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Are Recommended Infant and Young Child Feeding (IYCF) Practices
being followed In Our Region?
Assessment Methods and Research Evidence

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Introduction

We know that undernutrition in young preschool children, especially those under two years of age compromises their growth, physical and mental development and has serious deleterious effects on their quality of life as children, and later as adolescents and adults. We know, if not all, atleast the key intervention areas to prevent and control young child malnutrition. And yet we have not adequately and consistently acted on the knowledge we have in the past decades; with grave consequences and adverse impact on the quality of human resources.

It is no surprise then, that childhood undernutrition is a major public health problem throughout the developing world and is one of the principal underlying causes of death for many of the world's children (Murray, 1997a; Murray, 1997b). Around half of India's children under 5 years of age are underweight and stunted as compared to only about one-third in the world. Severe underweight is twice as high in India as compared to the world (Table 1). Further, India's prevalence figures are as dismal (or worse) than those of Africa (UNICEF, 2005).

According to NFHS-2 (1998-99), the prevalence of undernutrition among children under 3 years of age (measured by WAZ, HAZ and WHZ below - 2) increases with the age of the child, peaking at 12-23 months (Table 2 and Figure1). The state of Gujarat, despite being among the better developed states on the economic front, also has markedly high prevalence figures, similar to the rest of India. As regards gender differences, Table 2 shows no significant differences in the prevalence of undernutrition among boys and girls (NFHS-2, 1998-99). However, subtle gender discrimination – which does not show in point prevalence rates – is reported in literature, such as poor quality of food given to the girl child; and delay in seeking health care for the girl child during illness.

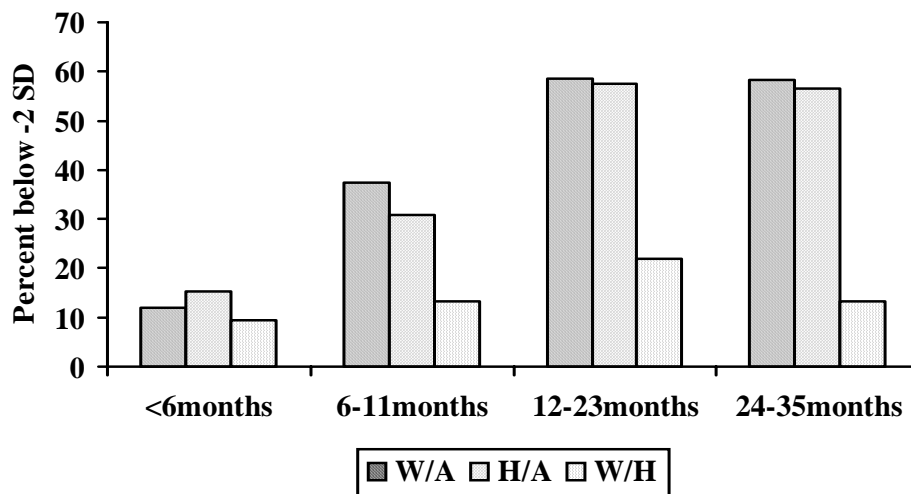
Table 1. Proportion of Children (Under 5 years of age) Suffering from Undernutrition: The World and India

	% Children 0-5 years (1995-2003)		
	Underweight (WAZ <-2)	Stunting (HAZ < - 2)	Wasting (WHZ <-2)
World	27	31	9
India	47	46	16
WAZ: Weight for Age z Score; HAZ: Height for Age z Score; WHZ: Weight for Height z Score. Source: UNICEF, 2005			

Table 2. Prevalence of Undernutrition among Children under 3 Years of age (NFHS-2, 1998-99)

Age (Months)	Underweight (WAZ <-2)		Stunting (HAZ < - 2)		Wasting (WHZ <-2)	
	Gujarat	India	Gujarat	India	Gujarat	India
<6	9.4	11.9	13.2	15.4	10.9	9.3
6-11	41.6	37.5	30.0	30.9	14.7	13.2
12-23	54.7	58.5	53.9	57.5	21.6	21.9
24-35	57.5	58.4	58.2	56.5	15.0	13.2
Males	40.3	45.3	42.0	44.1	13.9	15.7
Females	50.0	48.9	45.3	47.0	18.6	15.2

Figure 1. Under Three Malnutrition in India : When Malnutrition Strikes (NFHS-2, 1998-99)



Has the prevalence of under nutrition decreased over time?

The proportion of children under three years of age who are underweight decreased marginally from 52% in NFHS-1 survey to 47% in NFHS-2 survey and the proportion of severely underweight decreased from 20% to 18%. This reveals that there is no significant reduction in prevalence of undernutrition during the 5 year period from NFHS-1 to NFHS-2, further underscoring the critical importance of controlling this pervasive problem.

What are the major reasons underlying such high prevalence figures?

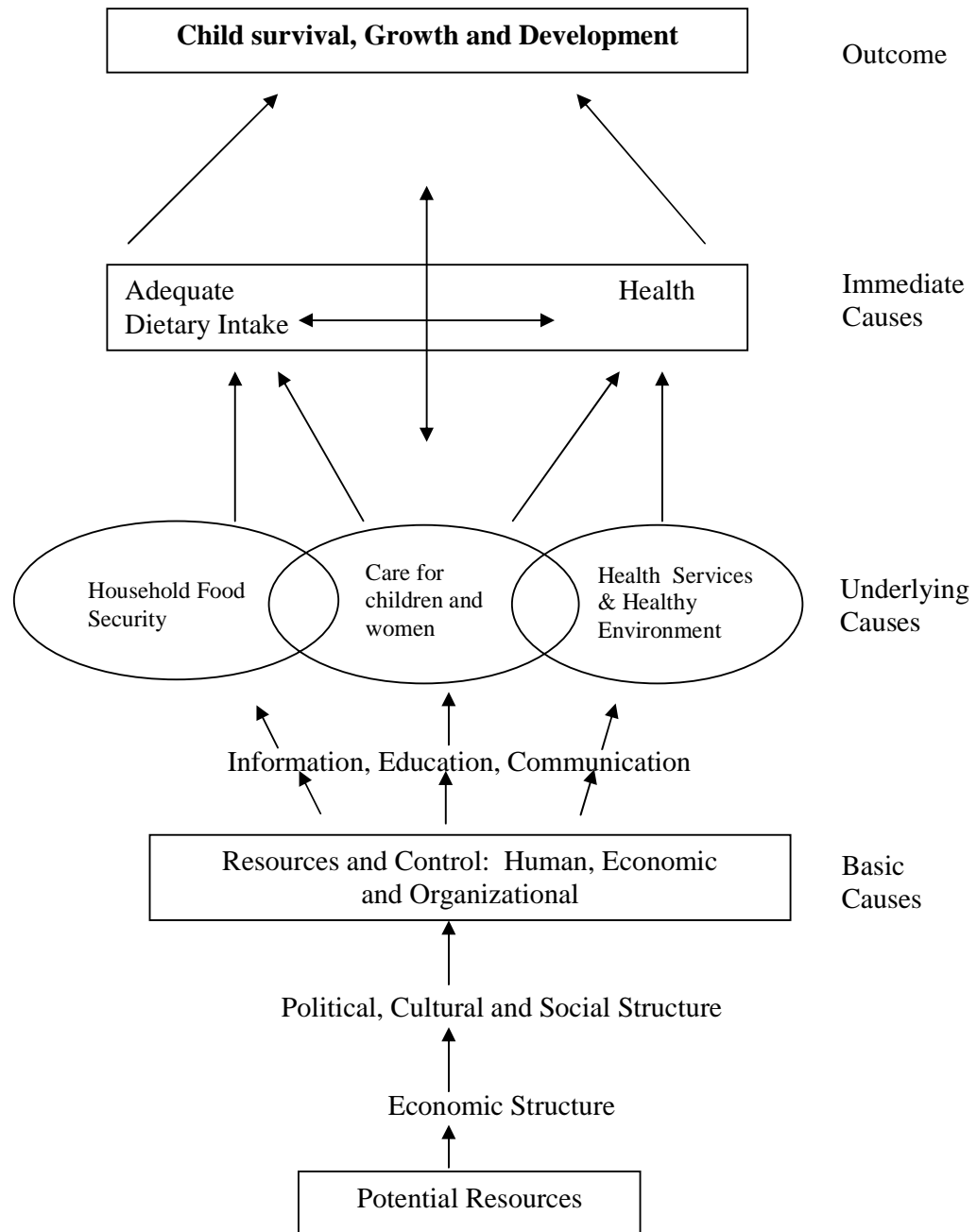
Figure 2 depicts the UNICEF conceptual model for childhood malnutrition. As the UNICEF framework reveals, the immediate causes of malnutrition and death are inadequate dietary intake and/or disease which in turn are caused by conditions that affect (1) household food security, (2) health services and healthy environment and (3) care for women and children, especially care of the girl child.

Neither household food security nor adequate health services and healthy environment will promote nutrition without optimal care. Further, even where poverty causes food insecurity and limited health care, enhanced care-giving can optimize the existing resources to promote good nutrition and health.

There is also the gender dimension to malnutrition. For several females, gender discrimination begins at birth, often continuing throughout childhood and adolescence, resulting in lower levels of education, higher workloads, less access to health care and possibly, also to reduced food intake. Malnourished women have a lower capacity to care for their own and their families' nutritional needs and are at a higher risk of having low birth weight babies. This inter-generational cycle serves to perpetuate malnutrition and needs urgent attention (Gujarat State Nutrition Policy, 1998).

The framework further reveals that the basic causes of undernutrition relate to poverty (availability of resources), social status (women's inferior status deprives them of control over resources) and the government policies and priorities.

Figure 2. A Conceptual Framework by UNICEF



Source: UNICEF, 1992.

Under nutrition and Infant and Young Child Feeding (IYCF) Practices in 0-2 year old children

It is recognized that the period from birth to two years of age is a “critical window” for the promotion of optimal growth, health and cognitive development. Adequate nutrition through appropriate infant and young child feeding during infancy and early childhood is fundamental to the development of each child’s full human potential. Unfortunately, longitudinal studies have consistently shown that 0-2 years is also the peak age for growth faltering (Figure 1), deficiencies of certain micronutrients, and common childhood illnesses such as diarrhea. After a child reaches 2 years of age, this under nutrition is very difficult to reverse (Martorell et al, 1994).

The immediate consequences of poor nutrition during these formative years include significant morbidity and mortality and delayed mental and motor development. In the long-term, early nutritional deficits are linked to impairments in intellectual performance; work capacity, unfavourable reproductive outcomes and overall poor health during adolescence and adulthood (Lutter, 2003).

Poor infant and young child feeding practices i.e. breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life, as seen earlier.

The focus of this monograph is on breastfeeding (BF) and complementary feeding (CF) practices, which are important components of IYCF. Hence the following section highlights the importance of adequate BF-CF practices in the context of growth and development of children 0-2 years of age.

An Overview of Infant and Young Child Feeding (IYCF) Practices

Promotion of adequate breastfeeding and complementary feeding practices have been ranked to be first and third respectively, among the most effective interventions for reducing under five mortality in the developing countries (Jones et al, 2003) . Infant and young child feeding practices have significant effects on both children and mothers. Exclusive breastfeeding (EBF) for the first six months of life protects infants against common childhood diseases (including

gastrointestinal infections and pneumonia), and hence reduces the risk of childhood mortality. Timely introduction of adequate and safe complementary foods at six months of age helps to fill the dietary gaps that cannot be met by breast milk alone. Continued breastfeeding for two years or beyond confers major nutritional benefits and is an essential component of appropriate complementary feeding (Kramer and Kakuma, 2002).

Mothers are affected through the influence of exclusive breastfeeding on the period of lactational amenorrhea which prolongs postpartum infertility, and hence influences birth interval. The other benefits of breastfeeding on the mother include early return to pre-pregnancy weight, protection against breast or cervical cancer and emotional bonding with the child (WHO, 2001).

For these reasons, it is essential to ensure that caregivers and programme planners are provided with appropriate guidance regarding optimal feeding of infants and young children. Given below is the summary of the recommended Infant and Young Child feeding practices excerpted from the *Guiding Principles for Complementary Feeding of the Breastfed Child*. Pan American Health Organization, World Health Organization, 2003.

Summary of guiding principles for infant and young child feeding

- **Duration of exclusive breastfeeding and age of introduction of complementary foods:** Practice exclusive breastfeeding from birth to six months of age, and introduce complementary foods at six months of age (180 days) while continuing to breastfeed.
- **Maintenance of breastfeeding:** Continue frequent, on-demand breastfeeding until two years of age or beyond.
- **Responsive feeding:** Practice responsive feeding, applying the principles of psycho-social care. Specifically:
 - feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues;
 - feed slowly and patiently, and encourage children to eat, but do not force them;
 - if children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement;
 - minimize distractions during meals if the child loses interest easily;
 - remember that feeding times are periods of learning and love - talk to children during feeding, with eye to eye contact.

- **Safe preparation and storage of complementary foods:** Practice good hygiene and proper food handling by :
 - washing caregivers' and children's hands before food preparation and eating;
 - storing foods safely and serving foods immediately after preparation;
 - using clean utensils to prepare and serve food;
 - using clean cups and bowls when feeding children;
 - avoiding the use of feeding bottles, which are difficult to keep clean.

- **Amount of complementary food needed:** Start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding. The energy needs from complementary foods for infants with "average" breast milk intake in developing countries are approximately 200 kcal per day at 6-8 months of age, 300 kcal per day at 9-11 months of age, and 550 kcal per day at 12-23 months of age. In industrialized countries these estimates differ somewhat (130, 310 and 580 kcal/d at 6-8, 9-11 and 12-23 months, respectively) because of differences in average breast milk intake.

- **Food consistency:** Gradually increase food consistency and variety as the infant gets older, adapting to the infant's requirements and abilities. Infants can eat pureed, mashed and semi-solid foods beginning at six months. By eight months most infants can also eat "finger foods" (snacks that can be eaten by children alone). By 12 months, most children can eat the same types of foods as consumed by the rest of the family (keeping in mind the need for nutrient-dense foods). Avoid foods that may cause choking (i.e., items that have a shape and/or consistency that may cause them to become lodged in the trachea, such as nuts, grapes, raw carrots).

- **Meal frequency and energy density:** Increase the number of times that the child is fed complementary foods as s/he gets older. The appropriate number of feedings depends on the energy density of the local foods and the usual amounts consumed at each feeding. For the average healthy breastfed infant, meals of complementary foods should be provided 2-3 times per day at 6-8 months of age and 3-4 times per day at 9-11 and 12-24 months of age. Additional nutritious snacks (such as a piece of fruit or bread or mixed flour chapatti) may be offered 1-2 times per day, as desired. Snacks are defined as foods eaten between meals, usually self-fed, convenient and easy to prepare. If energy density or amount of food per meal is low, or the child is no longer breastfed, more frequent meals may be required.

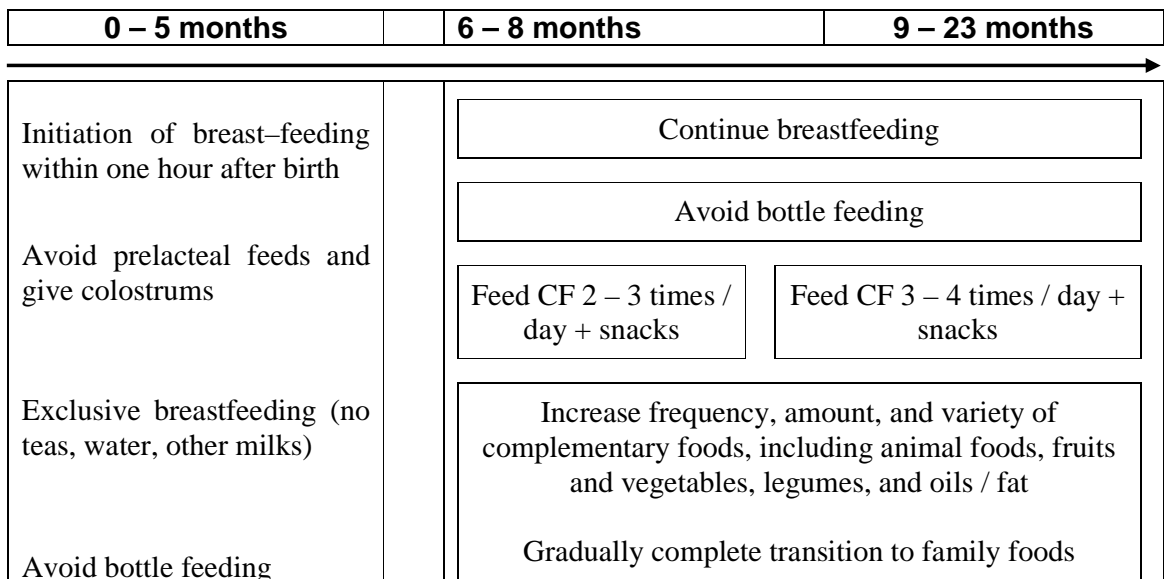
- **Nutrient content of complementary foods:** Feed a variety of foods to ensure that nutrient needs are met. Meat, poultry, fish or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used. Vitamin A-rich fruits and vegetables should be eaten daily. Provide diets with adequate fat content. Avoid giving drinks with low nutrient value, such as tea, coffee and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient-rich foods.

- **Use of vitamin-mineral supplements or fortified products for infant and mother:** Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed. In some populations, breastfeeding mothers may also need vitamin-mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients (particularly vitamins) in their breast milk.

- **Feeding during and after illness:** Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetizing, favourite foods. After illness, give food more often than usual and encourage the child to eat more.

Figure 3 gives an overall picture of the continuum of child feeding in relation to the abovementioned guidelines.

Figure 3. The Continuum of Infant and Young Child Feeding



CF: Complementary Foods

Source: Adapted from Ruel and Menon (2002) and Linkages (1999) to reflect new PAHO/WHO Guiding Principles (2003).

Section A

Overview of Departmental Studies Focusing on IYCF

In light of the internationally accepted guidelines given above, this section provides an overview of the findings of departmental studies on infant and young child feeding practices and perceptions of mothers and families in and around Vadodara (Annexure I). All these studies were conducted in the last six years, used more or less similar methodologies and focused on children under three years of age. A few studies focused on a narrower age group of 6-24 months. This section is presented under three major themes in IYCF:

- Newborn and Breast feeding practices (timely initiation, prelacteals feeding, colostrum feeding, exclusive breast feeding for six months, water feeding) ;
- Complementary feeding practices (time of initiation, continued breast feeding, quantity and quality of complementary foods) ;
- Care during feeding (active feeding, feeding during illness, safety during food preparation, feeding and storage).

The matrix given at the end of this section (Table 3) gives a summary picture of the departmental studies.

Newborn and Breastfeeding Practices and Perceptions

Timely Initiation of Breast feeding

Putting the baby to breast within an hour of birth (early initiation) is the first and the foremost step to optimal breastfeeding. Early initiation stimulates breastmilk production through prolactin reflex and also stimulates oxytocin (let-down) reflex for better milk flow from mother's breast to the baby. As soon as the infant starts suckling at the breast, the hormone oxytocin is released, resulting in uterine contractions that facilitate expulsion of the placenta and reduce the risk of postpartum haemorrhage. Early initiation also helps to ensure that colostrum, which provides the infant with the antibacterial and anti-viral protection, and the crucial nutrition, is available to the newborn. Early initiation of breastfeeding is associated with fewer breastfeeding problems and better mother-infant relationship.

In the departmental studies reviewed, timely initiation of breast feeding (within one hour of delivery) was reported by 12-50% of the women – a wide variation in responses. Less than half initiated in the recommended time. The main reason for late initiation, usually after 1-2 days, was that "mother had no milk".

Prelacteals Feeding

Giving babies other fluid and milk before breastfeeding is initiated is known as giving pre-lacteal feeds, a poor practice that contributes to increased infections in the newborn period and delays the establishment of breastfeeding. Babies lack desire to suckle after being fed with something else, leading to decrease in mother's milk production. Since the breast milk output is dependant on suckling of the baby, reduced suckling reduces the availability of breastmilk to the newborn. Thus, giving prelacteals contribute to loss of essential nutrition which breast milk can provide and places babies at risk of illness and even death.

Feeding of prelacteals to newborns still continues in a big way in our population. In the departmental studies conducted in urban and rural Vadodara, it was found that 40-67% of the newborns were given prelacteals, which were mainly *patasa* (sweetened) water and honey. The main reasons given were: "it inculcates the *sanskars* (values) in the newborn" or, "it clears the dirt from the baby's stomach" or, "initially there is no breast milk produced and the child is hungry". Basically, pre-lacteals are reported to be used to provide "energy or strength to the child to tide over the time till lactation sets in."

Colostrum Feeding

The feeding of colostrum, which is considered as the first level of immunization of the child due to its anti-infective properties, was reported to be practiced by 51-65% of the families in the departmental studies we reviewed. Most of the pregnant women when asked responded that they would *not* feed colostrum to their newborn as it is considered as "stale milk" and mothers feel that "the child will get sick if fed colostrum".

Although breastfeeding is nearly universal in India and in Gujarat, very few children are put to the breast immediately after birth. Only 16% of children begin breastfeeding within one hour of birth, and only 37% begin breastfeeding within one day of birth. Nearly two-thirds of women (63%) squeeze the first milk (colostrum) from the breast before they begin breastfeeding. The custom of squeezing the first milk from the breast before breastfeeding a child is widely practised in India, but it is more common in rural areas and for children whose mothers are illiterate, who belong to scheduled-tribe, children whose mothers work on the

family farm or in a family business, children living in households with a low to medium standard of living, children born at home, and children born without the assistance of a health professional (NFHS-2, 1998-99). However it is not clear from NFHS data whether colostrum was totally discarded or some of it fed to the child

Exclusive Breastfeeding (EBF)

Infants who are exclusively breastfed for first six months do not require any other food or drink (not even water) for optimal growth and development. In fact giving any thing including non-nutritive fluids would replace breast milk. Exclusively breastfed babies have significantly less gastrointestinal and respiratory illness including ear infections and asthma, than those who are not breastfed exclusively. Exclusive breastfeeding, while reducing the risk of diarrhea, also contributes to positive impact on nutritional status while the child is recovering from diarrhea. In addition, the breastfeeding mother has a reduced incidence of post-partum bleeding and thus anemia, reduced risk of breast and ovarian cancer, reduced risk of osteoporosis, and other beneficial effects such as increased child spacing due to delayed resumption of ovulation.

Breastfeeding is a universal phenomenon. Almost 100% of mothers in the departmental studies reported to have breastfed their children in first six months of life. However, exclusive breastfeeding, which is advised till about six months of age, is not followed. Departmental studies reflect a grim picture with EBF rate till 6 months reported to be as low as zero, while EBF till 2-3 months was reported to be 22-32%. This implies that although children may be exclusively breastfed initially, it is for a shorter duration than that recommended.

The main reason for this phenomenon has roots in the practice and perceptions about water feeding. Feeding of water was reported to have started as early as first month itself (45%) as mothers and families felt that "the child's mouth will dry up without water", and "giving water will prevent child's body from getting heated up". Other perceptions which prevented families and mothers from exclusively breast feeding their infants were that "mother's milk is insufficient to meet the needs of the growing child" and felt that EBF (not giving water) was "not necessary". Most of the pregnant women studied also responded that they will *not* exclusively breast feed their children beyond 2-3 months.

Table 4 shows that in India, only 55% of children under four months of age are exclusively breastfed (Gujarat, 65%), 23% receive breast milk plus water, and 20% receive supplements along with breast milk. The percentage of infants exclusively breastfed drops steadily from

72% under one month of age to 37% at four months of age and further down to 19% at six months of age. However, breastfeeding generally continues for a long period. Ninety-two percent of children at 12 months of age are still being breastfed, as are 59 % of children at 24 months of age (NFHS-2, 1998-99). The median length of *exclusive* breastfeeding in India is 1.9 months (slightly higher i.e. 3 months in Gujarat).

Further, table 4 highlights breastfeeding practices of the mothers within Gujarat according to various socio-economic characteristics like religion and mother’s education. Breastfeeding practices were inappropriate in both rural and urban areas as indicated by delayed initiation of breastfeeding, beyond 1 hour. Further, religion and mother’s education had no relationship with breastfeeding practices. However women with better education had slightly better breastfeeding practices.

Mother’s work status did not influence breastfeeding practices. Perhaps mother’s awareness regarding appropriate breastfeeding practices and the family support she receives have greater influence on her practices.

Table 4. Highlights of Breastfeeding Practices in India and Gujarat

	% Started BF within one hour of birth	% Started BF within one day of birth¹	% Whose mother squeezed first milk from breast
India	15.8	37.1	62.8
Gujarat	1.1	36.6	61.1
Within Gujarat			
Urban	12.1	40.1	62.1
Rural	9.0	34.6	60.6
Religion			
Hindu	10.0	36.4	60.8
Muslim	8.9	35.1	64.8
Mother’s education			
Illiterate	9.0	31.0	67.0
Literate, < middle school completed	9.7	37.1	57.5
Middle school completed	12.2	42.6	57.0
High school completed and above	12.8	48.3	51.3

Source: NFHS-2 (1998-99)

¹ Includes children who started breastfeeding within one hour of birth.

Hind Milk Feeding

Most of the mothers (70-98%) in the departmental studies did not feed the energy dense hind milk to the children by emptying one breast; they were feeding "a little from both breasts" at one feeding episode. It is known that the initial fore milk contains more water for the same volume compared to hind milk and hence is less nutrient dense. Most of the mothers however were not aware of the need to empty one breast before offering the other, because they believed that, "the breasts will become irregular in size and shape if they feed from one breast at a time" or that "milk will flow from the other breast, and hence it should also be given".

Top Milk feeding

A large proportion of children (31-43%) in the studies started receiving top milk before 6 months of age, mainly at 4-6 months of age. Fortunately, not many reported the introduction before 4 months of age. More than 50% of the pregnant mothers said they would introduce top milk at 4 months of age.

Complementary Feeding Practices and Perceptions

After six months of age, an infant's requirements cannot be met with breast milk alone. This is the time to begin complementary foods, which are of good quality and in adequate amounts in order to prevent malnutrition including micronutrient malnutrition like anemia. Studies have shown that early introduction of complementary food (prior to 6 months) is not necessary as it does not result in improved growth velocities or food acceptance; further, the early start of complementary foods earlier than 6 months replaces breast milk intake and does not increase caloric intake. Replacing breast milk means losing fats, energy and other micronutrients. It would therefore be important to maintain high levels of breastfeeding along with introduction of complementary foods, which are of high nutrition density (Dewey and Brown, 2003).

Age of initiation of Complementary Foods

According to the studies conducted by the department, majority of children (50-60%) are given complementary foods later than the recommended age of 6 months while nearly 20-30% mothers initiated solid foods before 6 months. In other words, timely initiation was negligible. The major reason given for early initiation of CF was that "breast milk is insufficient for the growing child" or that "child cries for food and eats by itself". For late initiation, the mothers

reasoned that "the child does not need anything till s/he is breast fed" or, "the child is too young to start eating".

Continued Breast feeding (CBF)

Majority of the mothers (70-100%) followed CBF for infants beyond six months of age with no specific reason given for the same. One of the studies reported that 71% mothers continued to breast feed their babies after 12 months of age also which is a positive practice in this part of the country.

For the majority of children in India, breastfeeding usually stops at about 26–27 months of age, but 40% of children are breastfed even till the age of 35 months.

For the majority of children in Gujarat, breastfeeding usually stops at about 22–23 months of age, but 29% of children at the age of 35 months are still breastfed (NFHS-2, 1998-99). The median length of any breastfeeding in India is slightly more than two years (25.4 months) while in Gujarat it is less (22.0 months). Supplementation begins relatively early, however. The median duration of breastfeeding is shorter for girls than for boys and longer in rural areas than in urban areas (NFHS-2, 1998-99).

Quantity and Quality of Complementary Foods

The studies conducted in the department used mainly the 24 hours recall method to derive the nutrient intake of infants from complementary foods. Most of the studies reported that the nutrient intake of the children was far from satisfactory: being on an average only 40% of the RDA for macronutrients and less (10-20%) for the important micronutrients viz. iron and vitamin A. This poor nutrient intake is reflected by the type of foods usually given (rice water, pulse water, biscuits, "*roti*") and the frequency of consumption of these foods in a day (only 60% receiving foods at the required frequency). None of the children surveyed were receiving animal foods other than milk and the consumption of green leafy vegetables not very significant. While fruits were being given, many were restricted as they were considered to be either "hot" or "cold".

The introduction of supplementary foods before four months of age puts infants at risk of malnutrition because other liquids and solid foods are nutritionally inferior to breast milk. Consumption of liquids and solid or mushy foods at an early age also increases children's exposure to pathogens and consequently puts them at a greater risk of getting diarrhea. In occasional cases, mothers who are extremely undernourished and who are in poor health

themselves may not be able to provide adequate breast milk for their infants. In these cases, breastfeeding with supplements is more beneficial than exclusive breastfeeding even for children under four months of age.

Although the introduction of complementary food at six months of age is critical for meeting the protein, energy, and micronutrient needs of children, in India, the introduction of complementary food is delayed for a substantial proportion of children. Only 24 % (33 % in Gujarat) of breastfeeding children start consuming solid or mushy foods at the age of 6–7 months. Only 35% (48% in Gujarat) of breastfeeding children age 6–9 months receive solid or mushy food as recommended. This proportion rises to about 46% at 9 months and 90 % at age 14–15 months and older ages. However, at 12 months of age, more than one quarter of breastfeeding children are still not eating any solid or mushy food (NFHS-2, 1998-99).

Till three years of age, milk is given more often than other liquids. The consumption of green leafy vegetables only gradually increases with age, from less than 3% at 6 months of age or about 50% or more at age 24–35 months. The consumption of fruits is negligible for children less than six months old, but it increases rapidly thereafter, reaching a plateau in about one-third of children age 18–35 months. These data imply that one of the main purposes of initiating complementary foods at 6 months is not being fulfilled, .i.e. including micronutrients in diets which are not available in human or animal milk (Vitamin C, Iron) through addition of fresh fruits and vegetables (NFHS-2, 1998-99).

Care during feeding

Feeding Interaction

Increasingly it is recognized that, in addition to the dietary aspects of feeding, caregiver-child interactions during feeding may critically influence nutrient intakes. Although such interactions are repeated, complex, and variable, feeding behaviours often occur together in ways that can be conceptualized as a caregiver feeding style. Responsive (active) feeding represents an optimal style to support the short- and long-term growth and development of young children. Active and responsive feeding includes a range of behaviors such as feeding on demand, being with the child and encouraging him/her to eat, preparing fresh food liked by the child in a hygienic manner, serving a second helping if needed and in general, being

attentive to the child's cues to ensure that the child obtains adequate quantity and quality of food.

In the departmental studies, "on demand feeding" was high (75%) both for breast feeding as well as complementary feeding of young children. Active feeding of children while giving complementary foods was however followed by much lower percentage of women (14-35%); while in some studies nearly 60-90% of the mothers reportedly sit with their children during feeding. A varied number of families (30-70%) reported preparing special foods for the children.

In one of the departmental studies, the intake of a higher number of calories by the child from complementary foods was significantly associated with the mother's care giving behaviors like breastfeeding the child on demand, active feeding while giving complementary foods to the child and continuing to breastfeed the child as before during illness. A trend was seen that as the mother's education, BMI and decision making role increased, the number of positive care giving behaviors also increased. The help given by father in tasks related to childcare was significantly associated with the proportion of mothers who could practice positive care giving behaviors. Mothers practicing fewer desirable care giving practices had husbands who were helping in fewer tasks related to childcare.

Feeding During Illness

A large body of data collected on this aspect in the department showed that during the illness of the child, mothers fed the infants only as much as the child desired i.e. they would not increase the amount of food/breast milk given, but let the child decide how much s/he wanted. Reduced appetite may cause the child to less food, but even ill children usually accept breastmilk. But if breastfeeding is reduced in child's illness, this is a cause for concern as during and immediately after the child's sickness, as much breastmilk as is possible is required to let the child recuperate from the effects of the illness as well as raise the immunity of the child through anti infective agents present in breast milk. When appetite returns, complementary foods also need to be increased; these practices however were not evident in the studies we conducted.

In case of mothers' illness, many mothers would rather not breastfeed the babies for the fear that the child will also fall sick. This again is not necessary and is unfortunate as it decreases lactation and increases the chances of lactation failure. Continued feeding in mother's illness is recommended as it is safe for the baby in most conditions.

Hygiene

Hygiene is an essential component of care giving practices. *Safety* during infant and young child feeding means that foods are hygienically stored and prepared, and fed with clean hands using clean utensils and not bottles and teats.. It incorporates the elements of *hand washing*: before cooking and before feeding child , washing child's hands before feeding, washing hands with soap; *safe food preparation and storage* : re-warming previously cooked food prepared for child before serving it, storage under low temperature; *clean utensils and avoidance of baby bottles* washing and drying feeding utensils/bowls before feeding child, bottle-feeding ; *water used in food preparation*: treatment of water used to prepare food and drinks for child (for example boil, use chlorine).

Nearly 50% of the women in the departmental studies reported having fed leftover foods to the children sometime or the other and most of them felt it was perfectly safe. Less than half of the mothers reported washing of hands before cooking meals for children while even fewer (16-22%) reported washing hands with soap before feeding infants. Very few (30%) women understood the importance of clean hands before cooking and feeding of children. Thus, overall, from safety point of view too, the children under study were disadvantaged owing to lack of knowledge amongst their mothers.

The use of bottles for feeding of infants and children was fortunately low: 15-17% in the departmental studies done mainly in urban areas of Vadodara. Bottle feeding has a direct effect on mother's exposure to the risk of pregnancy because the period of lactational amenorrhoea may be shortened when breastfeeding is reduced or replaced by bottle feeding. Because it is often difficult to sterilize the nipple properly, the use of bottles with nipples also exposes children to an increased risk of getting diarrhea and other diseases.

The use of bottles with nipples is not common in India as well as locally in Gujarat, especially for children who are being breastfed. The use of a bottle with a nipple is more common for children who are not being breastfed, where the proportion is 17–18% for children less than two years old.

Table 3. Summary of Departmental Studies on IYCF Practices and Perceptions

Sr.No	Practice	Prevalence	Major Perceptions
1	<p>Newborn and Breast feeding</p> <ul style="list-style-type: none"> • Timely Initiation of BF • Prelacteals Feeding • Colostrum Feeding • EBF for 6 months 	<p>12- 50%</p> <p>40-67%</p> <p>51-65%</p> <p>0-22%</p>	<ul style="list-style-type: none"> • Prelacteals feeding: “ <i>It inculcates values in the new born</i>” • Not feeding colostrum: “ <i>It is stale dirty milk</i>”; “ <i>will not feed colostrum</i>” • No EBF for 6 months: “ <i>Mother’s milk is not sufficient for growing child</i>”
2	<p>Complementary Feeding</p> <ul style="list-style-type: none"> • Continued BF • Timely initiation • Early Initiation • Late Initiation • Quantity – Energy Intake (% RDA) • Quality – Micronutrient intake (% RDA) 	<p>70-100%</p> <p>10-20%</p> <p>20-30%</p> <p>50-60%</p> <p>40%</p> <p>10-20%</p>	<ul style="list-style-type: none"> • Early initiation of CF: “ <i>Child needs food, cries</i>” • Late initiation of CF: “ <i>Child is too young to eat</i>” • Low Fruit intake : “ <i>Fruits like banana and guava can cause cold</i>”
3	<p>Care during feeding</p> <ul style="list-style-type: none"> • On demand feeding • Active feeding • Feeding during illness – on demand • Hygiene - Washing hands with soap before feeding • Bottle feeding 	<p>75%</p> <p>14-35%</p> <p>50-60%</p> <p>22-45%</p> <p>15-17%</p>	<ul style="list-style-type: none"> • Feeding less during illness : “ <i>Child does not feel like eating</i>” ;

Discussion

Our studies revealed that most of the recommended BF-CF practices were not being followed; which is similar to the situation seen in the rest of the country.

Tables 5 and 6 depict the key IYCF practices in India, locally in Gujarat and in different regions of the world, respectively. While most practices in India are far from ideal, limited data from many parts of the world indicate that IYCF practices are suboptimal from several perspectives in other countries also. Moreover, the areas where IYCF practices are the least desirable are also the areas where under three malnutrition is the highest.

Table 5. Feeding Indicators for Children 0-23 months in India

	% Children 0-3 months who are exclusively breastfed	% Children 6-9 months who receive breast milk, and solid/ mushy foods	% Children 12-15 months who are breastfed	% Children 20-23 months who are breastfed
India	55.2	33.5	88.9	68.9
Gujarat	65.2	46.5	86.2	56.1

Source: NFHS, 2 – India (1998-1999)

Table 6. Regionwise Summary of Key IYCF Practices in the World

Region	% Children (1995-2003)		
	Exclusively breastfed (<6months)	Breastfed with CF (6-9months)	Continued breast feeding (20-23months)
World	37	55	51
Sub-Saharan Africa	28	64	51
Middle East and North America	32	59	25
South Asia	36	46	67
Latin America and Caribbean	No data	48	26
Developing Countries	38	55	51
Least Developed Countries	33	63	63

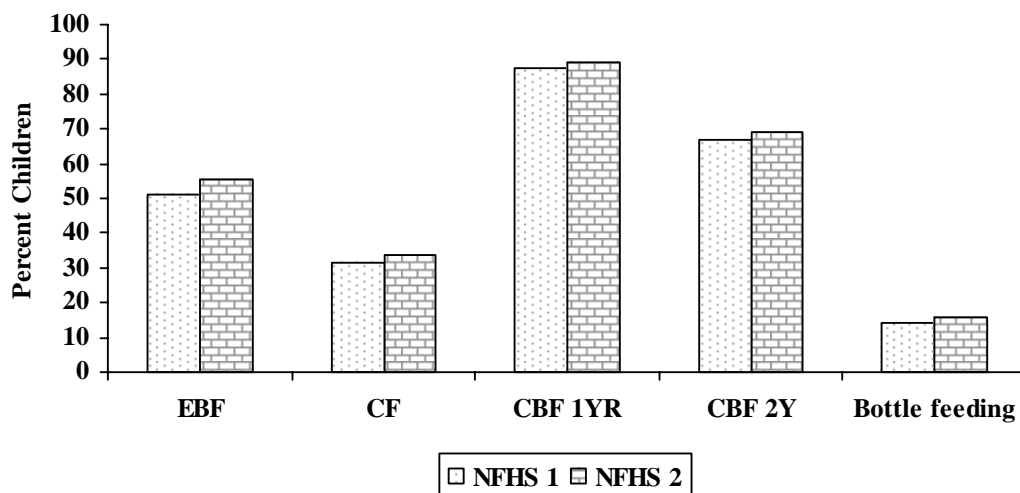
Source : UNICEF (2005).

While breastfeeding is universal, the benefits of exclusive breastfeeding for the desired period of six months are not being enjoyed by most of the children worldwide. Either the complementary foods are introduced earlier than is desirable; or their introduction is inappropriately delayed owing to traditional beliefs and lack of awareness of sound feeding practices. Complementary foods fed to infants in the second six months of life (and beyond) are often inadequate in energy density, protein, and micronutrient concentration. The frequency and amounts of these foods that are offered far less than that required for normal growth; further, their consistency or energy density is inappropriate in relation to the child’s needs.

Information on the prevalence of specific micronutrient deficiencies further suggests that either the nutrient content of these foods is inadequate or nutrient absorption is impaired by other components of these foods. These foods are often prepared, stored, or fed to children in ways that increase their risk of illness. Frequent microbial contamination of complementary foods and the associated high rates of diarrheal disease also indicate a need for improved food safety. Finally, prevalence of responsive feeding, ensuring that the child has had enough to eat, and other psychosocial aspects of care during feeding which are important for adequate food and nutrient intake, do not show a positive picture.

Figure 4 reveals that from period of NFHS-1 (1991-92) to NFHS-2 (1998-99), there has been no significant change in IYCF practices in India, highlighting that the scenario continues to be dismal and needs urgent attention.

Figure 4. IYCF Indicators in India – Comparison of NFHS1 and NFHS 2



Several national and international efforts have gone into improving the breastfeeding practices for example the Baby Friendly Hospital Initiative which has shown promising results in some areas in terms of improvements in breastfeeding rates. The international community is slowly coming to terms with need for a similar effort in the area of complementary feeding. The Global Strategy for Infant and Young Child feeding endorsed by the WHO/UNICEF (2003) is a much awaited but positive step in this direction (Annexure-VI). It becomes imperative that governments take action and programs are implemented to provide support to mothers, families and communities, for ensuring appropriate IYCF practices and improving the nutritional profile of this highly vulnerable age group of children.

Section B

Household Surveys to Collect Data on Infant and Young Child Feeding (IYCF) Practices

Background

As seen in Section A, national surveys such as NFHS-2 and regional studies like the ones conducted in our department, have highlighted the dismal scenario regarding the inadequacy of IYCF practices in our country.

There is a need for nutritionists and public health specialists to collect local/block/district level IYCF data through household surveys to achieve a better level of understanding of where are the gaps in IYCF practices and to get valuable information to guide interventions to improve IYCF.

A question arises: *How does one go about collecting this data? What are the specific methods and tools to conduct household surveys to ensure good quality data?* There is no doubt that research experience and methodological guidelines would be available with several nutritionists and nutrition departments in our country. To enrich the available experience we have put together these guidelines based on our research in the department wherein we collected household level data on BF-CF and CARE practices in rural areas and urban slums. These guidelines are user friendly, specific, focused and take the reader step-by-step on the pathway of collecting this information. The Annexures give sample tools of data collection such as semi-structured questionnaires, observation checklists and examples of data presentation formats. From the tools, selected questions are picked out to illustrate the types and methods of data to be collected.

This section is based on a manual prepared by Kanani, Daxini and Sharma (2005) which has been developed on the basis of our recent experience of research on assessing and overcoming undernutrition among urban and rural children below the age of 3 years. It is a methods oriented document focusing on answering questions regarding ‘*how-to*’ of data collection, recording and analysis.

So let us begin on our journey of understanding what is it that families are feeding their young children and what is the process of getting this information?

Before assessing IYCF practices in households, it is necessary to know the *recommended practices*. These have been discussed in the earlier section, but will be briefly reiterated here. These practices are meant to ensure adequate quantity (calories) and quality of diet (micronutrients) to promote normal growth and development in infants and young preschoolers. Further, the list below serves as a reference point against which we compare the data we obtain from our surveys.

What are recommended or desirable breastfeeding and complementary feeding practices? *

- Avoid giving prelacteals (For example *patasa* water, honey water or glucose) to the child after birth.
- Initiate breastfeeding as soon as possible after child birth (within 1 hour).
- Do not discard colostrum but feed it to the child. Colostrum is the first yellow coloured milk that is secreted from the breast for first 3-7 days after child birth.
- Practice exclusive breastfeeding from birth to six months of age (no water, no fluids or food).
- Introduce complementary foods at around six months of age while continuing to breastfeed.
- Continue frequent, on demand breastfeeding until two years of age or beyond.
- Practice responsive feeding i.e., sit with the child while feeding, assist older children when they feed themselves, encourage children to eat, do not force feed, minimize distractions during meals.
- Practice good hygiene during preparation, feeding and storage of complementary foods.
- Gradually increase food consistency and variety, as the infant grows older.
- Increase the frequency of complementary foods, as child grows older. For the average breastfed infant, feed 2-3 times per day at 6-8 months, 3-4 times per day at 9-11 months and 12-24 months of age.

*Adapted from AED (1999)

- The energy needed from complementary foods to meet daily requirements, along with ‘average’ breastmilk intake (about 600ml per day) is given below, and is considered as the RDA for calories to be obtained from complementary foods, in this paper.

Age of child (months)	Energy required from complementary foods (Kcal/day)
6-8	270
9-11	450
12-23	750

Source: AED (1999)

- Feed a variety of foods to ensure nutrient quality of child’s diet. Foods like fruits, vegetables, meat and egg (if available and consumed) and milk products should be included in the daily diet of the child.
- Increase fluid intake during illness, along with more frequent breastfeeding. Also encourage the child to eat, as much as s/he can. During recovery from illness, give food more often than usual. Encourage the child to eat more as the child’s appetite returns to normal and the extra calories help faster recovery to normal weight.

Methodology

A description of the tools and methods for eliciting information on beliefs and practices using semi-structured interviews and observations.

Topics covered are:

1. Infant and young child feeding
 - Initiation of breastfeeding
 - Colostrum feeding
 - Pre-lacteal feeding
 - Exclusive breastfeeding and
 - Water feeding
2. Complementary feeding and related aspects:
 - Top milk feeding
 - Complementary feeding
 - Active feeding
 - Morbidity profile
 - Feeding during illness
 - Health and health services
 - Family support

Annexure II gives the tool for individual Semi-Structured Interviews (SSI), which is used to collect information on the above topics. This tool has been used with adaptations in the studies carried out by Kanani et. al. in the past 5 years.

The SSI is a useful tool as it contains structured as well as open-ended questions. Please read the section below in relation to the tool given in Annexure-II, and the questions referred to, in the tool. We will explain what data are to be collected and tips for enhancing data quality. As in all research studies, make sure you have obtained *informed consent* from the mother or the person who is your informant for the SSI.

Background information

Questions 1.1 to 1.21 cover the background information of the subject.

The socio economic profile of the subject helps to explain various social and economic factors, which might affect beliefs and practices of the mothers regarding IYCF.. For example,

- Education of the mother might affect the beliefs and practices regarding colostrum and pre-lacteal feeding.
- Income of the family might affect quantity and quality of food given to the child. Thus, the questions elicit information regarding: type of family, number of family members, religion, education of parents, and income of the family.

Tips for overcoming problems during data collection

- If the respondent does not remember the date of birth of her child then ask for birth certificate or immunization card. If these are unavailable then age of the child can be known by asking the respondent to recall any festival or important event which had occurred at the time of the birth.
- While recording total family income, income of other family members and other resources if any should be asked: for example, sale of milk from cow/buffalo in rural areas or income from agriculture produce or from house rent. A record of other assets in the house (for example type of house, presence of TV, vehicle) also helps to determine the economic status of the family.

New born feeding

Questions 3.1.1 to 3.1.5 cover prelacteal feeding

Questions 3.2.1 to 3.2.9 cover colostrum feeding

Questions 3.3.1 to 3.3.9 cover initiation of breastfeeding

Questions 4.1 to 4.8 cover water feeding

Questions 5.1 to 5.4 cover exclusive breastfeeding

Questions 6.1 to 6.13 cover top milk feeding

Questions 7.1 to 7.11 cover complementary feeding

Questions 8.1 to 8.5 cover active feeding

Questions 9.1 to 9.5 cover morbidity profile

Questions 10.1 to 10.5 cover feeding during and after illness

Questions 11.1 to 11.8 cover health

Questions 12.1.1 to 12.1.5 cover autonomy and control of resources

Questions 13.1 to 13.23 cover work load and family support

Keep the following instructions in mind as you develop the tool:

- The topics should be arranged logically and sequentially For example, questions related to prelacteal feeding followed by colostrum feeding and so on.
- Questions should be formulated in simple language and asked in local dialect. Local terms should be used wherever possible: for example, for colostrum (*'chep'* or *'peelu doodh'*, i.e. yellow milk). Literal translation, using dictionary words of the local language do not usually help as each community often has its own terminologies to express events, illnesses, nutrition related problems. For example, the word *'pandurog'*, which is the Gujarati equivalent of 'Anemia', is not known to most lay people in slums or rural areas. They understand better what we are conveying if we use the terms *'phikku lohi'* (*pale blood*) or *'paatlu lohi'* (*thin blood*).

- The term <child> in the SSI means that while asking the questions, refer to the index child - regarding whom the data are being obtained - by his or her name, to build rapport.
- The expected responses for a question appear in the questionnaire in many places as options for ease of recording only and they should *not* be mentioned beforehand and given as options to the mother during the interview. Rather, they should be used to tick off the options she states *on her own*. The options given could be used as probes if necessary, or to give an example, especially if mothers are shy or not very communicative or no meaningful response is being obtained. These options also help relatively inexperienced interviewers to be sensitized to the nature of the topic. However, whether experienced or not, all researchers need to exercise patience to wait in silence for a few moments and allow the mother to give as much information as she can, on her own, without rushing to suggest answers. If however, some responses are obtained only on probing, then the word 'PR' should be mentioned against the question in the left margin; and this should be taken into account during interpretation of data.
- To understand beliefs, or reasons underlying a particular practice, open-ended questions should be asked in order to get indepth information.

For example,

- a) What are the reasons for giving prelacteals?
- b) Do you feel your child has normal appetite? Why do you think so?

- Questions should be phrased to appear neutral and not biased or leading:

For example,

This way: What is the right age to begin complementary feeding?

Not this way: Should complementary feeding begin at 6 months?

- Responses of open-ended questions should be recorded exactly as answered by the respondent in their own language, in the first person, and not paraphrased or modified by the researcher.
- To reconfirm or validate some responses a few questions may be re-framed and asked again later in the interview:

For example,

At what age did you start water feeding? _____ age in completed months

and

How long did you exclusively breast-feed your child (not even water)?

_____ age in completed months

- Think of how you will analyze the data both manually as well as on computer and accordingly frame the questions. Make sure questions are clear.
 - a) Do not combine two questions in one, otherwise analysis will be difficult,

For instance:

This way:

1. Do you think your child is healthy?

Yes

No

1.1 Give reasons for above

Not this way: 1. Do you think your child is healthy? Why?

- b) Separate out questions for different types of morbidities, since practices often vary by morbidity; however keep the list to minimum other wise questions become unduly complex. If diarrhea is the key morbidity we are interested in, then cold, cough and fever (other common morbidities) can be combined and diarrhoea can be kept separate.

This way: If child is receiving CF, then during illness you feed:

		Cold/cough/fever	Diarrhoea
1)	Same as before	1	1
2)	Less than before	2	2
3)	Stop feeding	3	3
4)	Amount child demands	4	4

Reasons for the above : _____

Not this way: If child is ill how do you feed your child

1)	Same as before	1
2)	Less than before	2
3)	Stop feeding	3
4)	Amount child demands	4

Reasons for the above : _____

- Do not ask double negative questions, otherwise it will not be clear whether the response is in a positive sense or a negative sense.

For example,

This way: Do you think colostrum is healthy for the child?

Not this way: Do you think colostrum should not be given to the child?

Pre-testing the questions

Before you begin actual data collection, the questionnaire should be pre-tested by asking similar women in another area. The questions should then be modified if they are not understood by the respondent or do not elicit meaningful information. Pre-testing also helps to know the local terminologies of the community.

A glimpse of the process

Examples of questions modified or added during formulation of final questionnaire after pre-testing in one of our studies is given below.

In our study, a question asked during pre-testing was:

- “How long did you exclusively breast feed your child”? _____ months

However, women often give water but still believe they are exclusively breast feeding.

Hence, the question was modified and asked as:

- “How long did you breast feed you child without feeding anything, not even water?”
_____ months

When asked in this way it was clearly understood by the respondent that not even water is included in the term exclusive breastfeeding. Hence, the correct age of exclusive breastfeeding was obtained.

Sometimes some questions are important and surface only during pre-testing. They should be added in the final questionnaire.

When finalizing the tool, pay attention to formatting details

While making the questionnaire on computer, ensure:

- Consistency in numbering (each theme should start with a new number and all questions under that theme should have that number (For example 4.1...4.8 for water feeding).
- Adequate spacing (leave enough space for recording responses where reasons are asked).

So your tool is ready.

The next step is collecting data and collecting it well. How will you do it?

Train yourself well and practice asking the questions by interviewing similar (not same) women in another area.

Remember these Tips for overcoming problems during data collection.

- Remember you should be asking questions in a neutral manner, and the questions too would by now be phrased in a neutral manner.. To save time you might be tempted to ask leading questions or suggest options as answers but resist this temptation.
- Mention the commonly used terminologies of the community while asking questions, which hopefully will already be there in your tool. This leads to better understanding and accurate recording of responses. For example, we realized in our community, the people mentioned ‘*Ami rahe*’ for satiety and used this term subsequently.
- If the respondent is unable to remember the exact age for a particular practice then the growth milestone of the child at the time of the practice should be recorded. For example, if the mother does not remember when did she initiate complementary foods then ask her about a growth milestone (was it when the child learnt sitting/started crawling/started walking).
- If the mother happens to cover multiple themes in response to an open-ended question then later on make sure that the respective responses are recorded in their respective themes. For example, when you ask about "who advised you to give water to your child" and the respondent answers: *“My mother-in-law advised me about when to feed water, when to start top milk and at what age should I feed complementary foods to my child.”* So for such a response one should record the relevant response under the given relevant theme - under the sections of top milk and complementary foods.
- The interviewer should be flexible to shift from one theme to the other according to the flow of responses. For example, if investigator asks about morbidity: “when was the child ill in last 15 days” and if the respondent starts answering about illness during teething then the investigator should shift the flow of questions to that topic (i.e., teething); finish asking all questions on that topic and come back to morbidity again.
- If the respondent is unable to answer or understand a particular question then it should be asked in a different but neutral way. For example,
 - Describe a child who is healthy, strong, and, weak, ill.

We found that many women could not say much in their response We got a better response when we re-phrased the above question as :

- If two children are in front of you (one healthy, and one not healthy), what differences would you notice between the two, in terms of their appearance or behaviour?
- At times probing in detail is required when we want indepth responses. For example, to get information on active feeding, when we ask ‘How do you feed your child?’ we may get irrelevant responses as often the respondent does not understand. Probing may be required by giving an example; for instance, ‘after you have served the child, what do you do?’ Or, ‘describe what all happens after you have served some food to the child, for example khichdi or roti’
- If during the interview other family members are present and the respondent feels hesitant to answer certain questions (related to CF or family support) then such question should be asked later, when family members have left the scene.

Tips on the Coding Process

This section gives guidance on formulation of questions, which should facilitate in coding and analysis later.

As you have seen in the sample questionnaire given in Annexure-1 questions can be framed as:

- 1) Open ended questions
- 2) Questions with multiple responses
- 3) Mixed questions with both 1 and 2 above

1) Open ended questions

An example of this type of question is -

“Besides breast milk, what are the other food items that you give to your child?”

In one study, the answer obtained to the above question -

By one mother was “*Khichadi, rice, dal, roti, fruits*”

The second mother replied: “*Rice, vegetables, fruits, biscuits, khichadi*”

Here the options (food list) were not given to the respondents, so the recorder recorded all types of foods as told by the respondent.

In our study, after data collection was over, the research team read through all questionnaires and made a list of all foods recorded. These foods were then coded and the codes were put back against respective foods in all questionnaires.

<i>Khichadi</i>	1	Vegetables	5
Rice	2	Fruits	6
<i>Dal</i>	3	Biscuits	7
<i>Roti</i>	4		

After coding the answers would look like this.

Mother 1:	<i>Khichadi</i>	Rice	<i>Dal</i>	<i>Roti</i>	Fruits
	1	2	3	4	6
Mother 2:	Rice	Vegetables	Fruits	Biscuits	<i>Khichadi</i>
	2	5	6	7	1

Later, these codes were entered in the record file in the computer for data analysis.

2) Questions with multiple responses

As explained earlier, the question has options given in the questionnaire but these options are not told to the respondent.

These responses are pre-coded. More than one response maybe obtained.

An example for this type of question is given below:

“Why did you start giving complementary foods to your child?”

- | | |
|----------------------------------|---|
| 1) Child cries a lot | 1 |
| 2) Insufficient breast milk | ② |
| 3) Child is grown up now | 3 |
| 4) Eruption of teeth | 4 |
| 5) Child started sitting/walking | ⑤ |
| 6) Absence of mother | 6 |
| 7) Don't know | 7 |
| 8) No response | 8 |
| 9) Others | 9 |

Here you can see that multiple responses were obtained. The numbers against their respective responses were then encircled. These then became the codes for that question.

Note: If responses other than those given in the questionnaire are obtained then they should be put under “Others” category. The common responses are pooled and further coded with numbers as appropriate. These codes are entered in computer along with other responses.

3) Questions having 2 sections. First part with options and the second part with reasons for each options which are given in open-ended way.

An example for this type of question is given below:

Part a) “In your opinion which is better?”

- | | |
|-----------------|---|
| 1) Mothers milk | 1 |
| 2) Top milk | 2 |
| 3) Both | 3 |
| 4) Don't know | 4 |

Part b) "Why (for 1,2 or 3)?"

Here in part (a) the question is not meant to be open-ended and the responses are read out to the respondent who will select any one response and give reasons for it, which are recorded in part (b).

For example, one mother said, “Mothers milk is better for the child.” So the recorder encircled option 1.

For part (b) Mother replied, “Mothers milk is easily digested by the child”. This reason was written in part (b). After data collection was over the research team pooled all reasons from all questionnaires for each option. Codes were then given for common responses.

This is how it would look.

a) “In your opinion which is better?”

- | | | | |
|----|--------------|---|--------------------------|
| 1) | Mothers milk | ① | <input type="checkbox"/> |
| 2) | Top milk | 2 | |
| 3) | Both | 3 | |
| 4) | Don't know | 4 | |

b) “Why (for 1,2 or 3)?

“Mothers milk is easily digested”

This helps in data entry in computer and increases ease of analysis.

Thus, we have seen that developing and using semi-structured questionnaires to collect IYCF data requires considerable preparation, practice and patience ! Let us now see the observation method.

Using the Method of Observations to Collect Data

Interviews will not give authentic information on certain aspects of breastfeeding and complementary feeding because reported data have certain limitations. Women sometimes give “socially desirable” answers rather than admitting to actual practices (for example saying they wash hands before feeding child when they actually do not) or they may forget to report certain practices, or may simply not have noticed them. Hence, the observation method should be used to complement the interview data wherever possible; for example to observe complementary feeding practices like active feeding, hygiene practices, quantity of foods given and other aspects. Now let us learn more about observation techniques: purpose, types, their advantages and limitations.

For the present purpose, the method of Direct Observations is Appropriate

It has advantages such as:

- It provides information on ‘what people actually do’ rather than ‘what they say they do (or did) or believe’.
- Not only can the researcher observe the frequency and duration of key behaviours/situations, but she/he can also observe associated activities/behaviours.

There are certain limitations of Direct Observations:

- It is possible that subjects under observation will ‘react’ to the presence of the observer and alter their behaviour. This is known as ‘Reactivity’. It refers to the ‘observer effect’ during structured observations. This is partly overcome by doing many observations so that the person observed gets used to the presence of the observer.
- Continuous monitoring observations (which go on for hours or days) are labour intensive in nature. Minimum of two observers are needed, as it is difficult for one to record multiple behaviors occurring simultaneously. This could be used in a limited way for certain behaviors.
- Well-trained and skilled observers and analysts are required. Training should be adequate.
- It might be culturally insensitive to observe certain behaviours. For example, it might be difficult to observe breastfeeding behaviours if the mother feels that the observer would cast an evil eye on her child (*najar lagi jae*). In that case, such observations should be dropped from the study.

In all cases, permission should be taken from the person being observed to carry out the observations.

Direct observations could be structured, unstructured, or spot observations

↗ **Structured Observations** are a quantified record of behaviour or behaviours collected by a trained observer, through the use of a pre-coded or partly coded data collection instrument. For example observation of hygiene behaviour like hand washing. Trained data collectors might observe and code several possible features of the behaviour. Such as whose hands are being washed, where, with what and for how long.

The observer not only can observe the frequency and duration of key behaviours and events, but also observe associated activities and behaviours.

↗ **Unstructured Observations**—Unlike structured observations, unstructured observations have no pre-coded checklist. The observer records all that he/she observes over a specified period of time.

For example observing a family for a day to know the care giving behaviours of the family members.

↗ **Spot (or spot-check) Observations** are observations whereby the investigator records an activity being performed at the first moment of observation. Usually a few minutes. For example, during field visits, at random times, the investigator records the activity of a child under 2 at the first moment of observation (Sasikala and Kapadia 1997; Bentley et al, 1994).

Now let us see how structured observations were used to elicit information on breastfeeding - complementary feeding and hygiene practices, in a study conducted by this department in a rural area.

Annexure-III gives the observation checklist regarding breastfeeding – complementary feeding, active feeding, hygiene and family support.

Annexure-IV gives the observation checklist regarding personal hygiene of mother and child and environmental hygiene.

Steps for developing the observation checklist

- Formulate the checklist such that the objectives or purpose of using observations are fulfilled.

- The checklist should be in accordance with whether you want to make structured or unstructured or spot observations. Annexure-III and IV are checklists prepared for making structured observations.
- Adequate space should be provided to note down other associated observations, behaviour or gestures observed.
- For structured observations the checklist should have options/observations which are pre-coded. So the observer has to encircle the number given against the observed behaviour. This helps in data entry and further analysis. It also saves time as the observer can quickly record many observations at one time.

For example;

Observation 2.3 Food served in - (Circle any one)

- | | |
|------------------|---|
| 1) Separate bowl | 1 |
| 2) Common bowl | 2 |

Tips for Observation

- Ensure all important and related behaviours are recorded. For example, it is necessary to note down who is feeding the child. This helps to know whether active feeding is practiced and if other members of the family support the mother in child feeding.
- Observations can be combined with questioning which could be done after observations are over, so as to get data essential to the observation. For example, if the investigator observes the type of food being fed to the child, but is unable to know ‘how long back’ or number of hours since the cooked food was prepared then the mother could be questioned later: How long back was this food cooked?

Question 2.5: Hours since food was cooked: _____

Question 2.15: If you see an empty milk bottle, then to know more about the condition of the bottle and nipple; ask : how long boiled –

- | | |
|-------------------------------|---|
| 1) Boiled for 10 minutes | 1 |
| 2) Boiled for few minutes | 2 |
| 3) Washed with soap and water | 3 |
| 4) Washed with water only | 4 |

- Note down all observations regarding hygiene even if they do not appear in the checklist. For example: If child has not worn clothes then it should be noted in ‘remarks’: If you happen to see the mother bathing her child with water, (or soap and water) then this should also be recorded.

- Increase frequency of observation to increase validity of data since people get used to your presence and behave more 'normally' over time.
- Spot Observations should be made on several occasions randomly as you make field visits. This could later be quantified and analysed. For example, if out of 10 observations, 7 times the mother was observed sitting with the child and feeding or encouraging him/her, then it could be inferred that mother often practices active feeding. But if only in a few observations (1 or 2) this is observed, then we can infer that she usually does not practice active feeding. In one of our studies it was experienced from spot observations that mothers breastfed their children for a very short duration (1-2 minutes) and fed only from one breast. This was contrary to her reported behaviour that she breastfed from both sides. In such cases/condition repeated observations give valid data.

Measuring the Child's Food Intake Using the 24 - hour Dietary Recall

Adapted for this Age Group

The 24-hour diet recall is one of the most commonly used methods routinely employed to assess current dietary intake. We will now see the steps to collect data for children under 2 years using this method. This is with reference to the format given in Annexure-V. Questions 1 to 13 in Annexure-V cover information on age of initiation of complementary foods, consumption of fruits and vegetables and foods consumed from the family pot. This is followed by a matrix giving the format for the 24 hour diet recall tool with an example

Steps for Developing the Tool

- Background information for each child whose diet intake is taken should be noted. A sample of the type of background information to be collected is given in Annexure-II, discussed earlier.
- The 24 hour diet recall method takes into account the consumption of foods eaten only on the previous day. Hence it is possible that certain foods not so frequently consumed such as micronutrient rich foods like fruits and vegetables, which might not have been consumed by the child the previous day, are left unrecorded. In order to know the usual consumption pattern of such foods (not present in 24 hour recall), there are questions included related to general consumption of fruits and vegetables along with their frequency of consumption during past 7 days. In addition reasons for giving or avoiding fruits and vegetables to the child should also be asked.
- At times, foods are available in family but not given to child. Hence, foods cooked in the family but not consumed by the child should be recorded along with their reasons. This is important for identifying potential complementary foods for recommendations (foods not given at present). Also, foods from the family pot which are given and why are also important to note.
- Before conducting the diet recall, it is necessary to know from the respondent whether the child was ill the previous day, as illness would affect child's food intake.

Tips for Conducting 24 Hour Diet Recall

- Ask the mother the time since she initiated complementary foods to her child. Be careful while recording. For example if child's present age is 10 months and mother says her child started eating since past 3 months then age at time of introduction is 7 months. However, if mother says child started eating when he was 8 months old then write 8 months in age column.
- Ask the respondent to report the foods consumed by the child meal wise, from morning till evening. This reduces the chance of missing out on foods by the respondent. For example, ask foods consumed in morning (tea) followed by breakfast, lunch, evening snack and dinner. Then go back to morning meal and ask about quantities consumed.
- In addition to foods cooked at home probe the respondent to recall foods consumed by the child in the form of snacks (for example biscuits, *chana*.) and outside the house (for example at anganwadi or in a marriage).
 - Probe the respondent for the additional intake of energy dense foods like oil or sugar. For example sugar in milk, oil used for kneading dough and applied on *roti* or added to *khichadi* or *dal*.
 - Be very specific about getting data on foods given to child. For example which biscuit did the child eat (sweet, salty or cream); in vegetable with curry, whether child had pieces of vegetable or had only the curry or both. Take details of unfamiliar foods with method of preparation.
 - Record the consistency and size of foods consumed by the child. This will enable to calculate the actual amount of foods consumed, especially when a standardized list of recipes is used to calculate child's intake of raw foods. Whether the *dal* consumed was thick or thin, size and thickness of the *roti* and type of top milk (diluted or undiluted).
 - For example, if child consumed 100ml of thick *dal* then after referring the standardized list of recipes, the actual intake of raw *dal* would be 27gm. Whereas if the child consumed 100ml of thin *dal* then the actual intake of raw *dal* would be 15gm.
 - Do not ask leading questions to know which foods were eaten and their quantity. For example:
 - *Do not ask:* Did the child consume ½ Katori *dal*?
 - *Ask:* How much *dal* did the child consume?
 - *Do not ask:* Did your child eat banana yesterday?
 - *Ask:* Which fruits did your child eat yesterday?

Steps for Determining Food and Nutrient Intake of Child

- Food items consumed by the child on the previous day along with the raw ingredients should be recorded.
- The total quantity (volume) of food cooked in the family should be asked in household measures, and then recorded in terms of standard measures (volume in standard cups: ml.) of the volume being measured by water. Similarly, the quantity of cooked food (standard volume) consumed by the child should be recorded.

We have found this approach to be useful as usually women do not have the actual cooked food to show at the time of the survey, hence ratio of the volume of cooked food consumed by the child, relative to the volume of the same food (total) cooked for the family, measured in terms of water volume, is useful to arrive at the raw food items consumed by the child, as seen below.

- The amount of raw ingredients (grams or ml) used to make the total quantity of food should be asked and noted.
- The raw amount of food consumed by the child is determined based on the volume of food consumed by child (B) divided by the total volume of cooked food (C), and multiplied by the total amount of raw ingredients (A).

Raw amount eaten by child: $D = B/C \times A$

In addition, a standardized food list can be prepared to calculate raw amount of foods consumed by the child outside the home. For example, for snacks purchased from a shop.

- To calculate the nutrient intake of the child pool the amount of the similar ingredients consumed by the child during the whole day.

For example: Pool the quantities (amount) of wheat flour or rice consumed by the child in different meals for example chapaatis or rice eaten at lunch and dinner.

Annexure V gives an example of a filled up dietary recall form.

Now let us take this example to understand how actual food intake of the child is calculated.

In lunch the child consumed *khichadi* and *kadhi*.

First, the ingredients used for making *khichadi* were recorded i.e., rice and *greengram dal* along with their amount in terms of household measures. These were then converted to standard measure in volume using standard cups showing the level by means of water i.e., 1 cup (200ml) rice and ½ cup (100ml) *greengram dal*.

Second,, the total amount of cooked *khichadi* in terms of volume was recorded : 2½ cup (500ml). From this the amount of cooked *khichadi* consumed by the child was noted – 1/3 cup (80ml).

Third, after returning from field the raw amount of ingredients in khichdi, i.e. rice and dal which were recorded in terms of volume were converted to raw weight by referring to our standard list of volume to weight measures. Such a list needs to be made if not available.

$$1 \text{ cup raw rice} = 170 \text{ gm}$$

$$\frac{1}{2} \text{ cup dal} = 80 \text{ gm}$$

Finally the raw amount of rice and *dal* (D) consumed by the child as *khichadi* was calculated using the total raw amount of ingredients for *khichadi* (A), volume of *khichadi* consumed by the child (B) and total volume of cooked *khichadi* (C), as explained earlier,.

That is :

$$\frac{80}{500} \times 170 = 27 \text{ gm rice consumed in khichadi}$$

$$\frac{80}{500} \times 80 = 13 \text{ gm dal (greengram) consumed in Khichadi}$$

Similarly after the field visit, the intake of other foods was calculated.

The mother was also asked regarding addition of sugar in milk and oil in shortening of dough as well as applied on *roti*. Further standardized list of foods was used to know the raw amount of snacks consumed by the child -

$$\text{i.e., } 5 \text{ biscuits} = 50\text{gm}$$

$$1 \text{ rice papdi} = 6\text{gm rice and } 4\text{gm oil}$$

For each ingredient calculate nutritive intake using Nutritive value of Indian Foods, (ICMR, 1991).

Assessing Nutrient Deficits

Recommended energy intake from complementary foods

AED (1999) gives recommended energy intake to be obtained from complementary foods by infants upto 1 year, based on energy needs and calories obtained from breast milk.

$$\text{Daily energy requirements} = \text{Calories coming from breast milk} + \text{Calories from Complementary foods}$$

Based on available literature, values arrived at by AED (1999) for breast milk intakes are reported as below:

“Average” breast milk intake corresponds to 630ml per day for 6-8 months, 580ml for 9-11 months and 520ml per day for 12-23 months.

Considering this, and the total energy needs of the infant, the recommended energy intake from complementary foods (considering ‘average’ breast milk intake) is given below:

6-8 months	=	270 calories
9-11 months	=	450 calories
12-23 months	=	750 calories

These recommended values are somewhat higher than the WHO recommendations; however, in this report, we have used the above AED recommended values.

Recommended Protein Intake from Complementary foods

Since neither AED nor the WHO guidelines give the recommended protein intake from complementary foods, we have calculated this as given below.

The daily protein requirements given by ICMR for:

- 6-12 months = 14gm/day

(Based on RDA of 1.65 gm/kg body weight; and average body weight as 8.6 kg)

- 1-3 years = 22 gm/day

$$\text{Total daily protein requirement} = \text{Proteins coming from breast milk} + \text{Proteins from complementary foods}$$

Human milk contains 1.1 gm protein per 100 ml milk (ICMR, 1991).

Considering “average” breast milk intake (as presented earlier) the proteins coming from breast milk are calculated as:

6-8 months	=	7.0 gm
9-11 months	=	6.4 gm
12-23 months	=	5.7 gm

Thus:

Age (Months)	Total Protein Requirements	Protein from Breast Milk (gm)	Proteins Required from Complementary Foods (gm)
6-8	14	7.0	$14 - 7 = 7$ gm/day
9-11	14	6.4	$14 - 6.4 = 7.6$ gm/day
12-23	22	5.7	$22 - 5.7 = 16.3$ gm/day

Presentation of data

Data obtained from the 24 hour diet recall can be presented in various ways:

- Age of initiation of complementary foods.
- Quantity of complementary foods eaten; by age and gender.
- Nutrient intake of the children in terms of amount and percent RDA.
- Common family meal pattern.
- Foods given and not given from household meals with reasons.
- Proportion of undernourished children (by weight for age) and its association with nutrient intake.

How can data be presented?

A few results from two recent studies carried out in the department (Kanani and Gadre 2004, Kanani and Gupta 2002) are given below as examples of various ways of representing the information collected on breastfeeding, complementary feeding and care practices. These were elicited from the tools described in the previous section.

As far as possible, ensure that the data are analyzed and presented to highlight trends in beliefs and practices according to age and gender. These examples of some ways of presenting data are given as tables, graphs and text.

Table A. Background Information of Mothers

Item	Total (N=80)		Rural (N=40)		Urban (N=40)	
	n	%	n	%	n	%
Religion						
▪ Hindu	68	85.0	40	100	28	70
▪ Muslim	12	15.0	0	0.0	12	30
Total number of family members						
▪ <4	5	6.3	3	7.5	2	5
▪ 4-7	52	65.0	19	47.5	33	82.5
▪ >7	23	28.8	18	45.0	5	12.5
Total family income per month (Rs.)						
▪ ≤1000	33	41.3	17	42.5	16	40
▪ 1001-2000	38	47.5	20	50	18	45
▪ 2001-5000	8	10.0	3	7.5	5	12.5
▪ ≥5001	1	1.3	0	0.0	1	2.5

Table B. Current Perceptions and Practices of the Mothers Regarding New Born Feeding and Breastfeeding

Item	Total		Boys		Girls		Rural		Urban	
	N=80		N=38		N=42		N=40		N=40	
	n	%	n	%	n	%	n	%	n	%
Prelacteals given immediately after birth	33	41.3	14	36.8	19	45.2	19	47.5	14	35
Prelacteals given were										
▪ Patasa water	22	66.7	10	71.4	12	63.2	18	94.7	4	28.6
▪ Honey	5	15.2	2	14.3	3	15.8	0	0	5	35.7
▪ Jaggery water	5	15.2	1	7.1	4	21.1	1	5.3	4	28.6
Colostrum is good for the child										
▪ Yes	35	43.8	19	50	16	38.1	12	30	23	57.5
▪ No	29	36.3	13	34.2	16	38.1	19	47.5	10	25
Reasons for why colostrum is good										
▪ Child becomes healthy	11	13.8	7	18.4	4	9.5	3	7.5	8	20
▪ Colostrum gives strength (is energy dense)	13	16.3	8	21.1	5	11.9	6	15	7	17.5
▪ It improves immunity	2	2.5	0	0	2	4.8	1	2.5	17.5	2.5
The child is exclusively breastfed (not even water) till										
▪ <1 month	35	44.9	17	45.9	18	43.9	24	61.5	11	28.2
▪ 2-3 months	22	28.2	12	32.4	10	24.4	11	28.2	11	28.2
▪ >3 months	21	26.9	8	21.6	13	31.7	4	10.3	17	43.6

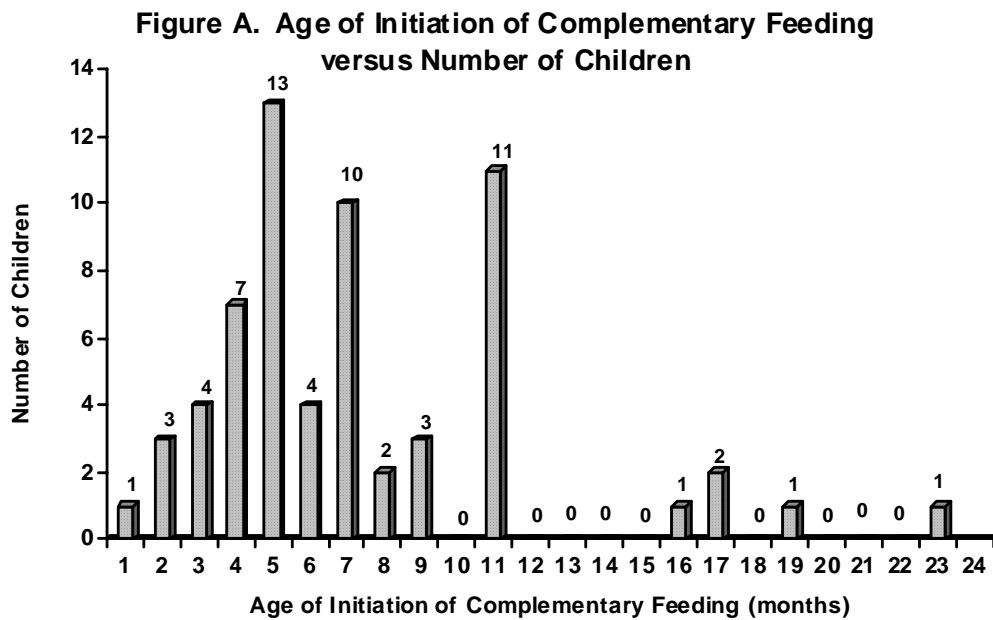
Qualitative data can be represented in the text as “voices” or “verbatim”- These are words as spoken exactly by the informant with English equivalent in parenthesis

- “*pehla divase dhavan naa aave to balak bhukhyu rahe*” (on the first day no breast milk comes and child is hungry).
- “*gadthuthi aapiye to balak maa saara sanskar aave*” (if we give prelacteals child, we inculcate sanskar in the child) .

Table C. Major Highlights of Observations of Breastfeeding Episodes

Sr No	Item	Total (N=34)		Rural (N=18)		Urban (N=16)	
		n	%	n	%	n	%
1	Number of children breastfed during observation	34	42.5	18	45.0	16	40.0
3	Mother washes her hands before feeding						
	▪ Yes	2	5.9	0	0	2	12.5
	▪ No	32	94.1	18	100	14	87.5
4	Infant position during breastfeeding						
	▪ Proper	20	58.8	11	61.1	9	56.3
	▪ Improper	14	41.2	7	38.9	7	43.8

Representation of data as graph



Are there gender differences? Urban-Rural differences?

Table D. Current Practices and Perceptions of the Mother Regarding the Complementary Feeding of the Child

Item	Total		Boys		Girls		Rural		Urban	
	N=80		N=38		N=42		N=40		N=40	
	N	%	n	%	n	%	N	%	N	%
Age of initiating complementary foods										
▪ <4 months	4	6.3	3	10.3	1	2.9	3	9.1	1	3.3
▪ 4-6 months	24	38.1	8	27.6	16	47.1	12	36.4	12	40
▪ >6 months	35	55.6	18	62.1	17	50	18	54.5	17	56.7
How does the mother feed the child										
▪ Encourage the child to finish up the meal	8	12.7	6	20.7	2	5.9	4	12.1	4	13.3
▪ Feed the child on demand	60	95.2	26	89.7	34	100	32	97	28	93.3
▪ Give food and leave	32	50.8	12	41.4	20	58.8	18	54.5	14	46.7
▪ Sit with the child while feeding	18	22.5	10	26.3	8	19.0	13	32.5	5	12.5
Whether child eats with the family members										
▪ Yes	26	41.3	13	44.8	13	38.2	13	39.4	13	43.3
▪ No	16	25.4	11	37.9	5	14.7	11	33.3	5	16.7
▪ Sometimes	21	33.3	5	17.2	16	47.1	9	27.3	12	40

Age wise representation

Item	Total (n=51)		Age of child (months)			
			6 – 11 (N=23)		12 – 18 (N=28)	
	n	%	n	%	n	%
Mother thinks child has normal appetite						
• yes	36	82	11	61	25	96
• no	8	18	7	39	1	4

Representation of data as a matrix
Table E. Frequent Reasons for Initiation of Complementary Feeding at a Particular Age

< 6 months (n=15)	6 months (n=13)	> 6 months (n=35)
<ul style="list-style-type: none"> ▪ Breast milk is insufficiency 	<ul style="list-style-type: none"> ▪ Child is grown up now 	<ul style="list-style-type: none"> ▪ Breast milk insufficiency
<ul style="list-style-type: none"> ▪ Child is grown up now 	<ul style="list-style-type: none"> ▪ Child has started sitting / walking 	<ul style="list-style-type: none"> ▪ Child cries a lot
<ul style="list-style-type: none"> ▪ Child cries a lot 	<ul style="list-style-type: none"> ▪ Preparing child to leave breast milk 	<ul style="list-style-type: none"> ▪ Child is grown up now
<ul style="list-style-type: none"> ▪ Child has started sitting / walking 	<ul style="list-style-type: none"> ▪ To habituate the child to eat other foods 	<ul style="list-style-type: none"> ▪ Eruption of teeth is seen, hence child is ready for top foods

Trends in responses can be given in text, highlighted by illustrative verbatims, as seen in box below.

<p>Perceptions and practices of mothers regarding feeding during illness</p> <p>More than half of the mothers when ill, decreased the number of breastfeeds with a view that '<i>Aapani bimari balakne lage</i>' (as I am sick, the child will also fall ill), '<i>Bimarima occhu khaiye to dhavan nahi aavatu</i>' (during illness mother eats less, so milk production decreases). But in both rural and urban areas this trend was higher for the girl child than boy child.</p>

Table F. Major Highlights of Observations of Complementary Feeding Episodes

Item	Total (N=8)	Rural (N=6)	Urban (N=2)
	N	N	N
Type of food fed to the child			
<ul style="list-style-type: none"> ▪ Fresh food 	2	3	0
<ul style="list-style-type: none"> ▪ Stored food 	1	0	2
<ul style="list-style-type: none"> ▪ Snack 	3	3	0
Active feeding practiced by caregiver			
<ul style="list-style-type: none"> ▪ Food served in separate bowl 	2	1	1
<ul style="list-style-type: none"> ▪ Mother encourages the child to eat 	1	1	0

Item	Total (N=8)	Rural (N=6)	Urban (N=2)
	N	N	N
Passive feeding practiced by caregiver			
▪ Child feeds himself / herself	7	5	2
▪ Mother leaves the child alone	2	0	2
▪ Child was not willing to be fed	6	5	1
▪ Caregiver did not persuade the child to eat more	7	5	2
▪ Caregiver did not wash child's hands before feeding	8	6	2
▪ Caregiver did not wash her hands before feeding	8	6	2
▪ Caregiver did not check whether the child needed a second helping	8	6	2
Child finished what was served			
▪ Most of all	1	1	0
▪ Half	2	1	1
▪ Very little	5	4	1

During the observations, the food which was fed in rural area was either freshly made (*Bajra rotla*, rice / *subji*, topmilk, anganwadi supplementary food) or a snack (biscuit / toast, bread), while two children in urban area were fed rice and *subji*.

To reduce subjectivity and to clarify the term “hygiene” (what it constitutes) a scoring system can be developed where a score of 1 is given to each criteria: e.g. clean, cut nails can be given a score of 1

Table G. Observation Data of Hygiene Practices (N=48)

Item	Maximum score	Mean score \pm SE	Median score
Hygiene of child (including face, hair, nails, hands and clothes)	10	7 \pm 0.42	8
Hygiene of the mother (including face, hair, nails, hands and clothes)	9	7.21 \pm 0.23	7.50

The table below complements the dietary survey data.

Table H. Intake of Family Foods by the Child

Item	Total (N=44)		6-11 months (N=18)		12 – 18 months (N=26)	
	n	%	n	%	n	%
Routine family foods given to the child						
• Yes	27	61	9	50	18	69
• No	17	39	9	50	8	31
Usually fruits given to the child						
• Yes	32	73	13	72	19	70
• No	12	37	5	28	7	30
Meal frequency of the child (meals per day)						
• 2 – 3	19	45	10	9	9	36
• 4 – 5	21	50	7	41	14	56
• > 5	2	5	0	0	2	8

Most of the children were fed fruits. However few fruits like banana and guava were avoided as most of the mothers thought that : ‘*varad thay*’ (it may cause cough), ‘*shardi hoti hai*’ (it may cause cold).

More than half of the mothers fed family foods to their children. However for younger children (6-8 months) half of the mothers did not give vegetables. The reason given was : ‘*Tikhu lage*’ (tastes hot). The commonly consumed foods by the children were biscuit, rotla / rotli, khichadi, milk, rice and dal.

Given below are illustrative examples for representing the diet intake data elicited using the 24 hour dietary recall method described in the previous pages.

Table I. Mean Nutrient Intake of the Children as % RDA

Nutrient Intake		Total N=51	Rural N=28	Urban N=23	Age of the Child					
					6 – 11 months		12 – 23 months		24 – 35 months	
					Rural N=2	Urban N=7	Rural N=12	Urban N=6	Rural N=14	Urban N=10
Energy (Kcal)	Mean ± SE	37.33 ±3.75	28.07 ±3.00	48.60 ±6.86	15.95 ±8.28	31.60 ±4.17	20.14 ±2.36	35.98 ±5.26	36.59 ±4.62	68.06 ±12.83
	Median	34.00	27.65	40.30	15.95	34.00	15.95	39.60	34.50	58.70
Iron (mg)	Mean ± SE	34.00 ±0.04	32.50 ±2.69	36.00 ±4.29	10.00 ±5.63	15.38 ±2.75	14.22 ±3.23	15.10 ±2.43	33.11 ±3.46	38.94 ±8.08
	Median	29.00	29.40	27.00	10.00	15.50	10.05	16.60	28.45	29.30
β-carotene (µg)	Mean ± SE	0.56 ±0.07	0.38 ±0.06	0.78 ±0.13	0.15 ±0.14	0.44 ±0.14	0.23 ±0.05	0.40 ±0.08	0.54 ±0.10	1.24 ±0.20
	Median	0.40	0.30	0.50	0.15	0.40	0.15	0.30	0.50	1.35

Figure B. Proportion of Children Meeting Various Levels of RDA for Calories

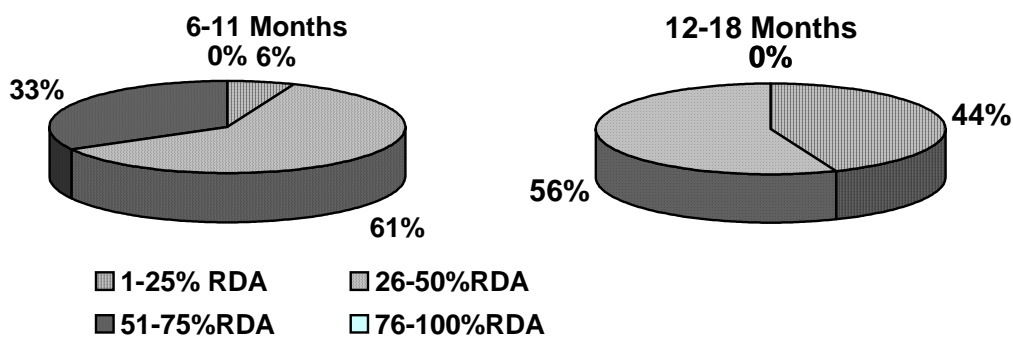


Table J. Association of Resources Available for Caregiving with Caregiving and Child’s Nutritional Status

Resources of Caregiving		No. of Caregiving Behaviours Practiced by the Mothers						
		0 – 3			4 – 7			
		T	R	U	T	R	U	
Father helps in tasks related to child care	▪ 0 – 2 tasks	n	17	7	10	8	5	3
		%	32.7	30.4	34.5	28.6	29.4	27.3
	▪ 3 – 5 tasks	n	35	16	19	20	12	8
		%	67.3	69	65.5	71.4	70.6	72.7
Mother has a say in decision making in family	▪ 0 – 2 decisions	n	3	2	1	1	1	0
		%	5.8	8.7	3.4	3.6	5.9	0.0
	▪ 3 – 5 decisions	n	49	21	28	27	16	11
		%	94.2	91.3	46.6	96.4	94.1	100

T; Total; R; Rural; U: Urban

Resources of Caregiving		No. of Caregiving Behaviours Practiced by the Mothers	
		N = 51	
		0 - 3	4 – 5
Mother’s education (in completed years)	Mean	6.69	7.94
	SE	2.01	0.14
	‘t’ value	1.22 ^{NS}	
Fathers help in tasks related to child care	0 – 3 tasks	n	24
		%	72.7
	4 – 5 tasks	n	9
		%	27.3
		Chi - Sq	4.27*

NS: Non Significant

*: Significant at p<0.05

Summing Up: We have thus seen the step-wise process of collecting household level data on IYCF. These are illustrative steps and are meant to serve as a guideline to the process. Adaptations will be required by those desiring to use these guidelines, depending upon their specific goals of the research.

Conclusion

The continuing high prevalence of under 3 malnutrition, especially during the period of 6-24 months when the transition from breast milk to complementary feeding takes place, needs to be urgently addressed. One contributory factor, in fact, a key contributory factor, is the lack of awareness of desirable BF-CF practices and also inadequate care-giving. Adequate CARE practices help ensure that the infant who is learning to eat new foods gets a diet adequate in quality and quantity. For this, it is necessary to train nutritionists and other research scientists on the methodology of collecting household level data on BF-CF and CARE – in other words on IYCF - and also to understand what the data is telling us in terms of which are the gaps in information which need to be addressed through community level interventions. The data base on IYCF practices in different regions should also be used as an advocacy tool to emphasize to the policymakers and key program personnel the crucial need to place IYCF high on the agenda in all major programs like ICDS and also allied programs in health, women's development and education sectors.

In this report, we have made an attempt to consolidate the research done in the area of IYCF in the department in recent years to get an overview of what the perceptions and practices are in this region. It is evident from the data that the picture is as dismal as it is in the rest of the country as shown by the NFHS surveys. Most of the recommended practices are not being followed. The positive side is that this is primarily due to lack of awareness of what is the desired practice and not so much due to lack of resources. It is known since long that among the interventions amenable to behavior change in resource-poor situations are BF-CF practices; it is just that we are simply not doing enough in this area.

We have also put together a systematic step-by-step guideline of *how* to go about collecting data on IYCF, and have added tips of useful steps to take (and mistakes to avoid) based on what we have learnt as we conducted this research; some lessons were learnt by us the hard way!

It is our hope that this report will be useful to all those who want to pursue research in the area of IYCF and also are keen to get data on what the situation is in our region.

To end on an optimistic note, perhaps this decade will see a lot more knowledge being translated into action – sustained, large scale and effective action. After all, as it has been said: *The child cannot wait.*

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