross sectional descriptive study done among 110 mothers of under-five year's old children visiting the outpatient department at a government hospital. Seven incomplete performa were excluded so the final study population on which analysis was done was 103 (N) mothers.

Table 1: General profile of mothers (n=103).

Sociodemographic factor	Number	Percentage
Age group (years)		
21-30	38	37
31-40	65	63
41-50	0	0
Education		
Illiterate	19	18.45
Primary	30	29.13
Secondary	16	15.53
Higher secondary	4	3.88
Graduate	34	33.01
Occupation		
Housewife-	98	95.15
Unskilled worker	2	1.94
Semi-skilled worker	3	2.91
Skilled worker	0	0
Religion		
Hindu	94	92
Muslim	9	8
Others	0	0

In the study one third (36%) of mothers were below 30 years of age group. Education level of mothers showed much of variation with 18% illiterate while in contrast around one third (30%) were educated up to primary and graduation level. In this study 96% women were homemakers and majority of them believed in Hindu faith (92%) (Table 1). Most of the children were of first and

second birth order while very few were of higher order. Just under one third (31%) started breast feeding within 1 hour while rest had delay in initiation of breast feeding and the major cause of feeding delay was found to be delay in rooming-in (33%) after child birth. Other causes leading to delay in initiation of breast feeding were illness of mother, illness of baby and negative advice by relatives. Around 11% mothers were unaware of the importance of early initiation of breast feeding. About 46% of mothers started feeding after 1 hour but within the first day. Majority (77%) of the mothers did not give any pre-lacteal feed to their children. While analysing other indicators of health seeking behavior, it was found that about 93% of the mothers had four or more antenatal check-ups during pregnancy and 91% opted for institutional delivery. Among the study population only 34% of mothers got their children vaccinated on time (within one month of the exact due date of vaccination). The most common cause for delay in vaccination was frequent migration accounting for 25% of the vaccination delays among other causes. Most common source of knowledge regarding the need of vaccination in our study was the local health worker ANM (30.1%) (Table 2).

Table 2: Vaccination status, cause of vaccine delay and knowledge regarding vaccination (n=103).

Parameters	N	Percentage
Vaccination status	Vaccination on time	35 33.9
	Late vaccine	68 66
Cause of late vaccination	Illness	10 14.7
	Lack of knowledge	10 14.7
	Family issues	2 2.9
	Frequent migration	17 25
	Others	1 1.47
Source of knowledge regarding vaccine	ANM	31 30.1
	Television	22 21.3
	Newspaper	5 4.8
	Doctor	24 23.3
	Neighbour	12 11.6
	Nurse	9 8.7

Exclusive breast-feeding for at least three months with no exclusive breast feeding at all were compared to the literacy level of mother which was found to be significant with Fisher exact value of 0.0166. Among children who had acute gastroenteritis requiring either medicine or hospitalisation (in last 6 months) and those who did not suffer from acute gastroenteritis were compared in terms of no exclusive breast feeding and exclusive breast feeding of at least 3 months but no significant association

was found. Similarly effect of exclusive breast feeding was assessed in the groups of children with or without documented episodes of lower respiratory tract infection requiring medicine or hospitalisation in last 6 months, but the results were not statistically significant. It was also observed that those mothers who did not give pre-lacteal feed to their child were able to breast feed for longer duration which when correlated were highly significant with Fisher exact value of 0.002. Percentage of exclusive breast-feeding for more than six months was highest among the first born child (36%) but when birth order was compared with duration breast feeding results were insignificant (Table 3).

Table 3: Analysis of duration of exclusive breast feeding with the birth order and time of breast feeding initiation.

Analysis	No EBF	EBF 3-6 months	EBF > 6 months	P value*
Birth order				
1	1	18	31	0.059 6
2	3	8	37	
3	0	3	1	
4	0	0	1	
Breast feeding initiation				
<1 hour	0	20	13	< 0.001
1 hour - 1 day	0	35	13	
1 day - 7 days	0	14	3	
>7 days	4	1	0	

* Fischer exact test.

It was found that those mothers who initiated early breast feeding had continued breast feeding for a longer time. When breast feeding was initiated after 24 hours, exclusive breast feeding rate was greatly reduced. When initiation of breast feeding was compared with the duration of feeding results were statistically significant with Fischer exact value of <0.001.

DISCUSSION

Most common source of knowledge to study participants was the local health worker ANM (Auxiliary Nurse Midwifery) (30.1%) followed by doctor (23%). Similar finding as of ours were also found in other Indian studies.³⁻⁵ ANM being grass root level worker seems to have the greatest impact and is considered the pillar of the health system of India.

Our study population was quite homogenous in terms of religion and occupation which is expected in a country like India where more 80% population is Hindu (census 2011) and women are traditionally expected to take care of household responsibilities.⁶ Study done by Kapoor et al also had similar demographic profile of mothers as majority were Hindu by religion, housewife by occupation.³

34% of the study population vaccinated their children on time while in 66% vaccination was delayed or partially missed. The most common cause behind the delay in vaccination was frequent migration accounting for 25% cases, other causes noted were illness in the family, illness of the child, ignorance about the due time and the felt need for vaccination. While study by Ahmed et al also looked into the causes of late vaccination and found that family trouble was responsible for the majority.⁷ A recent study done in the developing country of Saudi Arabia found illness of the child at the time of vaccination as the main cause for the delay in vaccination in children less than 2 years of age which was amounting up to 42.2%.⁸ Cause for partial immunisation was lack of information in a Indian study done by Angadi et al.⁴ Another study published from India showed 34% of study population with delay in vaccination and the major cause of delay was being at out-station at the time of vaccination.⁹ These causes from various studies indicate that despite various efforts of the government, there is much scope for improvement is left in terms of community involvement and awareness. Enhanced efforts to increase awareness about need and schedule of vaccination among people are required.

In this study only 31% of mothers started breast feeding within 1 hour while rest had delay in initiation of breast feeding and the major cause of delayed feeding was found to be delay in rooming-in (33%) after child birth. Around 11% mothers were ignorant about the need and benefits of early initiation of breast feeding. Other causes leading to delay in early initiation of breast feeding were illness of mother, illness of baby and advice by relatives. About 78% of the study participants started Breast feeding within the first day of childbirth. An Indian study assessing breast feeding practices in 781 mothers found more than half of mothers (57.5%) started feeding within an hour of birth, 55.9% gave exclusive breastfeeding for six months.¹⁰ As reported in the study by Bagul et al 32.56% (n=384) mothers had started breast feeding within 1 hour after their deliveries, while 94.41% of the mothers started breastfeeding within 24 hours after their deliveries.¹¹ Exclusive breast feeding for 6 months was given by only 36.84% mothers. The practice of exclusive breast feeding was more in the literate mothers (55.84%) and in mothers who were informed by the health personnel. Present study also shows that feeding practices like the late initiation of breast feeding; giving pre-lacteal feeds affected the duration of exclusive breast feeding. In a similar study done by Sapra et al showed that 57% (n=100) mothers started breastfeeding within an hour and 88% of the mothers had given pre-lacteal feed.¹² Exclusive breastfeeding was done by 47.8% of the mothers. They have also found that mothers agreed to strong family beliefs as the reason for giving pre-lacteal feed. A meta-analysis by Jackson et al showed an OR of 2.34 (1.42–3.88) associated with lack of exclusive breastfeeding and contracting infection.¹³ In another study conducted by Chaudhary et al. in an Tertiary care institute in the neighboring country Nepal among the lactating

mothers of children aged under 12 months, 41.5% (n=200) mothers initiated breast feeding within 1 hour of birth, 33% mothers gave pre-lacteal feed, colostrum was fed by 95%, 23.5% were practicing exclusive breast feeding.¹⁴

NFHS 4 data shows that in the urban population of Delhi, breastfeeding initiation within first hour of life is 28.1% while for the urban population of the whole country the percentage is 42.8%.²

More recently, analyses on a large cohort of almost 100,000 newborns from three large trials in Ghana, India and Tanzania has shown that, compared with infants who initiated breast feeding within the first hour of life, the risk of neonatal death among children who initiated breast feeding between 2 and 23 hours after birth was 41% higher (RR 1.41; 95% CI 1.24 to 1.62), and 79% higher among those who initiated breast feeding at 24-96 hours of birth (RR 1.79; 95% CI 1.39 to 2.30).¹⁵ Therefore, supporting mothers to initiate breast feeding within 1 hour of delivery is a proven high-impact intervention for neonatal survival.^{16,17}

Breast feeding is the primary step toward ensuring optimal health and development of the children. Colostrum, the early breast milk, plays a vital role in boosting immunity of a newborn. In our study 77% of the mothers did not give any pre-lacteal feed to their children. The causes behind comparatively lesser percentage of pre lacteal feeding may be the overall better educational status of mothers, better health seeking behavior and quite high institutional delivery in the study group.

Study by Roy et al in 2014 done on rural population of north India found alarmingly high (40%) prevalence of pre-lacteal feeding.¹⁸ In third world countries feeding practices are far from ideal despite multi-prong approach by WHO. A study from Ethiopia published in 2019 itself showed the prevalence of pre-lacteal feeding practices being about 20%.¹⁹

In current study, population being urban population of metropolitan city few health indices was quite above the national average as 93% mothers had three or more antenatal check-ups during pregnancy. According the NFHS 4 data in urban area of Delhi NCT ANC visits at least 4 times is 68.1% while of urban India it is 66.4%. In our study 91% opted for institutional delivery while proportion of home delivery was very less (8.7%). NFHS data shows average 84.4% of institutional delivery in urban Delhi and 88.7% for urban India.²

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life and introduction of complementary feeds from six months onwards, with continued breastfeeds till at least two years of age.^{20,21} Higher education conferred significantly greater odds of EBF at three months in the present study which is similar to the results reported by Chandhiok et

al.²² In contrast, many studies show higher rates of breastfeeding associated with lower income and less formal education.^{22,23} Higher exclusive breast feeding in less educated group may be attributed to the cost-effectiveness of EBF.

Our study did not show any significant relationship in the duration of exclusive breast feeding at 3 or 6 months and the hospitalisation of under 5 children due to acute gastroenteritis (diarrhoea) or acute respiratory infection in the preceding 6 months of data collection. This may be due to relatively small sample size of our study and even smaller number of such episodes reported in the study. This can also be explained by some other factors like better and piped water supply availability to large number of residents in the city as well as better health system in the city where such common infection might have been detected earlier and managed appropriately - preventing the need for intensive medical treatment or hospitalisation.

It was also observed that those mothers who did not give pre-lacteal feed to their child were able to breast feed for longer duration which when correlated was highly significant. A study by Bekele et al. from the developing country of eastern Ethiopia published in 2014 found that nearly half of the mothers did not initiate breastfeeding immediately after delivery while 46% of them were influenced to give pre-lacteal feeding to their new born infants. The authors also got statistically significant association between breast feeding initiation times with pre lacteal feeding.²⁴

These results are also in consistency with our findings. A study done in resource poor setting of the state of Bihar in India, which was published recently in 2019, found that in a large study population of 10262, 26% of children got pre-lacteal feed and the researchers also observed that those group of children who received pre lacteal feeding had approximately 60% lesser odds of being breastfed exclusively during the previous 24 hours and 80% lesser odds of receiving continued EBF since birth.²⁵

As expected, the ritual of giving pre-lacteal feed to the new born baby was less prevalent among mothers with higher education (fisher exact value of 0.0357). Maternal illiteracy has been associated with suboptimal feeding practices in few studies from developing countries.²⁶

Study from rural Maharashtra in India also had similar findings as among mothers having education secondary school level and above 33.9% were giving pre-lacteal feeds to babies while illiterate mothers and those having education less than primary, it was found that 63.3% practicing the pre-lacteal feeding which was significant statistically.²⁷

Limitation

Study population was hospital based who by themselves were seeking vaccination. Such a population is likely to be more informed than general population about vaccination and its benefits. Thus, it is likely that our results especially pertaining to knowledge and practice of vaccination may be extrapolated to the general population.

Some indicators of health status in under five children like anthropometric parameters were not measured in our study.

CONCLUSION

Despite the study being done in urban population of a metropolitan city, feeding practices were far from the ideal IYCF recommendation. Awareness regarding vaccination was also not adequate. Some institutional fallacies also came into focus as delay in rooming-in of newborn and mother even in institutional deliveries was a major cause behind the delay in initiation of breast feeding in the golden first hour. This study just re-emphasises the fact that general awareness and health seeking behaviour of our community still need to be enhanced to a greater extent and further studies involving larger population of both rural and urban areas need to be conducted to find better strategies of health care delivery.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Nhp.gov.in. (2019). Health Programmes / Wellness | National Health Portal of India. Available at <https://www.nhp.gov.in/healthprogramme/national-health-programmes>. Accessed on 6 March 2020.
2. National family health survey (NFHS-4) 2015-2016. Available at <http://rchiips.org/NFHS/pdf/NFHS4/India.pdf>. Accessed on 05 March 2020.
3. Kapoor R, Vyas S. Awareness and knowledge of mothers of under five children regarding immunization in Ahmedabad. *Healthline J*. 2010;1:12-5.
4. Angadi MM, Jose, Udgiri R, Masali KA, Sorganvi V. A study of knowledge, attitude and practices on immunization of children in urban slums of Bijapur City, Karnataka, India. *J Clin Diagn Res*. 2013;7(12):2803-6.
5. Ravishankar K, Vinodkumar ME, Surendra G, Williams A. Attitude and practices of rural mothers with children under five years of age about vaccination: a non-experimental study. *IJAPR*. 2015;6(3):88-93.
6. Censusindia.gov.in. (2011). Census of India: Office of the Registrar General and Census Commissioner,

- India. Available at http://censusindia.gov.in/2011census/Religion_PCA.html. Accessed on 5 March 2020.
7. Ahmed SM, Tarek A, Rahman AE, Masoed ES. Mothers' awareness and knowledge of under five years children regarding immunization in Minia city Egypt. *Life Sci J*. 2013;10(4):1224-32.
 8. Aloufi KM, Mosleh H. Prevalence and determinants of delayed vaccination among children aged 0–24 months in Al-Madinah, Saudi Arabia. *IJMDC*. 2019;3(1):55-9.
 9. Holambe VM, Thakur NA. Correlates of delayed immunization: a cross sectional study at a tertiary care centre of Maharashtra, India. *Natl J Community Med*. 2013;4(4):621-3.
 10. Patel DV, Bansal SC, Nimbalkar AS, Phatak AG, Nimbalkar SM, Desai RG. Breastfeeding practices, demographic variables, and their association with morbidities in children. *Adv Prev Med*. 2015;2015:892-25.
 11. Bagul AS, Supare MS. Infant feeding practices in an urban slum of nagpur, India. *J Clin Diagn Res*. 2012;6(9):1525-7.
 12. Sapra D, Ray S, Jindal AK, Patrikar S. Infant and young child feeding practices amongst children referred to the paediatric outpatient department. *Med J Armed Forces India*. 2015;71(4):359-62.
 13. Jackson S, Mathews KH, Pulanic D. Risk factors for severe acute lower respiratory infections in children: a systematic review and meta-analysis. *Croat Med J*. 2013;54(2):110-21.
 14. Chaudhary RN, Shah T, Raja S. Knowledge and practice of mothers regarding breast feeding: a hospital based study. *Nepal J*. 2011;9(3):194-200.
 15. Group NS. Timing of initiation, patterns of breastfeeding, and infant survival: prospective analysis of pooled data from three randomised trials. *Lancet Global Health*. 2016;4(4):266-75.
 16. Bhutta ZA, Das JD, Rizvi A. Evidence-based interventions for improvement of maternal and child nutrition. What can be done and at what cost? *Lancet*. 2013;382:452-77.
 17. World Health Organization (WHO). Essential nutrition actions. Improving maternal, newborn, infant and young child health and nutrition. Geneva, Switzerland: WHO, 2013. Available at https://www.who.int/nutrition/publications/infantfeeding/essential_nutrition_actions.pdf. Accessed on 12 August 2020.
 18. Roy MP, Mohan U, Singh SK, Singh VK, Srivastava AK. Determinants of prelacteal feeding in rural northern India. *Int J Prev Med*. 2014;5(5):658-63.
 19. Amele EA, Demissie BW, Desta KW, Woldemariam EB. Prelacteal feeding practice and its associated factors among mothers of children age less than 24 months old in Southern Ethiopia. *Ital J Pediatr*. 2019;45(1):15.
 20. WHO, Global Strategy on Infant and Young Child Feeding, World Health Organization, Geneva, Switzerland, 2003. Available at <https://www.who.int/nutrition/publications/infantfeeding/9241562218/en/>. Accessed on 20 August 2020.
 21. World Health Organization, Complementary Feeding: Report of the Global Consultation. Summary of Guiding Principles for Complementary Feeding of the Breastfed Child, World Health Organization, Geneva, Switzerland, 2003. Available at https://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf. Accessed on 12 October 2020.
 22. Chandhiok N, Singh KJ, Sahu D, Singh L, Pandey A. Changes in exclusive breastfeeding practices and its determinants in India, 1992-2006: analysis of national survey data. *Int Breastfeed J*. 2015;10:34.
 23. Victora CG, Bahl R, Barros AJ. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*. 2016;387(10017):475-90.
 24. Bekele Y, Mengistie B, Mesfine F. Pre lacteal feeding practice and associated factors among mothers attending immunization clinic in harari region public health facilities, Eastern Ethiopia. *Open J Preventive Med*. 2014;4:529-34.
 25. Das A, Mala SG, Singh RS. Prelacteal feeding practice and maintenance of exclusive breast feeding in Bihar, India, identifying key demographic sections for childhood nutrition interventions: a cross-sectional study. *Gates Open Res*. 2019;3:1.
 26. Lawan UM, Amole GT, Jahum MG, Sani A. Age-appropriate feeding practices and nutritional status of infants attending child welfare clinic at a Teaching Hospital in Nigeria. *J Fam Community Med*. 2014;21:6-12.
 27. Salve D, Inamdar IF, Tambe S. Study of pre lacteal feeding practices and its determinants in a rural area of Maharashtra. *Sch J App Med Sci*. 2014;2(4):1422-7.

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