Research Article

Reporting of core and optional indicators of infant and young child feeding practices using standardized WHO formats from a rural population of Jammu region

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ABSTRACT

Background: Adequate nutrition during infancy and early childhood are critical for the overall development of a child. Infant and young child feeding (IYCF) practices have direct bearing on nutritional status of children under 2 years of age, thereby impacting child survival. **Objectives:** To assess and report core and optional indicators of IYCF practices using standardized the WHO formats from a representative sample of a rural community. **Materials and Methods:** The present study was observational descriptive cross sectional in nature, conducted over a period of 6 months w.e.f October 2013-April 2014 in Block RS Pura which is a rural field practice area of Department of Community Medicine. Information from mothers of 300 children aged 0-23 months residing in eight randomly selected villages of Block RS Pura were interviewed in a house to house survey using standardized the WHO formats to assess core and optional indicators of IYCF practices. **Results:** Some core indicators reflected poor feeding practices, for example, only about half (57.6%) of the children studied were initiated breastfeeding within 6 h after birth. Among those who were initiated early, nearly two-thirds (61.7%) were exclusively breastfed, and in as many as (58.1%), breastfeeding was continued till 1 year of age. Bottle feeding was observed in nearly half of the children studied (51.5%). Solid, semisolid, or soft foods were correctly introduced at 6-8 months in two-thirds of the (66.7%) of infants studied. Nearly, 6 out of 10 mothers maintained minimum meal frequency. Among optional indicators, the consumption of iron-rich or iron-fortified foods was quite infrequent (22%). **Conclusion:** Figures for indicators of breastfeeding practices were better as compared to figures for indicators of infant feeding. Continued efforts to promote breastfeeding coupled with sustained focus beyond 6 months are needed to improve IYCF indicators.

KEY WORDS: Infant and Young Child Feeding; Community Based; Core and Optional Indicators

INTRODUCTION

Infant and young child feeding (IYCF) practices directly affect the nutritional status of children under 2 years of age and, ultimately, impact child survival. Improving IYCF practices in children 0-23 months of age is therefore critical to improved nutrition, health, and development of children. The nutritional well-being of a population is both an outcome and an indicator of national development. IYCF is a key area to improve child survival and promote healthy growth and development. However, until now, indicators that can be used in population-based surveys to measure IYCF practices have focused mostly on breastfeeding practices. The lack of evidence and consensus on simple indicators of appropriate feeding practices in children 6-23 months of age has hampered progress in measuring and improving feeding

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practices, thereby constraining improvements in infant and young child nutritional outcomes.

Therefore to achieve optimal nutrition outcomes, a set of recommendations termed as IYCF practices were recommended by the WHO and UNICEF (2002).[1]

The first 2 years of life provide a critical window of opportunity for ensuring children's appropriate growth and development through optimal feeding. Exclusive breastfeeding up to 6 months and breastfeeding up to 12 months coupled with appropriate complementary feeding practices are estimated to prevent almost one-fifth of under-five mortality.[2] The 2008 Lancet Nutrition Series reinforced the significance of IYCF on child survival.[3]

Simple, valid, and reliable indicators are essential to track progress and guide investment to improve nutrition and health during the first2 years of life. The WHO (2008) in "indicators for assessing IYCF practice" presented fifteen indicators.[4] This updated set of indicators includes eight core and seven optional indicators. The core list includes new indicators for dietary diversity (a proxy for adequate micronutrient density of foods and liquids other than breast milk), feeding frequency (a proxy for adequate energy intake from non-breast milk sources), and minimum acceptable diet among breastfed, and non-breastfed children aged 6-23 months. Although IYCF practices has always remained a hot topic for research, very few studies have been conducted to assess and report the indicators of IYCF in a comprehensive manner. The present study therefore was designed to accumulate the evidence with regard to IYCF in community settings using standardized methods recommended by the WHO.[4]

MATERIALS AND METHODS

The present cross-sectional study was carried out in 2013-14 in Miran Sahib Zone of Block RS Pura which is a field practice area of Department of Community Medicine, Government Medical College (GMC) Jammu, located at a distance of 13 km from GMC. The health services in the Miran Sahib zone are administered through a network of health institutions comprising of one New Type Primary Health Centre (NT-PHC) which is PHC Miran Sahib and four subcenters (SCs) including SC Maralia functioning under PHC. Out of eight zones of Block RS Pura, Miran Sahib Zone was selected randomly employing simple random sampling technique using table of random numbers. The population of Miran Sahib Zone is approximately 23,500 spread over 23 villages. 8 villages out of 23 were selected using two-digit table of random numbers. The total population of selected 8 villages is 8698 which is 37% of total population of Miran Sahib Zone. All the females in the age group of 15-49 years having children (living and deceased) in the age group of 0-23 months were the potential participants for the study. If an eligible mother had more than one child <2 years of age, then all eligible children were included in the survey.

A minimum sample size of 300 children was needed to be studied to assess and report indicators of IYCF with desired precision (95% confidence) as per the IYCF module.[3] 165 households were visited to get a desired sample of 300 children. The number of children in the target age group in these villages was 321 and number of mothers was 258. 241 mothers residing in these households were interviewed.17 mothers and their 21 children were excluded as their households were locked even on third consecutive visit. Except nonavailability, there were no other exclusion criteria. After obtaining ethical clearance from Institutional Ethics Committee Government Medical College, Jammu, a meeting of the all the multipurpose and accredited social health activist workers was convened in Primary Health Center Miran Sahib in which all the workers of the selected villages were sensitized about the purpose of the study. They were requested to inform the households regarding the same in their forthcoming village meetings so that adequate cooperation of the families can be sought.

Upon reaching a particular household the investigator first confirmed the respondent's eligibility criteria for the study, i.e., she was aged 15-49 years and had live birth in the past 2 years. The eligible respondents were then interviewed in person after obtaining informed consent from them. Pre-tested WHO questionnaires were used to collect information about the feeding practices of the children. Different WHO formats were administered separately for each mother or caregiver for each child <2 years of age in the household.

Following three questionnaires were used for data collection.

- Household roster
- Initiation of breastfeeding module (IBF)
- IYCF module.

The household roster was administered to the head of the household. Its purpose was to identify all potentially eligible respondents for the IBF and IYCF modules.

A separate IBF module was administered to each female member identified in the household roster. They were then asked additional screening questions. These included questions to identify their correct age and whether she had live birth in the past 2 years. This activity was independent of the information provided by the head of the household. Respondents confirming the above were then asked questions about the breastfeeding practices.

Similarly, for the IYCF module, the household roster information was used to identify the primary caregiver and children <3 years of age. A broader age range was used in the household roster because the respondent providing

the information may not have known the exact age of all household members. The household roster in this way only served as initial screen. The primary caregiver of each child was then asked the birth date and age of the child in years and months to determine the eligibility. Separate IYCF module was completed if there were more than one eligible child or these children had different caregivers. Dietary intake was assessed by previous day recall method by trained investigators (trained by virtue of PG training in community medicine). Standardized tools for measurement of portion sizes were employed.

RESULTS

The results of IYCF practices are presented below as core and optional indicators of breast and complimentary feeding; however, the results are best understood if the readers first go through the section dealing with calculation of indicators (Appendix 1). Age distribution of children is given in Table 1. Mean age of children was 10 ± 7.2 months. The indicators of breastfeeding (Table 2) reveal that early IBF (as recommended) is practiced by more than half (57.6%) of the mothers studied. Slightly, higher figures were observed for exclusive breastfeeding (61.7%) whereas lower figures were observed for children fed appropriately (53.3%). In both cases, no gender differentials were noted. The figures with regard to children ever breastfed were much higher (91.6%) as it included all the children who were fed even on a single occasion including bottle feeding. Although mean duration of breastfeeding was observed as 15.22 months, only 41% of the children were being breastfed at 2 years, a decline from 58.1% observed at year one.

Nearly, three-fourth (77.2%) children were predominantly breastfed. These figures surpass those for exclusive breastfeeding (61.7%) as mentioned above. Bottle feeding was reported by nearly half (51.5%) of the mothers studied. However, majority (86.6%) of non-breast fed children were fed with at least two milk feeds (Table 2).

Table 3 reveals that nearly two-third (66.7%) of children studied were introduced to solid and semi-solid/soft feeds. Similarly, minimum meal frequency was maintained in approximately two-third of children studied. Figures for minimum diversity and minimum acceptable diet were very low (20.9% and 27.9%, respectively). Consumption of iron-rich/iron-fortified food too revealed disappointing figures (22%).

Table 1: Distribution of children according to age

Age (months)	*n* (%)		
	Males	Females	Total
0-6	69 (51.9)	64 (48.1)	133 (44.3)
7-12	30 (52.6)	27 (47.4)	57 (19)
13-18	41 (65)	22 (35)	63 (21)
19-23	25 (53)	22 (47)	47 (15.7)
Total	165 (55)	135 (45)	300 (100)

Table 2: Core and optional indicators of breastfeeding

Core and optional indicators	Value (%)
Early IBF (*n*=300) (core)	
Within 1 h	70 (23.3)
Within 1-6 h	103 (34.3)
Within 6 h	173 (57.6)
Children ever breastfed (optional) (months)	
0-12	166 (91.2)
13-23	109 (92.3)
0-23	275 (91.6)
Continued breastfeeding at 1 year of age (*n*=43) (core)	
Males	20 (46.5)
Females	5 (11.6)
Total	25 (58.1)
Continued breastfeeding at 2 years of age (*n*=39) (optional)	
Males	7 (17.95)
Females	9 (23.08)
Total	16 (41)
Exclusive breastfeeding under 6 months (*n*=123) (core)	
Males	39 (31.7)
Females	37 (30)
Total	76 (61.7)
Age-appropriate breastfeeding (*n*=300) (optional)	
Males	87 (29)
Females	73 (24.33)
Total	160 (53.3)
Predominant breastfeeding under 6 months (optional) (months)	
0-1	36 (80)
2-3	29 (78.3)
4-5	30 (73.2)
Total	95 (77.2)
Duration of breastfeeding (optional)	15.22 months*
Bottle feeding (optional) (months)	
0-5	28 (22.8)
6-11	37 (68.5)
12-23	87 (73.7)
Total	152 (51.5)
Milk feeding frequency for non-breastfed children (optional) (months)	
6-11	16 (100)
12-17	22 (81.4)
18-23	27 (84.3)
Total	65 (86.6)

*Excluding 5 deceased children. IBF: Initiation of breastfeeding

Table 3: Core indicators of complementary feeding

Core indicators	Value (%)
Introduction of solid, semi-solid/soft foods (months)	
6-7	2 (25)
7-8	12 (92.3)
Total	14 (66.7)
Minimum dietary diversity (months)	
6-11	2 (3.7)
12-17	9 (13.6)
18-23	25 (48.07)
Total (6-23)	36 (20.9)
Minimum meal frequency (months)	
6-11	35 (64.8)
12-17	45 (68.2)
18-23	23 (44.2)
Total (6-23)	103 (59.8)
Minimum acceptable diet	20+28 (27.91)
Consumption of iron-rich/iron-fortified foods (months)	
6-11	8 (14.8)
12-17	14 (21.2)
18-23	16 (30.8)
Total	38 (22)

DISCUSSION

Clinicians and public health fraternity continue to accord top priority to infant and young feeding practices. The reasons for this are not difficult to understand as malnutrition remains a significant contributor to high child mortality in India.[3] Although significant gains has been registered in some IYCF practices (National Family Health Survey 3 and 14 country data), yet a large room for improvement exists.[5,6]

The present study reported both core and optional indicators. Early IBF was practiced by more than half (57.6%) of the mothers studied. Slightly, higher figures were observed for exclusive breastfeeding (61.7%) whereas lower figures were observed for children fed appropriately (53.3%). Majority (86.6%) of non-breast fed children were fed with at least two milk feeds. Nearly, two-third (66.7%) of children studied were introduced to solid and semi-solid/soft feeds. Similarly, minimum meal frequency was maintained in approximately two-third of children studied. However, results for minimum diversity and minimum acceptable diet were very low (20.9% and 27.9%, respectively). Consumption of iron-rich/iron-fortified food was also low.

Much of the discussion which follows draws context from the principles of complementary feeding enunciated by the WHO.[7]

As such, inconsistent evidence is available regarding breastfeeding practices in urban and rural settings.[8-13] Whether the inconsistency is due to methodological variations among studies or better awareness is difficult to pinpoint. However, lower figures for delayed IBF and continued breastfeeding in rural areas are linked to barriers such as prevalent customs and religious beliefs.[14,15] These also have been reported with attributes related to mother's lack of education, low socioeconomic status, caesarian section, insufficient breast milk, and social customs like administration of pre-lacteal feeds to newly born.[16,17] Although it is increasingly being agreed upon that cultures do not strongly insinuate attempts aimed at removing barriers to breastfeeding yet these discrepancies underscores the importance of context-specific and targeted IEC campaigns in urban and rural areas. In the present study, nearly 60% children were put on breastfeeding within 1 h of birth and were exclusively breastfed for 6 months. These figures were lower as compared to another study conducted in Gujarat.[18]

Better indicators relating to introduction of solid, semi-solid, or soft foods reflect positively for the population under investigation though the same cannot be commented for widely varying numbers receiving complementary feeding at 6-9 months of age (24-71.7%).[19-21] Everything else being equal, children fed timely complimentary feeding are expected to be well nourished as evident by studies conducted as far as Malawi and Pakistan.[22,23]

Indicators reflecting minimum dietary diversity and minimum meal frequency seem difficult to improve as evident by reported figures that generally range from dismal to just satisfactory. This is of particular importance for at least two different reasons. First, overwhelming evidence of their usefulness in health promotion cannot be disregarded and second, the interventions to tackle implications of poor diversity are different. Indicators regarding minimal acceptable diet have also yielded low figures.[18,24,25] Similar situation prevailing in other countries of sub-continent including Nepal, Sri Lanka, and Bangladesh points to common underlying factors.[6,25,26] The situation with regard to consumption of iron-rich or iron-fortified foods is poor as well.[27,28] The situation therefore, is amenable to mitigation only if sustained and multilevel efforts are made.

We observed contradictory figures with regard to bottle feeding, predominant breastfeeding rates, and continued breastfeeding rates at 2 years of age in our study. It was disheartening to observe higher bottle-feeding rates even though breastfeeding was near universal. It seems we are unable to sustain the initial advantage we have from higher coverage with other mother and child health practices such as immunization and antenatal coverage.[19,29] It also indicates a chasm between reported awareness figures and actual practices on ground.

Strengths and Limitations

Admittedly, the available data on IYCF is incomplete, non-representative, and predominantly hospital based. Standardized methodology has been seldom used to report IYCF practices. Therefore, by assessing and reporting indicators of IYCF, using standardized methodology we intend to overcome these shortcomings.

Standardized data collection procedure (WHO) allows for easy comparison of indicators across different settings became strength of the study.

1. Previous day recall method though widely used, may not accurately reflect usual intake. It is also prone to recall bias. Both factors might have influenced accurate reporting of IYCF indicators.
2. Some indicators such as introduction of solid and semi-solid food have a narrow age range in numerator and denominator which affect assessment and monitoring change programs.

CONCLUSIONS

Indices of IYCF observed in the present study are a reflection of prevailing IYCF practices. Continued efforts to promote breastfeeding coupled with sustained focus beyond 6 months are needed to improve IYCF indicators.

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APPENDIX

Appendix 1: Calculation of core and optional indicators

Indicators	Calculations
Core indicators	
Early IBF	Children born in the past 24 months who were put to the breast within 1 h of birth
	Children born in the past 24 months
Exclusive breastfeeding under 6 months	Infants 0-5 months of age who receive only breast milk during the previous day
	Infants 0-5 months of age
Continued breastfeeding at 1 year of age	Children 12-15 months of age who received breast milk during the previous day
	Children 12-15 months of age
Introduction of solid, semi-solid or soft foods	Infants 6-8 months of age who received solid, semi-solid, or soft foods during the previous day
	Infants 6-8 months of age
Minimum dietary diversity	Children 6-23 months of age who received foods from ≥4 food groups during the previous day
	Children 6-23 months of age
Minimum meal frequency	Breastfed children 6-23 months of age who received solid, semi-solid, or soft foods the minimum number of times or more during the previous day
	Breastfed children 6-23 months of age and non-breastfed children 6-23 months of age who received solid, semi-solid, or soft foods or milk feeds the minimum number of times or more during the previous day
	Non-breastfed children 6-23 months of age
Minimum acceptable diet	Breastfed children 6-23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day
	Breastfed children 6-23 months of age and non-breastfed children 6-23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day
	Non-breastfed children 6-23 months of age
Consumption of iron-rich or iron-fortified foods	Children 6-23 months of age who received an iron-rich food or a food that was specially designed for infants and young children and was fortified with iron, or a food that was fortified in the home with a product that included iron during the previous day
	Children 6-23 months of age
Optional indicators	
Children ever breastfed	Children born in the past 24 months who were ever breastfed
	Children born in the past 24 months
Continued breastfeeding at 2 years	Children 20-23 months of age who received breast milk during the previous day
	Children 20-23 months of age
Age-appropriate breastfeeding	Infants 0-5 months of age who received only breast milk during the previous day
	Infants 0-5 months of age and children 6-23 months of age who received breast milk, as well as solid, semi-solid, or soft foods, during the previous day
	Children 6-23 months of age
Predominant breastfeeding under 6 months	Infants 0-5 months of age who received breast milk as the predominant source of nourishment during the previous day
	Infants 0-5 months of age
Duration of breastfeeding	Median = $m_{i-1} + [(p_{i-1}-0.50)/((p_{i-1}-p_i) \times (w_i))]$ where pi is the proportion for the youngest age group of children with a proportion <0.50, pi−1 is the proportion for the 2 months age group that precedes the youngest age group with a proportion <0.50, m_{i-1} is the midpoint of the age range of children represented in the proportion, w_i is the difference in the midpoint of the age range of children represented by the proportions p_i and p_{i-1}
Bottle feeding	Children 0-23 months of age who were fed with a bottle during the previous day
	Children 0-23 months of age
Milk feeding frequency for non-breastfed children	Non-breastfed children 6-23 months of age who received at least 2 milk feedings during the previous day
	Non-breastfed children 6-23 months of age

IBF: Initiation of breastfeeding