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# ASSESSMENT OF COMPLEMENTARY FEEDING PRACTICES AND MISCONCEPTIONS REGARDING FOODS IN YOUNG MOTHERS

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### **ABSTRACT**

Objective of the study is to assess the current complementary feeding practices and food beliefs in young mothers. Complementary feeding practices were assessed in infants aged 6 to 12 months using a semi structured open ended questionnaire. An informal interview method was used to gather information regarding misconceptions about food. A 24 hour recall was used to identify types of complementary foods given. Results showed that 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%). Knowledge regarding appropriate timing of initiation of complementary feeding and feeding commercial infant foods did not vary with maternal education. However maternal knowledge had a significant impact on the consistency of the feed that was offered to infants (p= 0.041). Regarding feeding practices by food groups, animal milk (86%) was predominantly given. Most common food belief amongst majority of the mothers was that feeding banana, curd causes cold and cough. Prevalence of anaemia and constipation was 44% and 50% respectively. Thus it was concluded that Complementary feeding practices were inappropriate. Also the gap between knowledge and practice should be filled with proper interaction and education of mothers and family members.

**Key words:** Complementary feeding, infancy, misconception, maternal education.

#### **INTRODUCTION**

Adequate nutrition is essential for achieving Millennium Development Goal (MDG) which is to eradicate extreme poverty and hunger. The links between early childhood nutrition and childhood mortality are well documented (Lutter et.al., 2011). The global strategy for Infant and young child feeding as well as the National guidelines on IYCF in India recommend early initiation of breast feeding within one hour and exclusive breast feeding for the first 6 months of life to achieve optimum growth, development and health. Thereafter to meet their evolving nutritional requirement, infants should receive timely, nutritionally adequate meals with regards to quality and quantity and safe complementary foods while continuing breast feeding up to 2 years of age or beyond. Introducing solid foods into an infant's diet is recommended at about 6 months because at that age breast milk is no longer adequate in meeting a child's nutritional needs (energy, protein and micronutrient) to promote optimal growth (BPNI, 2012).

Annually about 26 million babies are delivered in India. According to National Family Health Survey -3 (NFHS-3) data 20 million are not able to receive exclusive breastfeeding for the first 6 months and only about 20% children are exclusively breastfed at 6 months of age. Introduction of complementary feeding along with

continued breast feeding in 6-9 months age is only 55.8%, as shown in NFHS-3 data. Moreover in Madhya Pradesh only 52% infant (age 6-9 months) received solid or semisolid food and breast milk (National family health survey 2005-06). Malnutrition rates increase between 6 and 18 months, the period of complementary feeding (Patel et.al., 2012). Stunting is irreversible and can have long-term effects on cognitive development, school achievement, and economic productivity in adulthood and maternal reproductive outcomes (Guidelines for enhancing optimal and young child feeding practices, 2013). In developing countries adequate nutrition is not met as a result of poverty, lack of nutrition knowledge, poor child feeding practices and infections which results in high mortality and mortality. Inappropriate practices such as early or delayed introduction of complementary foods, low energy and nutrient density of foods offered, feeding thin consistency feeds and in small amounts and food restriction due to cultural beliefs are common (Ijarotimi Steve Oluwole, 2013). Despite vast improvement in the country's economy under nutrition remains a challenge in India. The objective of the study was to assess complementary feeding practices in infants and to assess the food beliefs and misconception regarding different food items.



#### **METHOD**

The subjects in the study belonged to Indore City, Madhya Pradesh, India. Mothers (age 21-29 years) of 100 infants, age ranging from 6-12 months, visiting immunization and various minor ailments were selected through purposive random sampling from the pediatric clinics. Infants with severe illness requiring hospitalization, low birth weight and preterm babies were not a part of the study.

Birth weight of infants was recorded from the infant's clinic card or vaccination card. Present weight and height of infants were also measured to the nearest centimetres for length and kilograms for weight and converted to Z scores which were calculated using WHO Growth Standard charts. Nutritional status was further categorized into stunting and underweight. Information on breast feeding and the age of introduction of other liquids (including water, ghutti, milk, honey etc) based on self report by the mothers was collected during recall interview.

We analyzed the prevalence of few feeding practices and their association with maternal educational status. Misconception and food beliefs regarding various food items were also assessed. An informal interview method was used to gather information about food beliefs and feeding practices. The consistency of feeds was assessed by showing WHO teaching pictures. From food intake data, which was collected using a 24 hour recall method, percentage of food groups consumed was estimated. Prevalence of anemia and constipation was also studied. Infants whose haemoglobin levels were less than 11 gm% were considered anemic. Infant constipation is the passage of hard, dry bowel movement not necessarily the absence of daily bowel movements. Infant constipation often begins when a baby transition from breast milk to eating semisolid and solid food.

Statistical analysis was done using SPSS Software 16.0 Version. Mean and standard deviation was used for birth weight and present weight of infants. Complementary feeding variables by educational status of mothers were tested using Chi Square test. Other parameters were calculated in percentage.

### **RESULTS**

### BREAST FEEDING PRACTICES

Data depicted in Table 1 shows that 78% infants were exclusively breast fed for 6 months from birth. 17% infants were on mixed feeding i.e. breast milk and top milk and 5% infants did not receive breast milk at all from birth. They were completely on top milk. At the time of interview 88% mothers were continuing to breast feed their children whereas 12% mothers had stopped breast feeding their child. Most common reason for discontinuing breast feeding was not enough milk production or had never breastfed their kid (5%) since birth.

Table 1- Characteristics of the study population

Characteristic	Percentage (%)	
Breast feeding practices (n=100)		
Exclusively breastfed for 6 months	78	
Mixed feeding	17	
Never breast fed	05	
Maternal education		
Upto 10 <sup>th</sup> std	20	
Upto 12 <sup>th</sup> std	29	
Graduate	38	
Post graduate	13	
LAZ (Length for Age Z score)*		
Mildly	20	
Moderately stunted	17	
Severely stunded	15	
WAZ (Weight for Age Z score)*		
Mildly	10	
Moderately stunted	12	
Severely stunded	04	
Bottle feeding (n=100)		
Yes	36%	
No	64%	
Giving marked weaning foods (n=86)		
Yes	49%	
No	51%	
Consistency of complementary feeds		
(n=86)		
Thin	59%	
Appropriate	41%	
Anaemia (n=100)		
Suffering	44%	
Not suffering	56%	
Constipation (n=100)		
Suffering	50%	
Not suffering	50%	

\*Mild stunted defined as LAZ between-1.0 to -2.0, Moderate stunted defined as LAZ between -2.0 to -3.0, Moderate stunted defined as LAZ above -3.0, #Mild underweight defined as WAZ between -1.0 to -2.0, Moderate underweight defined as WAZ between -2.0 to -3.0, Moderate underweight defined as WAZ above -3.0.

Birth weight of infants was recorded from infant's clinic card. Mean birth weight of infants was 2.7 with minimum birth weight of 2.3 kg and maximum birth weight was 4.0 kg. In the present study mean weight of subjects was 8.54±7.06 kg. Anthropometric data from the study group reviled that 17% infants were moderately stunted and 15% infants had their Z scores (LAZ) below -3 and were severely stunted. Also, 12% and 4% infants were moderately and severely underweight (WAZ) respectively.

Timing of introduction of complementary feeding- 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). Maternal education level did not affect the age of introduction of complementary foods (P= 0.41). 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 - 40%), due to which they stopped offering foods to infants, whereas, 24% mothers had no idea what to start. 10% 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 moths	Not yet started
Percentage	10	40	36	14

Table 3: Reasons for delayed introduction of complementary feeding

Variables	Frequency (n=51)
Tried but failed as child vomits	20 (40%)
Had no idea what to start	13 (24%)
Mothers felt that her milk was	3 (5%)
sufficient	
Family elders says, kid may not	5 (10%)
digest solid foods	
Mother working, had no time	2 (4%)
Milk acceptance was good	3 (5%)
Scared of giving new foods	5 (10%)

#### FEEDING UTENSILS

It is the recommendation of WHO and UNICEF that babies should be fed with cups and spoons. Bottle use should be completely avoided. Among the sample, 36% mothers were using both bottle and cup and spoon for feeding and rest were not using bottle (Table 1).

#### CONSISTENCY OF FEEDS

Maintaining proper consistency of feed is very important owing to the capacity of the infant's stomach size. Thick consistency foods are energy and nutrient dense as compared to thin consistency. Mothers who started complementary feeding 59% were giving thin consistency food and 41% mothers were offering thick feeds (Table 1). Consistency of feeds varied significantly with maternal educational status (P= 0.41). Feeding commercial foods- Offering commercial baby food to infants as complementary foods was practised by 49% mothers (Table 1). No significant association was found between maternal education and feeding commercial foods (P=0.948).

Prevalence of anemia (Hb<11gm %) was present in 44% infants and 50% infants were suffering from constipation (Table 1). Occurrence of anemia and constipation did not vary with maternal education status.

Interestingly infants who were anemic were also constipated and a significant association was found between two conditions (P=0.01).

Source of information about complementary feedingmothers 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	33
Books/media/internet	16
Elders in family	37
(mother in law and grandmothers)	
Friends	27
Medical people	21
Husband	13
Neighbours	16

<sup>^</sup> Multiple answers by mothers

#### FOOD BELIEFS

In India a lot of myths and food beliefs exist amongst people. Majority mothers (60) believed that feeding banana and curd cannot be given to child in rainy and winter season since it causes cold and cough. Also milk is the best food for infant till 1 year of age was believed by 40 mothers. Rest are listed in Table 5.

Table 5- Food beliefs during complementary feeding

Table 5- Food benefit during complementary recum		
Food Beliefs/myths#	<b>Number</b> (n=100)	
Banana, curd causes cold and cough	60	
Rice caused cold and cough	40	
Ghee is heavy to digest, causes cough	28	
Gur (jaggery) is hot to give	15	
Only liquid foods like dal water, rice	47	
water good for children		
Ghee/oil is heavy for kids	26	
Wheat/daliya/moti suji heavy for kids	42	
Maggi/biscuits/marketed foods help in	20	
weight gain		
Solid/ thick consistency food cannot be	40	
given to kids		
Sour foods cannot be given, causes cold	37	
Milk is whole, complete food till1 year of	40	
age		
Dal/ pulses causes indigestion	33	
Vegetables choke in food pipe	29	
Gur (jaggery) is hot to give Only liquid foods like dal water, rice water good for children Ghee/oil is heavy for kids Wheat/daliya/moti suji heavy for kids Maggi/biscuits/marketed foods help in weight gain Solid/ thick consistency food cannot be given to kids Sour foods cannot be given, causes cold Milk is whole, complete food till1 year of age Dal/ pulses causes indigestion	15 47 26 42 20 40 37 40	

# Multiple answers by mothers

Feeding practices by food group and type of complementary foods offered: - With regards to the feeding practices by food groups, in most cases the food given was milk based (86%), followed by cereals (77%). Pulses, fruits and vegetables contributed to 41%, 39%, and 17% respectively (Figure1). A variety of weaning foods were offered to infants. Majority of mothers feed their infant milk and biscuits. Giving dal water/rice water is a common practice amongst many families. In the study



population, 42 mothers were giving marketed ready to eat weaning foods whereas 12 were using homemade ready to eat weaning foods. Fast foods like maggi/noodles, fried savoury items (sev, gathiya) were given by 27 mothers to their kid. Tea was consumed by 12 infants (Table 6).

Table 6: Type of weaning foods

Weaning foods <sup>*</sup>	Number
Biscuit	64
Commercial foods	42
Dal water/rice water/daliya water	50
Fruit	24
Fruit juice	13
Homemade dry mixes	12
Khichri	21
Rice	10
Dal	15
Kheer	31
Soup	5
Suji/halwa	14
Daliya/roti	13
Tea	12
Maggi/chips/gathiya/sev/murmura/	27
fryems	
Misc.	10

Multiple items being used

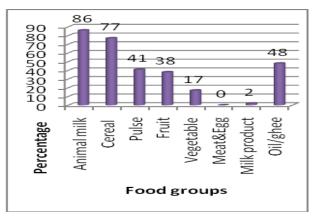


Figure 1: feeding practices by food groups

### **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 (Passi Gouri, 2004). Breast milk alone is not sufficient to satisfy the nutritional needs to sustain optimal growth beyond 6 months (Vaahtera *et.al.*, 2001). A recent study assessed the impact of timely introduction of solid foods at 6 months and concluded that while the timing of complementary feeding by itself many

not lead to improved nutritional status, timely introduction of foods of appropriate quality and quantity in a hygienic environment along with increased maternal interaction time will likely to have a positive effects on growth of young children (Kramer et.al., 2003 and WHO, 2008). 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, 2010). 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.

Monitoring consistency of the feed given to infants is also important. In this study, 59% mothers were giving a thin consistency feeds whereas 41% mothers were giving appropriate consistency of feeds. In a study conducted by A. Aggarwal et.al., 2008, it was found that 62% mothers were giving thin consistency feeds (Aggarwal et.al., 2008). It is essential to introduce varied textures throughout complementary feeding period. Under normal scenario, the mother tends to give thin or soft, completely mashed foods for a longer period. This might not satisfy baby's urge to chew with the development of teeth and preparation for textured family diet could be difficult. It is essential to advise mothers to differentiate the texture through the preparation and cooking methods. A soft to coarser to bigger bite texture will be a positive approach towards developing the baby for acceptance of family foods (Giugliani et.al., 2000).

Bottle feeding practice was practised by 36% mothers. Today the use of bottles is not recommended since it is a source of infection (WHO, 1998), reduces breast sucking time, interfering with breast feeding on demand and may alter the dynamics of oral feeding (Neifert *et.al.*, 1995).

A lot of misconception/myths/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 (PCI, 2010). Having enough food at household level does not guarantee the nutritional well being of every household member, especially that of children (Kruger, 2002). 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.*, 2007).

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

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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., 2004). High solute formula and cow's milk may lead to constipation Gupte Suraj., 2006(). Low intake of vegetables, fruits could also contribute to anaemia and constipation. Introducing new tastes with addition of vegetables, fruits will expose the baby to healthy eating practices (ESPGHAN). 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., 2010).

From the present study, the type of complementary food offered, it was found that majority of mothers (64) feed their infant milk and biscuits. 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., 2007). 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., 2009). Also the amount of fibre present in these foods is almost negligible. This may be one of the reasons that in the present study 50% infants were suffering from constipation and 44% infants had low haemoglobin levels than normal range.

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.*, 2005).

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. It becomes important to utilize the "Missed Opportunities" like immunization sessions to advice about complementary feeding (Gupta, 2010). Attention should be focused on socio-economic empowerment especially education of the girl child, utilization of immunization session to implement knowledge about timing, consistency and

quantity of complementary feeding (Patel *et.al.*, 2005-2006).

#### **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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