

**Original article:**

**Assessment of complementary feeding practices among mothers of children aged six months to two years in rural areas of Jaipur**

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**Abstract:**

**Introduction:** Infants and young children are at an increased risk of malnutrition from six months of age onwards, when breast milk alone is no longer sufficient to meet all their nutritional requirements and complementary feeding should be started. Assessment of complementary feeding practices among mothers of children aged six months to two years in rural areas of Jaipur.

**Methodology:** The hospital-based cross-sectional study was conducted at NIMS hospital, Jaipur from May 2014 to July 2014. 100 mothers of children between six months and two years attending the paediatric OPD for growth monitoring, immunisation and minor illnesses such as upper respiratory tract infections were selected for the study. The subjects were selected for the study by the order of their arrival to the OPD during the study period.

**Results:** Out of 100 infants. 14% had not started on complementary foods at all and only 40% received complementary feeding at 6 months. Most common reason for inappropriate practices who delayed complementary feeding was "tried but failed as child vomits or throws out food" (40%). Regarding feeding practices by food groups, animal milk and khichdi (31%) were predominantly given.

**Conclusion:** Initiation of complementary feeding at the recommended time of six months was seen in the majority of children. However the quantity of complementary feeding was insufficient. Advice about breast feeding and complementary feeding during antenatal check-ups and postnatal visits might improve feeding practices.

**Keywords :** complementary feeding

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**Introduction:**

An appropriate diet is critical in the growth and development of children especially in the first two years of life.<sup>1</sup> The World Health Organization (WHO) and UNICEF recommends exclusive breast feeding for the first six months of life, i.e. 180 days, with the addition of complementary feeds at six months with continued breast feeds until at least the age of two.<sup>2,3</sup> Infants and young children are at an increased risk of malnutrition from six months

of age onwards, when breast milk alone is no longer sufficient to meet all their nutritional requirements and complementary feeding should be started.

Complementary feeding as described by WHO refers to the addition of energy and non-energy containing fluids, non-human milk, and semi-solids or solids to children's diet.<sup>4</sup> The early introduction of complementary feeds before the age of six months can lead to inadequate consumption of

breast milk and increased risk of infections such as diarrhoea, which further contributes to weight loss and malnutrition.<sup>5</sup> Besides this, it is thought that babies are also not physiologically ready to receive complementary feeds under six months due to immaturity of the gastrointestinal and neuro-developmental systems and the kidneys. Studies have demonstrated that early introduction of complementary feeds does not result in improved growth velocities or food acceptance.<sup>6</sup> Inadequate food/nutrient intake is the major factor for malnutrition. Poor nutrition leads to underweight infants and stunting.<sup>7</sup> Proper breast feeding and complementary feeding practices can prevent under five mortality by 19%.<sup>8</sup>

Appropriate complementary feeding depends on accurate information and skilled support from the family, community and healthcare system. Inadequate knowledge about appropriate food and feeding practices is often a greater determinant of malnutrition than the lack of food. Knowledge of mothers about these factors will help in planning interventions to improve feeding practices. It has been shown in many studies that mothers in India are unable to start complementary feeding at the right time.<sup>1</sup>

Assessment of complementary feeding practices among mothers of children aged six months to two years in rural areas of Jaipur were our objectives.

#### **Material and methods :**

This cross-sectional study was conducted in department of pediatrics, NIMS hospital, Jaipur from May 2014 to July 2014. Inclusion criteria for the study were the mothers of children between six months and two years attending paediatric OPD of the above- mentioned hospitals for growth monitoring, immunisation and minor illnesses such as diarrhea, upper respiratory tract infections. All the children with known reason for failure to thrive were excluded. The age group of study subjects

was selected based on WHO recommendation on complementary feeding.<sup>3</sup> The subjects were selected for the study by the order of arrival to the OPD during the study period.

Data was collected using a semi-structured questionnaire administered by the authors to the mothers after getting written informed consent. It elicited information about demographic profile, breast feeding, initiation and adequacy of complementary feeding. Socio-economic status was assessed using modified Kuppaswamy's scale.<sup>8</sup> Quantity of food was assessed by showing a standard 150ml katori to get the near exact dietary details of the child.<sup>1</sup> As per WHO recommendations,<sup>3</sup> the following operational definitions were used.

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk.

Recommended time of initiation of complementary feed: Introduce complementary food at six months of age (180 days) while continuing to breastfeed.

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 needed from complementary foods for infants of developing countries are approximately 200kcal per day at 6–8 months of age, 300kcal per day at 9–11 months of age, and 550kcal per day at 12–23 months of age.

Recommended meal frequency: The appropriate number of 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. Time of initiation of complementary feed by the mother was compared with the recommended time of six months to decide if the feed in the child

was early, at recommended times or delayed. Adequacy of the feed was interpreted based on the amount of complementary feed the child received and the meal frequency.

The study protocol was approved by the Institutional Ethics Committee, NIMS,Jaipur. The data was analyzed using SPSS version 11.5.

**Observation and results:**

Among the selected 142 mothers, 100 consented to participate in the study. Some of the reasons

provided by the mothers for not participating in the study were lack of time, not interested in revealing details to the interviewer and objections by the family members to participate in the study. Of the 100, the majority of children i.e. 42% belonged to the 6-12 months age group, 57% were male children and 66% belonged to a joint family. Most of the mothers i.e. 82% were homemakers(Table 1).

**Table 1: Socio-demographic characteristics of study population N=100**

| Socio-demographic factors      | N% |
|--------------------------------|----|
| <b>Age of children:</b>        |    |
| 6- 12 months                   | 42 |
| 12-18 months                   | 25 |
| 18-24 months                   | 33 |
| <b>Gender:</b>                 |    |
| Males                          | 57 |
| Females                        | 43 |
| <b>Family Type:</b>            |    |
| Joint                          | 66 |
| Nuclear                        | 34 |
| <b>Mother's Education:</b>     |    |
| Illiterate                     | 20 |
| Primary School                 | 43 |
| High School                    | 18 |
| PUC                            | 12 |
| Graduate                       | 6  |
| Professionals                  | 1  |
| <b>Mother's Occupation:</b>    |    |
| Housewife                      | 82 |
| Working                        | 18 |
| <b>Children in the family:</b> |    |
| One                            | 24 |
| Two                            | 54 |
| More than two                  | 22 |
| <b>Socio-economic status:</b>  |    |
| Upper lower                    | 22 |

|                                |    |
|--------------------------------|----|
| Lower middle                   | 48 |
| Upper middle                   | 21 |
| Upper                          | 9  |
| <b>Institutional delivery:</b> |    |
| Yes                            | 88 |
| No                             | 12 |

When infants have completed 6 months of age they require adequate and safe complementary foods in addition to breast milk, however fewer than half of the infants age 6-12 months started complementary feeding at recommended age i.e. at 6 months. 10% infants received complementary foods before 6 months and others went beyond recommendation to introduce above 6 months (36%) (Table -2). The attitude of mothers towards late introduction of complementary foods was studied and analyzed

based on their response to question asked. The most common reason for delaying introduction of solid foods was “tried but child vomits (brings out food when offered - 43%), due to which they stopped offering foods to infants, whereas, 15% mothers had no idea what to start. 20% mothers delayed because their mother -in law or mothers advised that milk was sufficient for kids till 1 year of age (Table-3)

**Table 2- Age of initiation of complementary feeding**

| Months     | Before 6 months | At 6 months | After 6 months | Not yet started |
|------------|-----------------|-------------|----------------|-----------------|
| Percentage | 10              | 40          | 36             | 14              |

**Table 3: Reasons for delayed introduction of complementary feeding**

| Variables                                          | Frequency (n=100) |
|----------------------------------------------------|-------------------|
| Tried but failed as child vomits                   | 43                |
| Had no idea what to start                          | 15                |
| Mothers felt that her milk was sufficient          | 20                |
| Family elders says, kid may not digest solid foods | 10                |
| Mother working, had no time                        | 4                 |
| Milk acceptance was good                           | 3                 |
| Scared of giving new foods                         | 5                 |

Source of information about complementary feeding mothers own thought process and knowledge regarding infant feeding practices, grandparents influence, friends and media were mainly the sources from where feeding instructions were obtained (Table 4).

**Table 4- Source of Information about complementary feeding practices**

| Source                                            | Number (n=100) |
|---------------------------------------------------|----------------|
| Self                                              | 20             |
| Books/media/internet                              | 9              |
| Elders in family (mother in law and grandmothers) | 25             |
| Friends                                           | 18             |
| Medical people                                    | 12             |
| Husband                                           | 7              |
| Neighbours                                        | 9              |

A variety of weaning foods were offered to infants. Majority of mothers feed their infant khichdi ,milk and daliya. Giving dal water/rice water is a common practice amongst many families. In the

study population, 12 mothers were giving marketed ready to eat weaning foods .Tea was consumed by 9 infants (Table 5).

**Table 5: Type of weaning foods used by mothers**

| Weaning foods                     | Number(N=100) |
|-----------------------------------|---------------|
| Biscuit                           | 7             |
| Commercial foods                  | 11            |
| Dal water/rice water/daliya water | 10            |
| Fruit/Fruit Juice                 | 3             |
| Khichri                           | 19            |
| Cow's milk                        | 12            |
| Dal/ Rice                         | 5             |
| Kheer                             | 2             |
| Soup                              | 1             |
| Suji/halwa                        | 8             |
| Daliya/roti                       | 12            |
| Tea                               | 9             |
| Misc                              | 1             |

**Discussion:**

The study reveals that complementary feeding practices were inappropriate and the kind of food offered to infants needs to be improved for future health prospects since infancy is the period in which there is a higher prevalence of malnutrition and deficiency of certain micronutrients.

In the present study only 40% mothers started complementary feeding at recommended time i.e. 6 month of age. Higher prevalence of malnutrition among older children (6-12 months) may be related to prolong exclusive breast feeding (Rao P.G et.al)<sup>9</sup>. Breast milk alone is not sufficient to satisfy the nutritional needs to sustain optimal growth

beyond 6 months (Vaahtera et.al.)<sup>10</sup>. A recent study found that 32%(16/50) of 6-23 months of age, had started complementary feeding before reaching 6 months of age and only 36%(18/50) children of 6-23 months had started complementary feeding correctly at the age of 6 months. (Dasgupta A et. Al)<sup>11</sup>

Commonest reason for delayed complementary feeding was an unsuccessful attempt at feeding, i.e., "the child vomits out everything". This is actually not vomiting but the fact that the child tries to bring out the food put on the front of the tongue. Hence, the mothers should be educated that child has to develop the taste of the food and if they attempt and keep the food on child's tongue, the child will slowly start liking it and start swallowing (Elizabeth.E)<sup>12</sup>. Other reasons were no idea what to give and many other. It's important for the parents to know that feeding a child is a gradual process, which needs continuous trial and support

A lot of food beliefs exist amongst mothers and family members, which may lead to malnutrition. Traditional and cultural food preparation and practices were still exists. Lack of knowledge and misconceptions among elderly women like mother in-law, who generally influence and guide child feeding practices in the family, are often barriers to initiating appropriate complementary feeding at correct age. Nutritional factors during early development might have not only short term effects on growth, body composition and body function but also long term effects on health, disease and mortality risks in later age (Gostonic et.al.)<sup>13</sup>.

With regards to the feeding practices by food groups, in majority of the cases top milk or milk based preparations were given. One study showed that the milk intake of above 500 ml/day was associated with iron deficiency. It is acceptable to add small volumes of cow's milk to complementary foods, but it should not be used as

the main drink before 12 months (Gunnarsson et.al.)<sup>14</sup>Even though 35-40% of Indian families consume eggs and meats, it is traditionally believed that meat products and eggs cannot be given to infants due to the fact that infants fail to digest animal foods (Paul et.al.)<sup>15</sup>

From the present study, the type of complementary food offered, it was found that majority of mothers (31) feed their infants milk and khichdi. Giving dal water/rice water is a common practice amongst many families. In a study, 64% of the mothers were using dal water as weaning food (Dhingra et.al.)<sup>16</sup>. Introduction of dal water as a weaning food leads to a child receiving only liquid feeds rather than the semi solid dal rich in proteins and calories. This may be well explained due to the fact that dals are considered by many to be difficult to digest. A lot of convenience foods are being used these days by mothers like biscuits, marketed weaning foods and fast foods like noodles, fried savoury items (gathiya, sev) etc. These foods are non nutritious foods. They lack in many vitamins, minerals and contain hydrogenated fat; preservatives which may harm infant's health. These snacks can be energy dense but with a very low micro nutrient density (Lander et.al.)<sup>17</sup>. The consumption of tea was also observed. Polyphenols in tea are likely to have a marked adverse effect on non heme iron absorption, particularly because of their low content of ascorbic acid and cellular animal protein, two enhancers for non heme iron absorption (Mennen et.al.)<sup>18</sup>. Parents and caregivers should be encouraged to offer a wide variety of vegetables and fruits daily, with emphasis on dark green, leafy, and deep yellow vegetables and colourful fruits. to children, family-based approaches to developing healthy eating habits may be helpful (Mamiro et.al., 2005). Health worker must be enable to assess to common issues in infant feeding and offer appropriate counselling for the

community as well as for individual. Very few mothers received complementary feeding advice during their visit to clinic.

**Conclusion:**

Good nutrition forms the basic foundation of health throughout the life. Most mothers and health workers know little about how much food an child needs for adequate growth and development. Hence the advice given is often inaccurate and conflicting.

Also there is a heavy influence of advertisements and internet on day to day life. There is a need for parental education for sound and correct child rearing practices and in particular advice on how, when and why and with to feed the child from what is easily available in the household. The gap between knowledge and practice should be filled with proper interaction and education.

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