IMPACT OF WEANING PRACTICES & DIETARY INTERVENTIONS ON THE NUTRITIONAL STATUS OF MALNOURISHED CHILDREN

Dr Luxita Sharma*

Dr Sunita Sharma**

Abstract

Breastfeeding is a way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health (WHO , 1998)

The present study was carried out on the malnourished and children belonging to regions of Badshahpur and Gurgaon. The children were having low birth weight and proper weaning practices were also not followed due to lack of knowledge among the mothers. Hundred children were selected purposively from the above regions. All the selected subjects had lower weight than normal. The subjects were than counseled by the investigator and a Low cost Diet plan was provided to the mothers of the malnourished children for three months. At the end of study period the weight of the children was measured and there was a significant weight gain among them after following proper weaning practices.

* Head , Dietetics and Applied Nutrition, Amity University , Gurgaon

** Deputy Director , Internal Quality Assurance cell ,Amity University , Gurgaon

1.Introduction

In 2001 the World Health Organisation (WHO) issued a revised global recommendation that mothers should breast feed exclusively for six months. This recommendation is likely to influence national policies on the recommended age for the first introduction of solids, so it is important that pediatricians are aware of the issues and the evidence (or lack of it) on which the WHO recommendation is based. This is the main subject for this review, but other important issues are addressed, such as the influence of early nutrition on short term and later health and the question of whether we should adapt recommendations to take account of the special needs of groups such as low birth weight or atopic infants. In developing countries malnutrition is an important cause of infant mortality and morbidity, and the evidence that the too early introduction of solid food has an important deleterious effect in this context is presented.

The Canadian Paediatric Society, recommended exclusive breastfeeding for at least the first four to six months of life, and continuing with complementary foods for up to two years and beyond . Weaning, defined as the transition from milk to solid food during the first year of life, is a process important for not only nutritional and developmental reasons, but also for

its potential influence on life-long feeding patterns and health. It is currently recommended that the weaning process commence around six months of age, when the volume of milk ingested by exclusively breastfed infants becomes insufficient to meet their nutritional requirements. (Bennett, 2012)

2.Review of Literature

Approximately fifty percent of the 10 million deaths each year in developing countries occurs because of malnutrition in children younger than 5 years. Almost forty percent population is below poverty line and in addition twenty five percent barely manage to meet in basic minimum needs. According to Bulletin 2004, eighty seven percent children are suffering from various degree of malnutrition. Malnutrition widely recognized as a major health problem in the developing countries like Bangladesh. (Khan,2008).

The introduction to solid feeding and the gradual replacement of milk by solid food as the main source of nutrition is the process known as weaning. In its recent publications the WHO uses the term weaning in a more limited sense to indicate complete cessation of breast feeding.

Complementary feeding is the provision of any nutrient containing foods or liquids other than breast milk and includes both solid food and infant formula. In the UK the terms "weaning" and "complementary feeding" are sometimes used synonymously to mean infant solid feeding.

3.Materials and Methods

The methods and materials used for investigation are discussed under the following headings:

3.1 Locale of study

3.2 Selection of subjects

3.3 Experimental plan

3.4 Development of questionnaire

3.5 Dietary Counseling

3.6 Statistical analysis of the data

3.1 LOCALE OF THE STUDY:

The study was conducted on young adults belonging to the cities of Badshahpur and Gurgaon

3.2 SELECTION OF THE SUBJECTS:

1) One hundred young mothers between 20-35 years of age were selected by purposive random sampling from different localities and institutions, namely - Badshahpur and Gurgaon .

2) The selected mothers had babies between the age group from 1-24 months.

3) The height and weight of all the children were measured to find the malnourished subjects among them.

All the selected one hundred subjects were Free from any serious disease.

(i) Not following any dietary restrictions.

(ii) Out of the surveyed women , hundred malnourished children were selected purposively from the Badshapur and Gurgaon (NCR).

(iv) The objective and experimental protocol of the study was explained to the mothers of the children, and their prior consent was taken.

3.3 EXPERIMENTAL PLAN:

The study was constituted of three phases and the classification of subjects was elaborated as under:

3.3.1 Phase I : The phase one includes 100 young mothers and their children for study.

a) Field studies : These studies consists of collection of data regarding general information,

physical activity pattern , health record, assessment of nutritional status by using dietary survey, anthropometry and body measurement.

3.3.2 Phase –II : In the second phase, the malnourishment and the reasons for absence of weaning was studied. Nutrition education was imparted to the subjects. The effect of each treatment was studied for a period of three months.

3.3.3. Phase –III : The studies done on the parameters studied / examined on the control and the experimental groups are :

a.) Assessment of nutritional status by anthropometry, and dietary survey, both before starting and at the end of experimental period of three months

b.) Measurements of weight and height at the end of every month.

c.) Dietary counseling of the subjects of groups before starting and throughout the study period to help them in selecting a diet containing calories required by age group as suggested by ICMR.

3.4 DEVELOPMENT OF QUESTIONNAIRE

The general information, history of weaning, dietary intake, physical activity pattern and anthropometric measurements of the subjects were taken by developing the questionnaire .In the beginning of the study the experiment was carried out on ten subjects to test the reliability and validity of the questionnaire . Then the significant changes were made.

3.5 DIETARY COUNSELLING:

After collecting the initial information regarding the subjects of Gurgaon and Badshahpur, they volunteered to be part of the study for eradication of malnourishment and stunted growth through consumption of adequate diet. The mothers of the subjects were provided dietary counseling and behavioural guidance.

4. Results and Discussion :

The normal nutrient intake for children according to ICMR are given in Table.no.1.

The surveyed children were having low weight as shown in Table.no.4.2

Table.No.4.1: Recommended Dietary allowances for children's (ICMR) 1998

Nutrients	0-6 months	7-12 months	13-18 months	19-24 months

Calories	108/kg body wt.	98/kg body wt.	1240 kcal	1240 kcal
Carbohydrates	7g/kg body wt.	11.3g/kg body wt.	46g/kg body wt.	46g/kg body wt.
Protein	2.5g/kg body wt.	1.65/kg body wt.	22 g	22 g
Fat	-	-	25g	25g

*Sources: ICMR (1988)
Wt. - weight

Before the interventions the weight of the surveyed children was very less as compared to ideal weight. The data was collected from the Badshahpur and Gurgaon. In Badshapur mean total body weight of subjects of 0-6months is 2.37 ± 0.47, for 7-12 months is 4.35 ± 0.66, 12-18months is 6.5 ± 0.57 and for 19-24 months 7.54 ± 1.21 against the ideal body weight given by the ICMR. In Gurgaon mean total body weight of subjects of 0-6months is 4.75 ±1.25, 7-12months is 6.24 ± 1.65, 13-18 months is 7.35 ± 1.26 and 19-24months is 11.38 ± 1.69

Table no. 4.2. Mean total body weight of subjects belonging to areas of Badshahpur and Gurgaon.

Infants			
Age (months)	**Badhshahpur** (n=50)	**Gurgaon** (n=50)	**Ideal Weight ***
0-6	2.37 ± 0.47 (n=9)	4.75 ± 1.25 (n=10)	5.4 kg
7-12	4.35 ± 0.66 (n=11)	6.24 ± 1.65 (n=10)	8.6kg

13-18	6.5 ± 0.57 (n=15)	7.35 ± 1.26 (n=15)	12.2kg
19-24	7.54 ± 1.21 (n=15)	11.38 ± 1.69 (n=15)	15 kg

* Reference by ICMR

* n= total number of subjects of each group

Fig.4.1 Mean decrease in body weight with reference to mean ideal weight of children belonging to area of Badshahpur before the Interventions

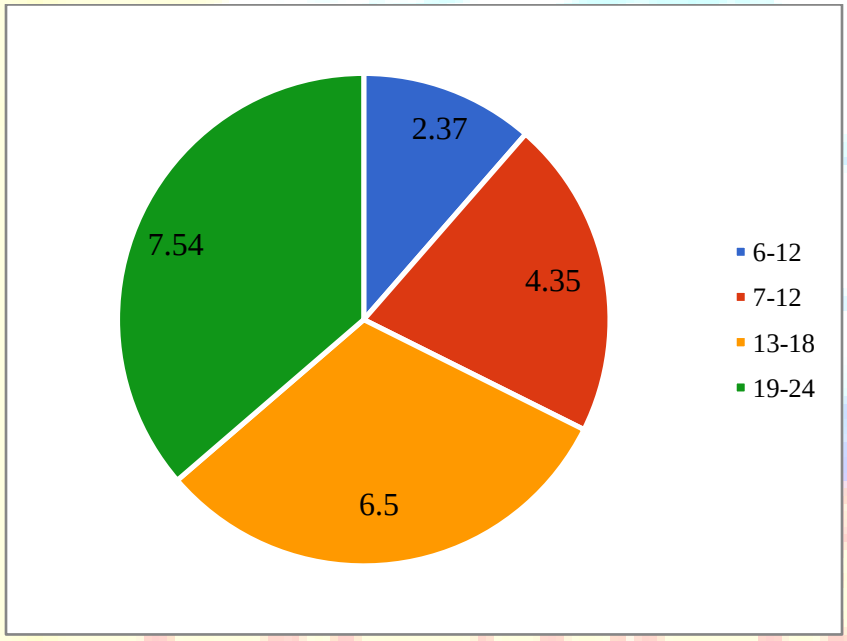
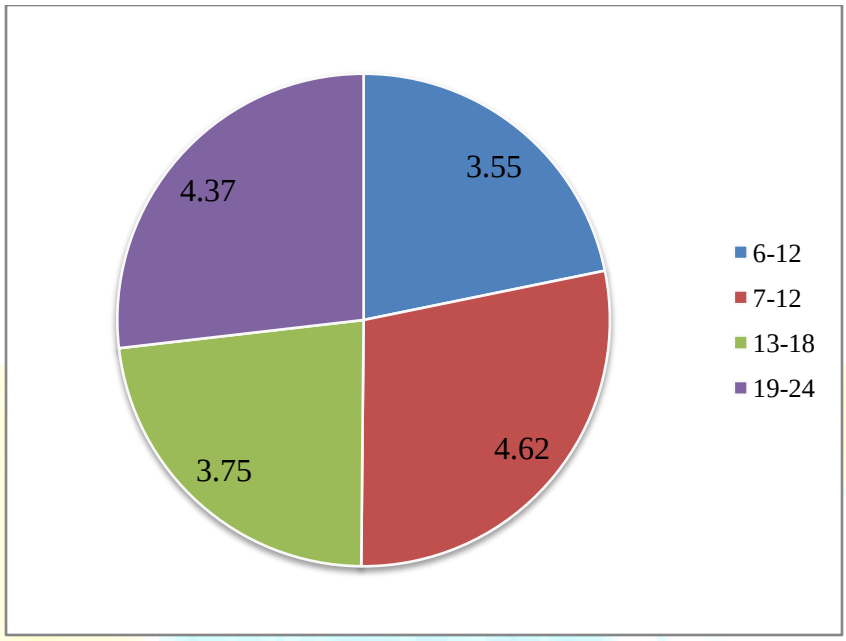


Fig.4.2 Mean decrease in body weight with reference to mean ideal weight of children belonging to area of Gurgaon before the Interventions



In Badshahpur mean value weight of subjects of 0-6months age group is 2.37 ± 0.47 and the decrease in weight from reference weight is 3.55 ± 1.52, in 7-12 months mean value weight of subjects is 4.35 and the decrease in weight from reference weight given by the ICMR is 4.62 ± 0.91,in 13-18 months mean value weight of subjects 6.5 ± 0.57 and the decrease in weight from reference weight is 3.75 ± 0.47, in 19-24 months mean value weight of subjects is 7.54 ± 1.21 and decrease in weight from reference weight is 4.37 ± 0.93.In Gurgaon mean value of weight of subjects 0-6months is 4.75 ± 1.2 and decrease in weight from reference weight 1.22 ± 1.67,in 7-12months mean value of weight of subjects is 6.24 ± 1.65 and decrease in weight from reference weight is 2.7+1.55, in 13-18 months mean value of subjects of weight is 7.35 ± 1.2 and the decrease in weight from reference weight 2.9 ± 1.27 and in 19-24months mean value of weight of subjects is 11.38 ± 1.69 and the decrease in weight from reference weight is 0.7 ± 1.57 respectively. The ideal body weight reference given by ICMR .

Table No. 4.3. Increase the body weight of subjects belonging to Badhshahpur and Gurgaon after the Interventions

This table no.4.3. indicates the increase in body weight of the children after the interventions. Acccording to the data , the mean increase in body weight was from 3-5 kgs in the low weight infants

Infants					
Age (months)	Badshahpur		Gurgaon		IBW
	Weight	Increase in wt.from reference wt.	Weight	Increase in wt. from reference wt.	
0-6	4 ± 2.2	3.75 ± 1.52	5.75 ± 1.9	2.22 ± 2.67	4-6kg
7-12	6.5 ± 2.5	3.62 ± 1.91	6.24 ± 1.65	3.27 ± 1.75	8-9kg
13-18	8 ± 3.2	5.85 ± 2.47	8.35 ± 2.2	3.9 ± 1.57	10kg
19-24	9.12 ± 2.7	5.37 ± 1.93	12.38 ± 2.7	1.7 ± 1.57	12kg

Table no.4.6. Mean total nutrient intake of subjects belonging to areas of

Badhshahpur and Gurgaon before the interventions

Infants								
Age	**Badhshahpur**				**Gurgaon**			
	Calories (kcal/d)	**Protein (g/d)**	**Carbs (g/d)**	**Fat (g/d)**	**Calories (kcal/d)**	**Protein (g/d)**	**Carbs (g/d)**	**Fat (g/d)**
0-6 months	277.3 ± 85.5	6.32 ± 1.05	29.25 ± 1.5	19.5 ± 4.20	546.2 ± 84.2	10.35 ± 3.22	52.5 ± 9.03	32.7 ± 6.4
7-12 months	129.3 ± 56.3	8.95 ± 5.51	10.1 ± 6.38	5.9 ± 1.91	254.4 ± 119.6	17.61 ± 9	17.69 ± 9.02	14.2 ± 9.19
13-18 months	196.5 ± 51.72	11.5 ± 1.91	18.5 ± 6.24	8.5 ± 3.28	247.9 ± 70.2	15.0 ±3 .7	24.4 ± 11.69	12.05 ± 3.97
19-24 months	355.3 ± 211.2	20.36 ± 8.22	38.81+ ± 2.13	12.93 ± 6.89	456 ± 303.7	25.7 ± 10.6	53.3 ± 52.41	15.5 ± 7.9

* g = gram *d = day kcal = kilo calories carbs = carbohydrates

Table no.4.9. Mean daily nutrient intake of subjects from Badhshahpur and Gurgaon after the Interventions

Infants								
Age (months)	**Badhshahpur**				**Gurgaon**			
	Calories (kcal/d)	**Protein (g/d)**	**Carbs (g/d)**	**Fat (g/d)**	**Calories (kcal/d)**	**Protein (g/d)**	**Carbs (g/d)**	**Fat (g/d)**
0-6	287.3 ± 95.5	9 ± 5.23	35.75 ± 4.5	22.5 ± 7.5	552.2 ± 89.2	18.35 ± 7.22	57.5 ± 12.03	38.7 ± 12.4
7-12	135 ± 67	15.75 ± 10	18 ± 8.57	8.91 ± 5.91	262.4 ± 123.6	25.81 ± 15	25.69 ± 15.02	20.2 ± 14.29
13-18	218.5 ± 63.7	25.5 ± 5..5	22.86 ± 9	12 ± 7.5	255.9 ± 73.2	25.07 ± 5.7	29. ± **19**.69	17.05 ± 7
19-24	377 ± 218	35.7 ± 15	45.81 ± 40.17	17.8 ± 8.89	463 ± 311.7	30.7 ± 17.6	59.3 ± 60.41	20.5 ± 9.

The mean intake of cereals, pulses, dairy products, fats and oils, sugar and oilseeds was low but after intervention the mean intake of cereals, pulses, dairy products, fruits, green leafy vegetables were increased.

Weaning is one of the milestones of child's development process and it is very important for child's growth and development. Breast milk does not provide all the nutrients for growing baby's needs after 6 months, in particular iron and calories that solid foods provides, in fact solid food should be introduced during this period to meet baby's requirement through weaning process. Hence weaning provides nutritional balance for proper growth and development of the child. Improper weaning not only causes allergy, regurgitation, vomiting, diarrhea, abdominal colic, but also causes of growth failure leading to kwashiorkor.

After the 3 months nutritive intake by subjects. The proteins present in the diet should be of

high nutritive value. Milk proteins are commonly used as skim milk powder is readily at low cost. Rapid recovery has been reported on protein intakes of 3-5g/kg body weight in the form of milk proteins. In the present study mean weight of subjects belonging region of Badhshahpur and Gurgaon of food intake was 75±15.81 and after the intervention was 80±19.81 respectively.

Conclusion

The counseling was provided in the form of discussions (group and individual), charts, pamphlets, printed material and diet manual in the form of a booklet. This booklet included information on calorific value of commonly consumed foods, lists of food to be eaten, limited and avoided, food exchange lists and calorie content of some common dishes/snacks. In addition to it the tips for healthy eating low-calorie and low-fat cooking were also given. Further more sample menus, with special emphases on menus for breakfast were given so as to select a calorie balanced diet with a rich variety.

Healthy children are an asset to future generation. Adequate physical, mental and social well being is the sign of good health. Infant mortality rate remains highest in India, and malnutrition remains one of the major cause.

The emphasis was primarily laid on lessening the amount of fat, sugar, salt and refined cereals in the diet and on the increase of consumption of fiber, in the form of whole cereals, fruits and vegetables, especially the green leafy variety. Besides the subjects were encouraged to study the guidelines regularly and to clear the queries by the investigator. In addition, the queries of all the subjects were entertained through telephones or E-mails. Except the above groups all those mothers who were interested were counseled (Dietary and Behavioural) after the completion of study period of three months.

Child survival strategies usually recommend exclusive breast feeding for the first four months of life but reports on child feeding practices from around the world show that exclusive breast feeding is rare and that early supplementation with water and other fluids is common. Nagra.et al from Faisalabad, Pakistan report that of nine hundred sixteen infants followed from birth to twelve months of age, sixty per cent were receiving supplementary milk feeds by three months of age.(Badruddin,1992)

Mothers of infants may have inadequate information and knowledge regarding feeding of infants with bowl (katori) and spoon feeding. The diet usually consists of skim-milk powder (re-

constituted),sugar, cooked cereals and kheer. Fat is introduced in the diet from the second week of treatment. Vegetables protein mixtures along with cereals, kheer have proved useful in the treatment of mild to moderate causes of malnourishment. The study can be replicated on a large sample using random sampling technique. In this chapter the investigator has deal with the various limitations; the experience of investigator during the study has helped to give suggestions and recommendations for further studies.

References

Bennett AE, O'Connor AL, Canning N, Kenny A, Keaveney E, Younger K, Flynn MA.(2012) ; Weaning onto solid foods: some of the challenges. Ir Med J. 2012 Sep;105(8):266-8

Hendricks KM, Badruddin SH. Weaning recommendations: the scientific basis, Nutr Rev. 1992 May;50(5):125-33.

Khan Asif , Radha (1998) : Breast feeding and weaning practices of mothers in a rural area – a cross-sectional study ; Int J Med Sci Public Health. 2(4): 857-86

World Health Organization: Collaborative study on Breast feeding, a Report, WHO, Geneva.

WHO. Child and Adolescent Health and Development, Global strategy for infant and young child feeding.

Walker, C. (1995) When to wean: whose advice to mothers find helpful. Health Visitor, 59, 41–44.

World Health Organization. Weaning from breast milk to family food. Geneva, 1988.

WHO. Fifty-fourth World Health Assembly. WHA54.2. Agenda item 13.1. Infant and young child nutrition.

1. **WHO/NUT/98**.1. *Complementary feeding of young children in developing countries: a review of current scientific knowledge*. Geneva: World Health Organisation, 1998.