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Original Research Article

A study on infant and young child feeding practices among mothers attending the immunisation clinic of a tertiary care hospital, Kolkata, West Bengal

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ABSTRACT

Background: Age appropriate feeding practices is an essential determinant of physical growth as well as mental health of under-five children. WHO and UNICEF have formulated the infant and young child feeding practices guidelines to enhance appropriate feeding practices in infants and young children.
Methods: A descriptive, observational, cross-sectional study was conducted in the immunization clinic of KPC medical college and hospital from October to December 2018 among children in 0-23 months age group. The mothers were interviewed regarding their sociodemographic details as well as the IYCF practices as per WHO.
Results: It was found that appropriate practices in terms of prelacteal feeding, colostrum feeding; early initiation of breast feeding and exclusive breast feeding was present in 78.4%, 80%, 77.5% and 50% children respectively. Timely initiation of complementary feeding was found in 81%, breast feeding was continued upto 1 year in 68.8% and consumption of iron rich or iron fortified food was found in 54.5% children. Appropriate practices in terms of minimum meal frequency, minimum dietary diversity and minimum appropriate diet were found in 49.7%, 27% and 32.3% children respectively. Sex wise distributions have found significant association with minimum dietary diversity and minimum acceptable diet. Age wise distribution revealed significant association with minimum dietary frequency, minimum dietary diversity and minimum acceptable diet ($p<0.005$).
Conclusions: Thus infant and young child feeding practices were not satisfactory. Mothers should be made aware about the appropriate feeding practices and health education should be given regarding correct child feeding practices.

Keywords: IYCF indicators, Exclusive breast feeding, Colostrum, Prelacteal

INTRODUCTION

Children, especially the neonates, infants and those under five years of age remain the most vulnerable age group to suffer from under nutrition. Worldwide, around 10.5 million under-five deaths occur every year and India accounts for 2.4 million of these deaths. Malnutrition has been found to account for more than half of these deaths.[1] Appropriate feeding practices in these age groups helps to lay the foundation for physical as well as mental growth for later in life.[2] Lack of optimal breast feeding practices have been found to account for 1.4 million under five mortality all over the world.[3] It has been recommended by world health organization (WHO) that breast feeding should be initiated as early as possible and exclusive breast feeding must be continued for the first 6 months of life followed by complementary feeding with locally available nutritional foods.[4] This has also been promoted

by the Government of India.[5] Exclusive breast feeding involves only breast feeding and nothing other unless medically indicated. Apart from providing optimal nutrition at a low cost, breast feeding also protect the infants from infections. It also helps the mother in birth spacing by lactational amenorrhoea.[6] It has been found that breast fed infants have lesser incidence of diarrhoeal diseases and respiratory tract infections which accounts for much lesser morbidity and mortality in these children. They also have lower risk of developing allergies and cardiovascular disease later in life.[5] Complementary feeding, when introduced at an appropriate time lead to reduction of 6% deaths in children under the age of 5 years.[3] Correct complementary feeding practices helps in prevention of malnutrition, cognitive development as well as lower the incidence of infectious diseases viz. Acute respiratory infection and diarrhoea.[7-9] In India, 67% of deaths among children can be attributed to malnutrition.[10]

The global strategy for infant and young child feeding (IYCF) was laid down by WHO and UNICEF in 2002.[4] In 2006 National guidelines for IYCF was developed to ensure appropriate feeding practices.[11] According to the recent IYCF guidelines, exclusive breast feeding should be continued for the first six months with timely initiation of complementary feeding around 6 months and breast feeding being continued upto 2 years of age.[12] It was found that if IYCF guidelines are followed in 90% under-five children, it will lead to prevention of one-fifth deaths in this age group.[3]

However it was revealed from National family health survey 4 (NFHS 4) data that in West Bengal only 52.3% of children under the age of 6 months were exclusively breast fed, 47.4% children under age of 3 years were breast fed within one hour of birth and 52% children aged 6-8 months were receiving solid or semi-solid food and breastmilk.[13] Thus these findings clearly indicates that the IYCF guidelines are not being practiced adequately.

Most of the studies have assessed breast feeding practices and complementary feeding and there are very few studies assessing the appropriateness of other IYCF indicators like minimum meal frequency, minimum dietary diversity, minimum acceptable diet and consumption of iron rich and iron fortified food. Thus the present study was undertaken to assess the feeding practices according to IYCF guidelines among children aged below 2 years who are attending the immunisation clinic of a tertiary care hospital in Kolkata, West Bengal.

METHODS

A descriptive, observational, cross-sectional study was conducted in the immunisation clinic of KPC medical college and hospital from October 2018 to December 2018. The study population included mothers with children aged between 0-23 months. A total of 320 children in the above mentioned age group attended the immunization clinic during the study period. Children who were not accompanied by their mothers were excluded from the study as other persons may not be able to give us correct information about the feeding practices. Also mothers who did not give informed consent were excluded from the study. Out of 320 mothers, 2 mothers did not give consent and 3 children were not accompanied by mothers. So the sample size was 315.

After obtaining informed consent from the mothers, data collection was done. A pre-designed and pre-tested schedule was used for data collection. The mothers were interviewed about the ten core IYCF indicators mentioned by WHO.[12] IYCF indicators were used as per the WHO definition. 24 hour recall method was used to collect dietary information including the frequency and type of food items consumed as recommended by WHO. Food groups were classified into seven classes; cereals, legumes and nuts, dairy products, meat products, egg, vitamin A rich fruits and vegetables, and other fruit and vegetables

Information regarding sociodemographic characteristics like age of child, sex of child, age of mother, education of mother, their religion, type of family and socio-economic status (BG Prasad) were collected.

The data collected were analysed using statistical software SPSS 16. Proportions and Chi-Square tests were used for analysis.

RESULTS

Majority of the children (49.8%) were in the 6-11 months age group whereas 40% children were less than 6 months of age and only 10.2% of children were 12-23 months of age. Majority (60.6%) of the children were male. 70.2% children were Hindus whereas another 29.8% were of Muslim religion. 60% of the children belonged to nuclear family and 40% were from joint family. Most of the children were of class 3 socio-economic status followed by 29.8% children belonging to class 5, 19.7% belonging to class 1 and 10.4% belonging to class 2 and class 4 socio-economic status each. Again, majority (40%) of the mothers have studied upto Higher Secondary level or above whereas 19.7%, 20.3% and 20% mothers were illiterate, completed upto primary and secondary level of education respectively.

Component wise analysis of various IYCF indicators has revealed that prelacteal feeding was offered in 21.6% children. Colostrum feeding was practiced in 80% children and in 77.5% children, breast feeding was initiated early. Exclusive breast feeding was found in only 50% of children under the age of 6 months. Complementary feeding was initiated timely in 81% children. Breast feeding was continued upto 1 year in 68.8% children. Appropriate practices in terms of minimum meal frequency, minimum dietary diversity and minimum appropriate diet were 49.7%, 27% and 32.3%

respectively. Consumption of iron rich or iron fortified food was found in 54.5% children (Table 1).

Table 1: Distribution of the IYCF indicators.

IYCF indicator	N (%)
Prelacteal feeding given (0-23 months) (n=315)	68 (21.6)
Colostrum feeding done (0-23 months) (n=315)	252 (80.0)
Early initiation of breast feeding (0-23 months) (n=315)	244 (77.5)
Exclusive breast feeding practiced (0-5 months) (n=126)	63 (50.0)
Timely initiation of complementary feeding (6-8 months) (n=63)	51 (81.0)
Breast feeding continued upto 1 year (12-23 months) (n=32)	22 (68.8)
Appropriate minimum dietary diversity (6-23 months) (n=189)	70 (37.0)
Appropriate minimum meal frequency (6-23 months) (n=189)	94 (49.7)
Appropriate minimum acceptable diet (6-23 months) (n=189)	61 (32.3)
Consumption of iron rich or iron fortified food (6-23 months) (n=189)	103 (54.5)

Minimum meal frequency (MMF), minimum dietary diversity (MDD), minimum acceptable diet (MAD) and consumption of iron rich or iron fortified food was found to be higher in 12-23 months age group. Significant association was found with minimum dietary frequency, minimum dietary diversity and minimum acceptable diet ($p<0.005$) (Table 2).

Table 2: Distribution of IYCF Indicators according to age.

IYCF indicator	Age (in months)		P value
	6-11	12-23	
MMF, N (%)	65 (41.4)	29 (90.6)	0
MDD, N (%)	40 (25.5)	30 (93.8)	0
MAD, N (%)	33 (21.0)	28 (87.5)	0
Consumption of iron rich or iron fortified food, N (%)	83 (52.9)	20 (62.5)	0.319

Sex wise distribution of IYCF indicators revealed that prelacteal feeding and timely initiation of complementary feeding was practiced more in females whereas colostrum feeding, early initiation of breast feeding, exclusive breast feeding and continuation of breast feeding upto 1 year of age was found more in male children. Appropriate minimum meal frequency was found more in female children whereas appropriate minimum dietary diversity, minimum acceptable diet and consumption of iron rich food was more in male children. Significant association was found with colostrum feeding, early initiation of breast feeding, timely initiation of complementary feeding, minimum dietary diversity and minimum acceptable diet ($p<0.005$) (Table 3).

Table 3: Distribution of IYCF indicators according to sex.

IYCF indicator	Sex		P value
	Male N (%)	Female N (%)	
Prelacteal feeding	36 (18.8)	32 (25.8)	0.143
Colostrum feeding	187 (97.9)	65 (52.4)	0.000
Early initiation of breast feeding	183 (95.8)	60 (48.4)	0.000
Exclusive breast feeding	34 (51.5)	29 (48.3)	0.721
Timely initiation of complementary feeding	19 (63.3)	32 (97.0)	0.001
Continuation of breast feeding till 1 year of age	21 (70.0)	1 (50.0)	0.555
MDF	60 (48.0)	34 (53.1)	0.505
MDD	64 (51.2)	6 (9.4)	0.000
MAD	67 (45.6)	4 (6.2)	0 .000
Consumption of iron rich or iron fortified food	69 (55.2)	34 (53.1)	0.786

DISCUSSION

In the present study, early initiation of breast feeding (within an hour of birth) was found only in 77.5% children which is much higher than that found in NFHS 4 report for India (41.5%) and West Bengal (47.5%).[14] A study by Patel et al in Gujarat have shown early initiation of breast feeding was practiced by 57.5% of mothers.[15] Delayed initiation of breast feeding was found in 73.3% children in a study by Reddy and Sreeramareddy in rural Bangalore.[16] A study by Khan et al in Delhi reported initiation of breast feeding within 1 hour of delivery was practiced by 37.2% mothers whereas it was only 13.6% in one study from West Bengal.[17,18] Another study from Sikkim found early initiation of breast feeding in 61.2% children.[19] The women attending the immunisation clinic of the tertiary care hospital were mostly residents of urban area where majority of deliveries occur in hospitals. The higher institutional deliveries may account for such higher proportion of infants receiving breast feeding within 1 hour of birth. Also higher educational level of the mothers may also contribute to this finding.

Prelacteal feeding was given to 21.6% of children. The result is comparable to NFHS 4 data for India where prelacteal feed was offered to 21.1% children but however higher than the NFHS 4 data for West Bengal where it was only 11%.[14] The study from Delhi and West Bengal reported the proportion of infants receiving prelacteal feeds to be 38% and 26.7% respectively.[17,18]

This difference can be attributed to difference in customs and beliefs across different communities of people.

In the present study, 80% of children received colostrum. In studies by Kumar et al, Maiti et al and Alamu et al colostrum feeding was observed in 40%, 74.83% and 94.5% children.[19-21]

Exclusive breast feeding was practiced by only 50% mothers in children less than 6 months of age. Similar figures have been reported by NFHS 4 for West Bengal (52.3%) whereas slightly higher values are reported in the NFHS 4 data for India (55%).[16] The studies from Delhi and West Bengal also found slightly higher proportion of exclusive breast feeding of 57% and 57.1% respectively.[17,18] Another study from slum of Delhi found only 20% of children under 6 months of age were on exclusive breast feeding.[23] A study from Vellore found exclusive breast feeding was done only in 11.4% of children under 6 months whereas Mahmood et al reported the prevalence of exclusive breast feeding to be 75%.[24-26] The main reason of this finding may be due to common perception of mothers that breast milk is not of sufficient quantity and has to be supplemented by other sources of milk like animal milk or formula milk. Also some mothers lack knowledge regarding correct positioning and attachment to the breast which also hinders the practice of exclusive breast feeding.

In the present study timely introduction of complementary feeding was found in 81% children. This was higher than the study conducted in Sikkim where 72.5% mothers introduced complementary feeding at a correct age.[19] However a study conducted in Delhi by Agarwal et al showed a delay in initiation of complementary feeding in 77% children.[26] Another study from urban slums of Delhi have found timely initiation of complementary feeding in 16.6% children.[27] Proportion of children aged 6-9 months and receiving complementary feeding was found to be 71.7% and 38.7% in two studies from Kolkata and Allahabad.[29] Again, another study conducted in Mangalore reported that 77.5% children were started on complementary food at the correct age.[20] Timely introduction of complementary feeding was quite high in this study which may be due to higher educational level of mothers and higher socio-economic class.

Breast feeding was continued upto 1 year in 68.8% of children in the 12-23 months age group. The proportion is comparable to the study conducted in Delhi (72.1%) but lower than the study conducted in West Bengal where 91.1% children of 12-23 months received breast milk upto 1 year of age.[18] Similar results were also found by Gupta et al where the proportion of children where breast feeding is continued upto 1 year of age was reported to be 71.5% .[31]

WHO definitions were used for minimum meal frequency (MMF), minimum dietary diversity (MDD) and minimum acceptable diet (MAD).[12] Minimum meal frequency (MMF) refers to the proportion of children of 6-23 months of age both breast fed and non breastfed, receiving solid or semisolid food in the preceding 24 hours. It also includes milk feeds for non breast fed children. MMF is found to vary according to age in breast fed children where it should be at least 2 times for children aged 6-8 months and at least 3 times for children aged 9-23 months. In non breast fed children it is recommended as 4 times in all age groups (9-23 months).[12]

Minimum dietary diversity (MDD) indicator indicates the proportion of children 6-23 months of age, where out of 7 food groups; they have consumed food from 4 or more food groups. The total 7 food groups comprised of dairy products, legumes and nuts, flesh foods, eggs, vitamin A rich fruits and vegetables, cereals and tubers, and other fruits and vegetables.[12]

Minimum acceptable diet (MAD) indicator is defined as the proportion of children aged 6-23 months who have received food according to the minimum MDD as well as the minimum MMF criteria as per the recommendations mentioned above.[12]

MMF, MDD and MAD was observed in 49.7%. 37% and 32.3% children aged 6-23 months in this study. As per NFHS 4 reports, in India, the MDD was 22% and MMF was 11.6% whereas in West Bengal, the MDD and MMF were 37.8% and 19.9% respectively.[14] A study by Davalgi et al observed the MDD, MMF and MAD to be 59%, 48% and 26% in 6-23 months children.[32] The study conducted in Delhi by Khan et al observed the MMF to be 48.6%, the MDD to be 32.6% whereas the MAD was 19.6% for children of 6-23 months age group.

Consumption of iron rich or iron fortified food refers to the proportion of children aged 6-23 months receiving iron-rich food or any age appropriate food fortified with iron whether commercially available or home based during last 24 hours. Iron-rich or iron-fortified foods consist of flesh foods, commercial preparations containing iron, or home based foods fortified with micronutrient powder or supplements.[12] Available evidences have shown that infants and young children between 6-23 months of age, who are on food which is fortified with multiple micronutrient powder, have 26% less risk of developing anaemia and 52% lower risk of developing iron deficiency with increased haemoglobin concentration of 5.12 g/l at follow up.[33] In the present study 54.5% children were consuming iron rich or iron fortified foods.

It has been found that colostrum feeding, early initiation of breast feeding, exclusive breast feeding. Continued breast feeding upto 1 year of age, MDD and MAD was higher in male child than the females. This may indicate gender biasness, preference of male child and thus more

care for the later in the form of appropriate feeding practices.

This study, being a hospital based study, the IYCF practices were assessed among mothers who are attending the immunisation clinic of a tertiary care hospital. Thus these mothers are well aware of child rearing and caring practices and are utilizing the health services such as immunization from the hospital. Moreover, the hospital being in the heart of the city mainly caters to people residing in urban area where people are more conscious regarding child care practices. Thus a community based study would have yield better idea regarding the IYCF practices in the general population.

The study has shown infant and young child feeding practices are not satisfactory. Exclusive breast feeding was only practiced by 50% of mothers. The indicators like minimum acceptable diet, minimum dietary diversity and minimum dietary frequency were also quite low. This reveals the lack of knowledge and awareness of mothers regarding appropriate infant and young child feeding practices. Thus health education should be given to mothers regarding correct child feeding practices and the adverse consequences of malnutrition. The mothers should be counselled and motivated regarding exclusive breast feeding and also should be encouraged to sustain breast feeding even at workplaces.

CONCLUSION

The practices regarding colostrum feeding, prelacteal feeding, early initiation of breast feeding, complementary feeding and continuation of breast feeding is quite good in this study. This indicates the mothers have sufficient knowledge regarding infant feeding practices in these aspects. However, proportion of infants on exclusive breast feeding is very low. Also, appropriate practices in terms of MMF, MDD and MAD were found in lower proportion of mothers. This reveals the lack of awareness among these mothers regarding the benefits of exclusive breast feeding and also regarding the feeding practices in terms of frequency and type of food to be given. Thus IEC activities along with counselling and education of the mothers are required to ensure appropriate feeding practices.

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