What's wrong with complementary feeding practices?

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Abstract

Sub optimal complementary feeding (CF) practices lead to various serious health consequences and despite decade long intensive efforts of everyone involved in child health care the improvement in CF practices is minimal. It's vital to identify a few neglected yet very important component of multi-dimensional CF and address them with even greater emphasis.

Materials and Methods: Information regarding CF was collected by 24 hour diet recall and food group frequency in past one week. 150 children aged 6 to 24 months who were not having any chronic disease or feeding difficulty were included. Nutritional assessment (anthropometry) and general physical examination (to detect manifestations of micronutrients) was done in all children.

Results: Positive practices were high rate of timely initiation of CF, continued breast feeding and high daily feed frequency found in 54.7%, 46.7% and 68% children respectively. Problematic practices observed were inadequate amount of food per feed, low and almost fixed daily diet diversity, poor frequency of important food groups like pulses, eggs, non-vegetarian food items and GYOR fruits and vegetables. Underweight, wasting and stunting was identified in 30%, 17.3% & 38% children respectively. Commonest micronutrient deficiencies were manifest anaemia and rickets found in 87% and 28.7% children.

Conclusion: Certain aspects of CF have been addressed inadequately and will require repeated counselling of caregivers to induce the desired change in their behaviour related to complementary feeding.

Keywords: Infants, Complementary feeding, Dietary diversity, Food frequency, Under-nutrition.

Introduction

Introduction of complementary feeding (CF) is an important milestone not only in Paediatrics but also in many communities all over India it is still an occasion which is celebrated in grand way, signifying the well appreciated importance of CF by our forefathers optimal CF practices ensures that young child gets adequate nutrition and be adequately equipped to deal with inter-current infections.

Sub-optimal feeding practices in first two years of life coupled with high rates of infectious illness could lead to growth faltering[1,2] and deficiency of some important micro nutrients leading to significant morbidity[3-5] and disabling sequelae e.g. visual impairment or bony deformities post vitamin A or D deficiency.

According to the figures of a recent health survey in India from 2010 to 2013 covering all 284 districts of 8 Empowered Action Group states (EAG) including U.P, it was found that the timely initiation of CF was seen in only 53% children, minimal feeding frequency was inappropriately low in more than half (56%) of participants and only one third kids (29%) were getting the CF with recommended dietary diversity.[2,3]

So the question arises that why despite decade long intensive efforts of Government of India and various agencies involved in child health care, the much expected improvement in malnutrition indices as well as infant and young child feeding practices (IYCF) is minimal? There is substantial evidence that behaviour change interventions (BCI) can improve infant feeding practices which in turn can lead to better growth.[6,7]

Present study was an attempt in this direction with the aim to know the local CF practices in a holistic way, so as to identify the ignored and inadequately addressed practices which could be altered by behaviour change interventions like nutritional counselling.

Materials and Methods

Present study was a cross sectional, hospital based study conducted in outpatients department of paediatrics of a tertiary level care teaching hospital situated in urban area of district Ghaziabad, Uttar Pradesh. Ethical clearance was obtained from institutional ethical committee. Children aged 6 to 23 months attending the hospital for vaccination or minor ailments of short duration were included during the 6 months period from May 2015 to October 2015. Eligibility criteria were willingness to participate and presence of primary care giver so that the correct dietary history could be obtained. Children suffering from any chronic illness or having feeding difficulties secondary to some organic disease were excluded. Pre-designed and pretested questionnaire was used to collect the information for the study and the information collected under two subheads–first was about population characteristics and second section was about IYCF practices. 24 hour diet recall and frequency of food groups consumed in previous one week were noted for all and used to assess daily feed frequency (FF) and dietary diversity (DD). Seven Food groups (FG) chosen were cereals, pulses, milk and milk products, egg/non-vegetarian food, vegetables and fruits, oil and sugar. Parents were shown standardized

measurement vessels (available in department) to know the amount of food taken. Dietary diversity was the number of food groups consumed on the previous day of the interview. The food group frequency (FGF), was assessed separately by noting the food items from above mentioned seven groups in last one week.

The anthropometry was done for every child using standard methods. Weight for age, height or length for age and weight for height were recorded and using WHO 2006 references, kids were categorised as underweight if (WAZ < - 2SD), Stunting if (HAZ < - 2SD) and wasting if (WHZ < - 2SD). General physical examination was done in all children to detect manifest anaemia, rickets, xerophthalmia, cheilosis and glossitis.

Results

Population characteristics: In present study total 150 children were enrolled of which 43% (65) were below 12 months and 57% were between 1 -2 years of age. Majority of participants belonged to small families and average family size was 3.7 +/- 1.2. Only 14.6 % (22) mothers were working outside the home 85% mothers were educated up-to middle class or higher. 84.7 % (127) mothers were exposed to various audio visual and print mass media campaigns related to child health.

Complementary feeding practices: Timely initiation of CF was found in 54.7% infants only and 11.4% babies were getting exclusive breast feeding till 7 to 9 months of age while inappropriately early initiation of CF (by 4 to 5 months) was done in 33.9% children. By the age of 9 to 12 months 96% (144) infants were getting CF. Food frequency per day ranged from 3 times or less in 32%, 4-5 times in 26% and 6-7 times in 42% children. Top milk was being given 3 to5 times per day in 67% children. Dietary diversity was disturbingly low and the usual daily diet included only 3 to 4 almost fixed food groups namely - cereals, animal milk, potato, oil and sugar. The cereals and animal milk were being offered almost daily in 85% and 100% children respectively. Pulses were given 3 or more times per week in only 27% children. Among vegetables and fruits the frequency per week was 0 to 2 /3 times (more for former and less for later) in 53% children. Potato and banana topped the list irrespective of the season and socio economic class of the family. Intake of yellow, green, orange and red (GYOR) vegetables and fruits was negligible. Only 17% children were being offered egg or non-vegetarian food that too only for 1 to 2 times per week. The fat and sugar were given daily. Consistency of feed be it top milk or pulses was thin to highly dilute in 27% children. In the context of responsive feeding, only 7% children were being offered food in a separate plate and were allowed to play with food. Around 53% kids were being offered food separately at 3 major meal time but were being fed by mothers or grandparents mostly by coercing or by distracting with mobile phones. Nearly 86% were also sharing food from the plates of elder family members. Food hygiene-bottle feeding was being given to 64% babies. As stated all mothers were maintaining food hygiene. The summary of CF practices is shown in Table 1.

Table 1: Complimentary feeding practices in 150 children (6-24 months)

S. No.	Complimentary feeding practices	Number (N=150)	Percentage
1	Timely initiation of CF	82	54.7
2	Continued breast feeding	70	46.7
3	Food frequency less than 3 times /day	48	32
4	Amount per feed less than recommendations.	138	92
5	Diluted consistency of food	40	27
6	FGs taken for ≤ 2 days per week:- a) Pulses b) Egg/non veg c) GYOR fruits & vegetables.	 109 124 147	 73 83 98
7	Bottle feeding	96	64

The percentage of kids having under nutrition and/ or micro nutrients deficiency manifestations in present study are shown in Table 2.

Table 2: Showing the distribution of under nutrition and manifestations of micro nutrients deficiency.

S. No.	Nutritional status /micro nutrient deficiency	Number	Percentage
1	Under weight	45	30
2	Wasting	26	17.3
3	Stunting	58	38
4	Vitamin A (Bitot's spot)	3	2
5	Microcytic hypochromic anaemia	130	87
6	Rickets (nutritional)	43	28.7
7	Cheilosis /stomatitis	22	14.7

Discussion

The findings of present study showed that CF practices in urban Ghaziabad are more or less same as in rest of the districts in India and neighbouring developing countries.[8-12] The observed positive practices were-timely initiation of CF, continued breast

feeding and high daily feed frequency (FF) in majority of kids. The problematic aspects requiring intervention were –low and almost fixed daily dietary diversity (DD) containing mostly cereals, milk, oil & sugar. Inappropriate food group frequency (FGF) was next big hurdle. Animal milk intake was unanimously 3 or more times daily and toppled the food pyramid in all, irrespective of the nutritional status of participants. Similar results were the observations of a recent research from slums in urban Mumbai (2014). The percentage of children reported by them who were fed foods from the seven food groups were: grains, roots and tubers -91.7%; legumes and nuts - 59.6%; milk/ milk products -58.1%; flesh foods - 2.7%; eggs - 5.4%, vitamin A rich fruits and vegetables - 8.7% and other fruits and vegetables - 19.7%. Another important observation stated was that DDS and food frequency of children below the 1 year of age were lower than older children.[12] In a hospital based study (2011) from Bangladesh which included children of same age group, it was reported that food frequency (much lower than figures of present study) was 2.4 times in last 24 hours and, on average 2.2 food-groups per day were being given. The food group frequency stated by them in previous week for carbohydrate, vegetable protein, and animal protein were on average, 5, 3.4, and 1.8 days respectively.[10] The next most neglected food group in present study was vegetables and fruits particularly from GYOR (green, yellow, orange, red) category in concordance with observations of other researchers. Eggs and non-vegetarian items were next on the list of neglected items. Even if the child was from a non-vegetarian family, the amount offered was very inadequate and therefore it couldn't be considered a significant source of protein. Frequency of intake of pulses was also low at 2-3 times per day which was a matter of concern in majority of pure vegetarian kids. The good Food frequency in this project was due the fact that usually whenever an adult in family was having meals, the child was being offered some food but the limitation was that the amount consumed by child was usually few bites only. Secondly this practice prevented self-feeding by child. Next hurdle was diluted feeds be it milk or pulse. None of the parents attempted to increase the energy density of food by increasing the amount of oil or sugar in food.

So we got the answer to the question "What's wrong about CF practices?" now comes the question "why are we wrong and how to rectify it?" The fact is that in the context of CF most mothers are guided by family elders and cultural food practices, various audio-visual & print mass media and less often by doctors. Often the aspects addressed by these sources are time of initiation of CF and dietary items to be offered only. Traditional attitudes like thin food, fear of cold *tasir* of citrus fruits or fear of *gas* & indigestion by green leafy vegetables prevents the mothers from offering these beneficial, locally available and cheap food items. Multi-dimensional nature of CF and changing recommendations with increasing age of child will require the repeated reinforcement and guidance to the care givers.

Conclusion

Certain important aspects of CF that are still being addressed inadequately are-amount of food per feed and unsatisfactory dietary diversity. It's vital that these very important component of multi-dimensional CF are discussed with even greater emphasis repeatedly so as to induce the desired change in the behaviour of caregivers related to complementary feeding.

References

1. Srivastav N, Sandhu A. Index for measuring Child Feeding Practices. Indian J Pediatr 2007;74:363-68.
2. Tiwari S, Bharadava K, Yadav B, Malik S, Gangal P, Banapurmath CR et al. Infant & young child feeding guidelines. Indian Pediatrics 2016;53:703-13.
3. Presentation on Annual Health Survey Fact Sheet Key Findings. New Delhi; Office of the Registrar General and Census, Ministry of Home Affairs, Government of India; 2011.Available from hhtp://www.censusindia.gov.in/2011-common/AHSurvey.html. Accessed on October 11, 2017.
4. Srinivasan V, Patil R, Datta SS, Narayan KA, Stephen F. Feeding practices and morbidity pattern of infants in a rural area of Puducherry - A follow up study. J Com Med Health Educ 2014;4(4):1-6.
5. Kumar N, Unnikrishnan B, Rekha T, Mitra P, Kulkarni V, et al. Infant feeding & rearing practices adapted by mothers in coastal South India. Indian J Colla Res Int Med & Publ Health 2012;4:1-12.
6. Joseph N, Unnikrishnan B, Naik VA, Mahantshetti NS, Mallapur MD. Infant rearing practices in South India: A longitudinal study. J Fam Med & Pri Care 2013;2:37-45.
7. Fabrizio CS, Liere M V, Pelto G. Identifying determinants of effective complementary feeding behaviour change interventions in developing countries. Maternal and Child Nutri 2014;10:575–92.
8. Bhutta Z, Das J, Rizvi A. The Lancet Nutrition Interventions Review Group, and the Maternal and Child Nutrition Study Group. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost. The Lancet 2013;382(9890):452–77.
9. Ruel MT, Menon P. Child feeding practices are associated with child nutritional status in Latin America: innovative uses of the demographic and health surveys. J Nutr 2002;132:1180-7.
10. Khatoon T, Mollah M A H, Choudhury A M, Islam M M, Rahman K M. Association between Infant- and Child-feeding Index and Nutritional Status: Results from a Cross-sectional Study among Children Attending an Urban Hospital in Bangladesh. J Health Popul Nutr 2011;29(4):349-56.
11. Garg A, Chadha R. Index for measuring the quality of complementary feeding practices in rural India. J Health Popul Nutr 2009;27:763-71.
12. Lohia N, Udipi S A. Infant and child feeding index reflects feeding practices, nutritional status of urban slum children. BMC Pediatrics 2014;14(290):1-11.