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AGE–APPROPRIATE INFANT AND YOUNG CHILD FEEDING PRACTICES [IYCF] IN STUDY POPULATION AND IMPACT OF SELECT MATERNAL CHARACTERISTICS ON THEM

Rohini Panigrahi[1], Anusha Rao[2], Mukesh Agarwal[3]

[1]MD Pediatrics, DM Neonatology, Consultant Pediatrics and Neonatology, Cloudnine Hospital, Pune, Maharashtra, India.
[2]MD Pediatrics, DNB Neonatology, Consultant Pediatrics and Neonatology, Ankura Hospital, Pune, Maharashtra, India.
[3]Professor [Retd.], Department of Pediatrics, Seth GS Medical college and KEM Hospital, Mumbai, Maharashtra, India.

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Corresponding Author:
Dr. Rohini Panigrahi,
MD Pediatrics, DM Neonatology, Consultant Pediatrics and Neonatology, Cloudnine Hospital, Pune, Maharashtra, India.
Email: rohini.panigrahi@gmail.com

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ABSTRACT

Background: Infant and young child feeding [IYCF] practices have significant impact on the nutritional status of children below two years of age. Assessment of these practices in local population assists to identify lacunae and select appropriate interventions. Revised WHO indicators [2008] are useful tools to assess these practices.

Objectives: Present study aims to assess in study population – a] Current status of IYCF practices in terms of WHO indicators and b] Effects of select mother-baby determinants on these indicators.

Materials and Methods: In this cross- sectional observational study, 400 mothers with infants below 2 years, attending the well-baby clinic of the study hospital were interviewed regarding selected demographic features and infant feeding practices and the data was analyzed using WHO indicators for assessment of IYCF.

Results: Early initiation of breast feeding [EiBF] within one hour of birth was reported only in 60% of the infants, which was seen more in young mothers. 86.9% of mothers continued breast feeding till their first birthday of their baby. Complementary feeding was started in 69% of infants at the recommended age of 6-8 months. The minimum dietary diversity [MDD] rate] was merely 45% in the present study, signifying poor quality of weaning foods in the study population. Holistically, only 38.6% of infants between 6-23 months received Minimum acceptable diet [MAD]. Less than half of the infants [47.1%] consumed iron rich or iron fortified foods.

Conclusions: Exclusive breast-feeding rate in the study population is far better than national and state data. The issue of Delayed initiation of breastfeeding needs to be addressed by further reinforcement of the concept among health workers at the site of delivery. While most mothers [87%] mothers continue breast feeding till the end of one year, a substantial number stops before the second birthday of their child, perhaps due to work pressure. Complementary feeding practices are found to be largely unsatisfactory in terms of quality and quantity of food. These issues need reinforcement of postnatal counseling at every point of contact with health care workers and strengthening of Breast-feeding facilities at workplaces.

Keywords: Infant and young child feeding [IYCF], Early breast feeding [EiBF], Complementary feeding, Exclusive breastfeeding, Minimum dietary diversity [MDD], Minimum acceptable diet.

INTRODUCTION

The first thousand days from the conception to second birthday, are considered as the golden days,[1] the most critical period for child survival, health and future. Malnutrition during this period is the underlying cause of most of the infant & young child morbidity & mortality in developing countries like India. Lack of appropriate Infant and Young Child Feeding [IYCF] practices during first two years of life remains the crux of the malnutrition problem, with a huge scope of intervention & improvement.

According to the National family health survey-5 [NFHS-5, 2019-21],[3] more than half of the children in India do not get appropriate breast feeding or complementary feeding. Exclusive breast feeding during the first 6 months is practiced in only 63.7% of infants & early initiation of breast feeding within 1 hour of birth is provided to only 41.8% of infants which was comparatively improved from 54.9% and 41.6% respectively in National family health survey-4 [NFHS-4, 2014-2015]. The timely introduction of complementary feeds at 6-8 months was observed to be practiced in 45.9% of infants which showed a marginal increase of 3.2% from the NFHS-4 data.

Exclusive Breast feeding in early infancy followed by timely addition of complementary feeds in appropriate quality & quantity are the most crucial components of Infant and young child feeding [IYCF]. Practices related to these components depend on many social, economic and cultural factors and vary among the populations. WHO indicators for assessment of IYCF practices at the time if study includes 8 core and 7 optional indicators.[4] While Indian literature is abundant with IYCF studies, very few regional studies of any kind are available for assessment of complementary feeding component of IYCF.

This study was conducted to assess the status of IYFC practices in the study population from lower socioeconomic strata, living predominantly in urban slums using WHO indicators as the tools for assessment& to determine any impact of select maternal-infant characteristics on these practices. Data has been collected from mothers attending a well-baby clinic or study hospital for logistic purposes.

MATERIALS AND METHODS

Present study is a hospital based cross-sectional observational study carried out from April 2015 to October 2016 over a period of 18 months in the well-baby clinic of the Department of Pediatrics of the study hospital, a tertiary care public facility, catering mainly to the low socio- economic strata of population, living in urban slums.A sample size of 376 was found to be adequate for this study, presuming approximately 18000 as the population size attending well- baby clinic of the study hospital over 18 months of study period & confidence level of 95% and the confidence interval of 5. However, to ensure adequacy of data at the time of analysis the sample size was fixed as a total of 400 subjects. Mothers attending the well-baby clinic with infants of 2 years of age & younger were counseled regarding the study. Mothers who gave consent to participate were included in the study. Mothers with complicated delivery, twin gestation or any medical illnesses which could affect her capacity to feed the baby were excluded. Infants with history of NICU admission, prematurity or any other medical illness which could affect his/her capability to breastfeed or accept complimentary feeds were excluded from study. All enrolled mothers were interviewed based on a pre-designed questionnaire [Annexure-2]. Data pertaining WHO IYCF core & optional indicators [47] [D] were recorded on the basis of maternal responses to the questionnaire. Data regarding maternal characteristics age at the time of delivery, educational status, Occupation, [classified as Working mother or home maker], type of delivery [classified as caesarian section or normal delivery], Parity & Infant's gender were recorded.

IYCF indicators rates were recorded in terms of percentages as per WHO definitions[47][D]. For each IYCF parameter maternal and child characteristics were grouped in a dichotomous manner, and a univariate analysis was done to identify impact of these characteristics on individual IYCF parameters.

This study was duly approved by the Departmental Review Board as well as the Institutional Ethics Committee of the study hospital, prior to the commencement. A written informed consent was obtained from mothers after explaining the nature and mode of study.

Table 1: WHO IYCF indicators in present study population vs with National & State [Maharashtra] data

Core Indicators							
Sr No.	**Indicators**	**Age group analyzed**	**No of cases in analyzed age group [n]**	**No of cases fulfilling the core indicators [n]**	**Study Population Percentage**	**Maharashtra [NFHS-5]**	**India [NFHS-5]**
C-1	**Early initiation of breastfeeding [EiBF]**	0-24m	400	240	60.0%	52.9%	41.4%
C-2	**Exclusive breastfeeding under 6 months [ExBF]**	0-5m	211	172	81.5%	71%	63.7%
C-3	**Continued breastfeeding for 1 year [CBF]**	12-15m	23	20	86.9%	84.3%	84.9% [11-17moths]
C-4	**Introduction of complementary feeds [ICF]**	6-8m	42	29	69.0%	52.7%	45.9%
C-5	**Minimum dietary diversity [MDD]**	6-23m	189	85	45.0%	17.6%	24.1%

C-6	**Minimum meal frequency [MMF]**	6-23m	189	141	74.6%	30.5%	31.2%
C-7	**Minimal acceptable diet [MAD]**	6-23m	189	73	38.6%	8.2%	10.8%
C-8	**Consumption of iron rich or iron fortified foods [CIF]**	6-23m	189	89	47.1%	15.3%	17.9%
Optional Indicators							
Sr No	**Indicators**	**Age group analyzed [months]**	**No of cases in analyzed age group [n]**	**No cases fulfilling the core indicators [n]**	**Study Population [Percentage]**	**Maharashtra [NFHS-5]**	**India [NFHS-5]**
O-1	**Children ever breastfed [CEB]**	0-24m	400	392	98.0%	96.3%	95.0%
O-2	**Continued breastfeeding [CBF]**	20-23m	38	23	60.5%	64.2%	73.8% [18-23mths]
O-3a	**Age-appropriate breast feeding [ABF]**	0-5m	211	172	81.5%	56.6%	54.9%
O-3b	**Age-appropriate breast feeding [ABF]**	6-23m	189	163	86.2%	61.5%	74.5%
O-4	**Predominant breastfeeding under 6 months [PBF]**	0-5m	211	202	95.7%	72.5%	74.3%

RESULTS

Out of total 400 infants enrolled in study 208 [52.0%] infants were male &192 [48.0%] were female, 221 [52.8%] were below 6 months of age and 189 [47.2%] were in the age group of 6 months to 23 months.

Out of 400 mothers, 379[94.8%] were less than 35 years of age & 21[5.2%] were more than 35 years of age, 371[92.8%] were literate & 29[7.3%] were illiterate, 338[84.5%] were homemakers &62[15.5%] were working, 228[57%] were primipara &172[43%] were multiparous. 271[67.8%] delivered by normal delivery while 129[32.2%] delivered by cesarean section. A total of 303[75.8%] mothers had previously received antenatal counseling regarding breastfeeding while 97[24.2%] had not received the same.

All eight WHO Core indicators for IYCF practices were assessed in this study. The core indicator of Early initiation of breast feeding [EiBF] within 1 hour of birth was fulfilled in 60% [240 out of 400] of infants. Younger mothers [<35 years of age] in the present study had an EiBF rate of 61.5% [233 out of 379] versus 38% [8 out 22] in mothers >35 years. The difference was statistically significant with P value 0.0410 & Odds ratio of 2.6[1.1-6.4] at 95% confidence level. Mothers who delivered vaginally also had significantly higher EiBF rates of 79 % [214 out of 271] versus those who delivered by cesarean section i.e. 20.2 % [26 out of 129]. The difference was statistically significant with P value 0.0001 &Odds ratio of 14.9 [8.8-25] at 95% confidence level. In the present study, Exclusive breast feeding till 6 months of age [ExBF] rate was 81.5% [171 out of 211]. Younger mothers [<35 years of age] had an ExBF rate of 81.8% [166 of 203] versus 25% [2out of 8] in older mothers [>35 years of age]. The difference was statistically significant with P value of 0.0010 &Odds ratio of 13.5 [2.6-69.4] at 95% confidence level. Literate mothers were found to have significantly higher ExBF rates in the present study i.e.84 % [168 out of 200] versus illiterate mothers i.e. 36.4% [4 out of 11], the difference being significant with a P value of 0.0008 & Odds ratio of 9.2 [2.5-33.2] at 95% confidence level. Continued breastfeeding at 1 year of age [CBF] rate was 87.0% [20 out of 23] in the study population, it was not found to be significantly affected by any of the maternal or infant variables.

In the present study, Introduction of complementary feeds [ICF] rate was 69.0% [29 out 42]. The ICF rate in the present study was not found to be significantly affected by any maternal & infant characteristics. Minimum Dietary Diversity [MMD] rate was 45% [85 out of 189] in the study population. It was found to be significantly higher in literate than in illiterate mothers i.e. 47.4% [81 out of 171] versus 22.2% [4 out of 18] respectively with a p value of 0.0480 & Odds ratio of 3.2[1-10] at 95% confidence level. Minimum Meal frequency [MMF] rate was 74.6% [141 out of 189] in the study population. MMF rate in the present study was found to be significantly higher in Primipara mothers and those with a male child. Primipara mothers in the present study had an MMF rate of 84% [84 out of 100] versus 65.2% [58 out of 89] in multipara mothers, the difference being significant at P value 0.0039 & Odds ratio of 2.8 [1.4-5.6] at 95% confidence interval. Malé infants of the study had better MMF rate of 89.9% [80 out of 89] than 68.5% [61 out of 89] of female infants, difference was significant at P value of 0.0070 & Odds ratio of 4.1 [1.8-9.3] at 95% confidence interval. Minimum acceptable diet [MAD] is a composite index of the previous two indicators, including infants fed with minimum dietary diversity [MMD] and the minimum meal frequency [MMF] during the previous day. In the present study, MAD rate was 38.6% of the study population. MAD rate in the present study was found to be significantly higher in younger mothers & primipara mothers. Younger mothers less than 35 years had MAD rate of 43.8% [77 out of 176] versus 30.8% [4 out of 13] in older mothers, the difference being significant at P value 0.0410 and Odds ratio of 1.8 [0.5-5.9] taking 95% as the confidence interval. Primipara mothers had MAD rate of 50% [50 out of 100] versus 34.8% [31 out of 89] in multipara mothers, the difference was significant at P value of 0.04 &Odds ratio of 1.7 [1-3.1] at 95% confidence. Consumption of iron-rich or iron-fortified foods [CIF]rate was 47.1% in the study population. No significant difference was observed on the basis maternal & infant characteristics.

Amongst the Optional IYCF indicators studied, Children ever breastfed [CEB] rate was 98% [392 out of 400]. The rate of Continued breastfeeding for 2

years was60.5% [23 out of 38] & rate of Age-appropriate breastfeeding was 83.9%. Predominant breastfeeding under 6 months was 95.7% [202 out of 211]. In the present study none of the optional indicators were significantly associated with any of the maternal & infant characteristics.

DISCUSSION

All eight WHO core indicators for IYCF practices were assessed in this study. Table 1 suggests that all core indicators in the study population were better than that reported from state level& at all India level as per NFHS-5survey.[1,2] Better indicators in the study population than Maharashtra & all India values appear to be due to large percentage of in-hospital deliveries in the study hospital, which is a certified Baby friendly hospital and follows "Ten successful steps of breast feeding".

Early initiation of breastfeeding [EiBF] not only ensures that the infant receives the colostrum but also provides skin-to-skin contact between mother and infant shortly after birth that increases the likelihood of exclusive breastfeeding for 6 months of life as well as the overall duration of breastfeeding. In our study EiBF rate was 60% [240 of 400] & was significantly better in younger mothers & in mothers who delivered vaginally as compared to caesarean section. Many regional & international studies reported association of lesser EiBF rates with older mothers &with caesarean section delivery.[3] However, Chaudhary R et al observed no difference in EiBF rates amongst mothers who delivered vaginally or by caesarean section & concluded that with the help of a trained lactation management counsellor it is possible to initiate breastfeeding early even among mothers delivered by caesarean section.[4]

Exclusive breastfeeding [ExBF] for 6 months confers many benefits to the infant and the mother. In our study, Exclusive breast feeding till 6 months of age [ExBF] rate was 81.5% [171 out of 211] & was significantly better in younger & literate mothers. In a similar study from Maharashtra by Bagul AS et al ExBF rate was 63.9%, which was better amongst literate mothers & mothers with lower parity.[5] In a study from Gujarat by Shwethal B et al authors observed that excusive breast-feeding rates were better in younger & educated mothers.[6]

In the present study, Introduction of Complementary Feeding ICF rate was 69.0% [29 out 42]. Complementary feeding in appropriate quality, quantity & its introduction at appropriate age, perhaps is as important as exclusive breast feeding till 6 months of age. The lack of the same really puts the infant's health & the very survival at jeopardy. The Core indicators that assess breast feeding part of IYCF practices are performing better compared to Core indicators that assess the Complementary feeding part, as seen in this study as well as other studies,[11] The promotion of breast feeding by various stake holders, it appears has been better & improving. It requires it to be further sustained & strengthened. However, the performance of all Core indicators pertaining to Complementary feeding is very dismal & worrisome. In fact, introduction of complementary feeds at 6-8 months at all India level is practiced in only 45.9.% of infants and only 10.8% of infants receive "Minimum acceptable Diet" [MAD] as per NFHS-5 data.

In the present study, the Minimum Dietary Diversity [MDD] rate was 45% in the study population & was found to be significantly higher in literate than in illiterate mothers. Minimum Meal Frequency MMF rate was 74.6% in the study population& was found to be significantly higher in Primipara mothers and those with a male child. The composite index of Minimum Acceptable Diet [MAD] rate was 38.6% in the study population& was significantly better in younger & primiparous mothers & those with male infants. In a community-based study from urban slum by Rao et al ,280 subjects were selected by random sampling method. Authors found out that Minimum dietary diversity [MDD] and Minimum meal frequency [MMF] & Minimum acceptable diet [MAD] were met in 52.8 %, 52% & 32.1% of the children respectively. Maternal education was associated with better minimum dietary diversity rates & male gender was associated with better minimum acceptable diet rate amongst study population.[7]

Limitations of the present study include –WHO-IYCF indicators are originally designed for large community surveys, while the present study has a small sample size, especially in some sub- groups. Present study includes cases who visit well baby clinic of the study hospital. The fact that they visit this clinic on their own indicates that they have better health awareness and hence, more likely to follow correct practices. Majority of the babies included in the study are delivered in the study hospital itself, which is a certified baby friendly hospital for over two decades with more rigorous IYCF counselling services, which may contribute to better IYCF indices.

CONCLUSION

Present study reveals that although study population has relatively better IYCF indicators than the national or state figures most of them are far from satisfactory and need further efforts to ensure best possible IYCF practices. IYCF practices depend on many maternal characteristics e.g. age, educational status, parity, and mode of delivery as well as on the gender of infants. In general, Younger and more educated mothers tend to follow better IYCF practices. Parental understanding of Infant & Young child's nutritional needs can be strengthened by counselling at antenatal visits, during immediate post-natal period, at well baby visits as well as during sickness. Primary care physicians shall use each opportunity to educate parents. Presently there is a boom of fast food & food

delivery systems in our country in both urban & semi urban areas. People are more inclined to eat fast foods than homemade traditional recipes, fruits & vegetables. Different means to increase awareness at population level shall be sought after. Incorporation such information in syllabi at school level could be one of such means.

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