

VALUE ADDITION OF COMMERCIAL WEANING FOOD

Dr. Sweta Vyas

College Lecturer, Department of Home Science,
Government Girls College, Nathdwara, Rajsamand (Raj.)

ABSTRACT

The consumption of CWF is increasing day by day. The present study was conducted on 100 infants (6-12 months age) of mothers aged 20-35 yrs. residing in Udaipur city and on 20 shopkeepers of markets of Udaipur. A pretested interview schedule was used to collect information from mothers about infant feeding practices and background information. It was found that majority of families were of hindu religion. Almost all the parents were literate and majority of them were highly educated. Feeding practices revealed that colostrum was discarded by 40 per cent mothers due to various reasons and 80 per cent gave different types of prelacteal feeds. Seventy percent mothers were giving breast milk at the time of study. Semisolids and/or solid foods prepared at home and/or purchased from the market either as ready to eat (75 %) or ready to prepare i.e. CWF (70 %) were also given to infants. CWF of different brands of Cerelac (47 %) and Farex (19 %) were given to majority of infants. Thirteen CWF sold in the markets of Udaipur city were studied for their nutritive value, cost and feeding schedule. All the foods were ISI marked with varied cost and nutritive value. Intake of CWF per serving size recommended by manufacturers for an infant of 6-12 months ranged from 25-50g with with 1-2 or 3-4 feeds per day in addition to milk. It means a mother will feed 50-100g of CWF per day which will cost her Rs. 16-18/day. Average nutritive value of CWF (per 100g) compared with recommended dietary allowances revealed that energy was in inadequate amount protein in adequate amount and, vitamin and calcium in more than adequate amount. When compared with home made foods, the CWF were found to be costlier, shorter shelf life, and with almost similar nutritional value per serving of the weaning food.

Keywords: Commercial Weaning Food, Nutritive Value, Indian Foods, Feeding Practices

1. INTRODUCTION

The term weaning is used to denote the process in which an infant changes from breast milk to a mixed diet, starting with the small quantity of complementary foods given regularly in-increasing amount until replacement of milk is virtually completed(1). Homemade or commercial

weaning foods (CWF) i.e. value added foods be given to infants from 4 months onwards to fulfill the demand of nutrients for their proper growth and development.

In well to do societies, value added commercial infant foods are widely used. They are convenient to use but manufacturer's are often more concerned with profit and acceptability by the mother than with nutritional value(2). Value addition encompasses whole of the processing in which the raw foods are subjected to technological modifications either for converting them into ready to use or eat foods by eliminating laborious household procedures thus enhancing monetary value at consumer level and increased profit value at producer's level(3). Very few researches have been reported on value added commercial weaning foods. Hence, it was thought worth while to find out the adequacy of nutrients provided by commercial weaning foods with respect to their cost.

2. METHODS

The present study was conducted on one hundred infants (6-12 months age) of the mothers who were 20-35 years age, residing in Udaipur city atleast from last five years, and were willing to participate in the study. Twenty five infants from each area i.e. north, south, east and west of Udaipur city was selected purposively irrespective of their sex. A pretested interview schedule was used to collect the information from mothers about infant feeding practices, and background information of the parents i.e. religion, family type, education, occupation and food habits.

Along with the mothers, 20 shopkeepers (ten pharmaceutical and ten general) were also interviewed to get the information about commercial weaning foods sold in Udaipur city. From the containers of the value added commercial weaning foods, ingredients used in the preparation of weaning foods, their nutritive value along with feeding schedule and cost marked were noted. The information collected was then worked out to same units for comparison if required. Commonly given home made weaning foods were prepared in the laboratory and their nutritive value was calculated using the food composition tables.(4)

3. RESULTS AND DISCUSSIONS

3.1 BACKGROUND INFORMATION

Majority of the families were of hindu religion, except 3 families, who belonged to muslim religion. Sixty per cent of the families were joint and 40 per cent nuclear and 82 per cent of the families were vegetarian, 15 per cent ovo-vegetarian and only 3 per cent non-vegetarian. The mean per capita income calculated by considering income from all the sources was Rs. 1825 + 2 SD per month. Income of the most of the families (95 %) ranged between mean - 1 SD to Mean + 1 SD. Almost all the parents were literate and majority of them were highly educated i.e. either

graduate or possessing a professional degree. Infants were evenly distributed in 6-9 & 9-12 month age groups and were immunized as per the immunization schedule.

3.2 FEEDING PRACTICES

The feeding practices revealed that colostrum was discarded by 40 per cent mothers due to weakness (13%), tradition (12%), elders advice (8%), difficult to digest (4%), not good for baby (2%) and inconvenient in feeding (1%), Eighty per cent mothers gave prelacteal feeds such as janam ghutti, glucose water, honey, top milk, tea, etc. All the mothers gave breast milk to their babies from birth. Seventy per cent mothers were giving breast milk at the time of study and remaining discontinued. Fifteen per cent were giving exclusively breast milk and remaining were following a practice of giving breast milk and/or top milk (80 %), liquids other than milk (77 %) and solid and semi-solid foods (82 %). Liquids other than milk such as fruit juice (75 %), dal soup (71 %), vegetable soup (49 %) were mainly given to infants.

Semi-solids and/or solid foods prepared at home and/or purchased from the market either as ready to eat (75 %) or ready to prepare i.e. CWF (70 %) were also given to infants. Most commonly given home made weaning foods were well cooked dal (69 %), rice (66 %), fruits (65 %), khichadi (65 %), cooked vegetables (40 %) and soft chapati (44 %).

CWF of different brands of Cerelac (47 %) and Farex (19 %) were given to majority of the infants (Table 1). Most of the motehrs did not read the instructions provided on the containers nor fed prescribed quantity of CWF to their babies although these mothers were highly educated. Mothers were preparing CWF as explained to them by neighbourers/friends/family members. On an average 10 g of CWF was used to prepare one serving of feed. Number of times CWF given to infants varied from day to day and was ranging from as low as 1 feed to as high as 4 feeds per day.

Table 1: Commercial weaning foods given to infants

S.No.	Commercial weaning foods	Percentage (n=100)
(i)	Cerelac (47 %)	
	Cerelac - apple	20
	Cerelac - wheat	16
	Cerelac - egg	4
	Cerelac - orange	5
	Cerelac - vegetable	2
(ii)	Farex (19 %)	

	Farex - wheat	7
	Farex - fruit	4
	Farex - rice	4
	Farex - egg	3
	Farex - vegetable	1
(iii)	Nestum - rice	3
(iv)	Dexolac - rice	1
	Total	70

3.3 MARKET SURVEY OF COMMERCIAL WEANING FOODS

The market survey revealed that there are 13 types of commercial weaning foods (CWF) sold in Udaipur city. All the brands of CWF were providing information on containers about its net weight, cost, standard mark, ingredients used, nutritive value, feeding schedule and method of preparation.

3.3.1. Composition and Cost

The available containers were of net weight 400 g and ISI marked. The cost and nutritive value calculated per 100 g for each CWF are presented in Table 2. The cost ranged from Rs. 107- to Rs. 18.8 for CWF 13. The lowest cost for CWF 12 is due to the fact that milk solids have not been added in its preparation and manufacturer has recommended to prepare it with milk which will subsequently increase its cost.

Cereal flour, milk solids, sugar, minerals and vitamins have been used in the preparation of all the CWF studied. One or two of the other foods such as fruit powder, vegetable powder, egg powder, vegetable fat and green gram powder have been added to develop specific type of food except CWF 2, 3, 12 and 13.

3.3.2 Nutrient composition and feeding schedule

Nutritive value of CWF varied from food to food even among different brands of a company (Table 2). Proximate principles i.e. energy, protein, fat, carbohydrate, ash and moisture varied from 373 to 431 kcal, 6 to 16.5 g, 0.6 to 11.5 g, 65.5 to 86 g, 0.7 to 4.2 g and 1.0 to 4.0 g respectively per 100 g of CWF. Similarly other contents also varied which ranged from 200 to 523.5 meg for vitamin A, 120 to 750 mg for calcium, 25 to 270 mg for sodium and 7.5 to 18.5 mg for iron. Other vitamin and mineral contents also varied from food to food.

Table 2: Cost and Nutritive value of commercial weaning foods (per 100 g)

Details	Commercial Weaning foods													Mean	% RDA
	1	2	3	4	5	6	7	8	9	10	11	12	13		
Energy (kcal)	408	404	417	431	395	419	413	413	419	419	406	373	413	410	44
Protein (g)	15.5	12.0	15.5	16.5	15.5	13.5	15.5	15.5	15.5	15.5	15.5	6.00	13.5	14.3	100
Fat(g)	9.0	7.5	10.0	11.5	7.5	9.0	9.0	9.0	9.0	9.0	9.0	0.6	7.5	8.3	+
Carbohydrate (g)	66.2	72.2	66.2	65.5	66.3	68.9	67.4	67.4	69.0	69.0	65.7	86.0	72.5	69.4	+
Vitamin A (meg)	362	360	360	360	360	350	350	200	350	350	350	200	524	344	115
Total Ash (g)	3.5	3.5	3.5	3.5	4.2	2.7	3.2	3.2	2.7	2.5	3.2	0.7	3.5	3.1	+
Calcium (mg)	750	750	750	750	750	570	700	460	470	465	400	120	750	591	118
Iron (mg)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	18.5	10.0	8.5	+
Sodium (mg)	-	-	-	-	-	200	210	180	150	170	270	25	184	174	+
Moisture (g)	4.0	3.0	3.0	1.0	3.0	2.5	2.5	2.5	2.5	2.5	2.5	4.0	3.0	2.8	+
Cost (Rs.)	16.8	15.0	15.0	17.5	16.0	14.3	15.5	15.5	17.8	16.3	17.0	10.0	18.8		

Vitamin A content given in I.U. have been converted to meg.

+ RDA not recommended.

- Indicate that the information is not given on the constainers.

Table 3: Feeding schedule of commercial weaning foods

<i>Details</i>	<i>Commercial Weaning foods</i>												
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
<i>Amount/feed (g)</i>	50	50	50	50	50	25	25	25	25	25	25	20	40
<i>Dilution with water (ml)</i>	125 (1 cup)	125 (1 cup)	125 (1 cup)	225 (1/2 cup)	225 (1/2 cup)	75	75	75	75	75	75	200ml (1/4 cup) (milk)	160 (1 cup)
<i>Number of feed/day</i>	2	1-2	1-2	1-2	1-2	3-4	3-4	3-4	3-4	3-4	3-4	1-2	1-2
<i>Amount per day*</i>	100	50-100	50-100	50-100	50-100	75-100	75-100	75-100	75-100	75-100	20-40	20-40	40-80

**In addition to milk.*

Amounts of CWF recommended by manufacturers for infants aged 6-12 months ranged from 25-50 g with 1-2 or 3-4 feeds per day which is equivalent to 50-100 g/day in addition to breast milk intake (Table 3). The mean nutritive value considering all the CWF surveyed was calculated and expressed as percentage of recommended dietary allowances(4) for infants of 6-12 months age (Table 2). It was found that if mothers feed 100 g of CWF per day than infant will get protein (100 %) and folic acid (92 %) in adequate amounts, energy in inadequate amount (44 % of RDA), while vitamin A and calcium in more than the adequate amounts (115 % & 395 % respectively of RDA).

According to WHO, breast fed children in developing countries, aged 6-8 months and 9-11 months need 269 and 451 kcal/day respectively from complementary foods. But the CWF studied were providing on an average 410 Kcal per day which is more than adequate for 6-8 months and inadequate for 9-11 months infant if these foods are given to infant as prescribed by manufacturers.

Therefore, if mothers feed CWF in the quantities as recommended by manufacturers in addition to milk, the infant will get many of the nutrients in inadequate amounts and will spend about 16-18 Rs. per day on commercial weaning foods.

Home made weaning foods

Most commonly consumed home made weaning foods were prepared in the laboratory. On the basis of the raw amounts used in the preparation of 100 g of a cooked weaning food, the nutritive value was calculated using the food composition tables (4). Commonly consumed home made weaning foods were chapati with dal/vegetable/milk, khichadi, dalia, halwa and banana. The amount of these foods consumed at a time varied with combination and from food to food (Table 4).

Comparison of home made and commercial weaning foods

Nutritive value and cost of home made and CWF in one serving given by the majority of the mothers were compared (Table 4). Energy, protein and cost of home made weaning foods ranged from 26 kcal (dalia with milk) to 162 kcal (chapati with milk), 0.3 g (banana) to 6.4 g (rice with ghee and sugar) and Rs. 0.10 (well cooked moong dal) to Rs. 1.40 (chapati with milk). Whereas these values for CWF ranged from 41 to 68 kcal, 1.3 to 2.7 g and Rs. 1.4 to 2 respectively. These findings show that home made foods are better than CWF. Similar results have been reported by Prakash and Indira(6). They reported that weaning the child on home processed foods will cost 25 per cent that of commercial preparations and suggested that, it is not essential to wean the baby on commercial weaning foods.

Table 4: Per serving nutritive value and cost of commonly consumed commercial and home made weaning foods

S. No.	Name of weaning food with cooked amount per serving	Nutritive value		Cost (Rs.)
		Energy (KCal)	Protein (g)	
I. Home made				
1.	1/2 Chapati* with 50g dal (23)	106	3.1	0.40
2.	1/2 Chapati* with 50 gm veg. (23)	92	2.0	0.50
3.	1/2 Chapati* with 100 ml sweetened milk (23)	162	4.7	1.40
4.	25g rice with ghee and 5g sugar (51)	57	6.4	0.20
5.	25g rice with ghee & 25g dal (51)	63	1.2	0.25
6.	25g Khichadi with 5g sugar (52)	51	0.7	0.35
7.	25g dalia (28)	39	0.5	0.20
8.	20g dalia with 5 ml milk (46)	26	0.4	0.20
9.	25g Halwa (28)	55	1.0	0.20
10.	50g well cooked mung dal (61)	52	1.6	0.25
11.	50g Banana (26)	58	0.6	0.50
II commercial weaning foods**				
1.	40g CWF 6 without milk (15)	42	1.3	1.40
2.	40gCWF6withmilk(15)	62	2.3	1.70
3.	40g CWF 7 without milk (20)	41	1.6	1.50
4.	40g CWF 7 with milk (20)	61	2.6	1.85
5.	40g CWF 3 without milk (7)	48	1.8	1.70
6.	40g CWF 3 with milk (7)	68	2.7	2.00

Values in parenthesis are the percentage of mothers providing weaning foods.

* 1 chapati = 30 g

**10g of commercial weaning food+30g of water/milk=40g of prepared CWF.

REFERENCES

1. Grenier T. The complementary foods problem. Improving young child feeding in Eastern and Southern Africa. In: Household Level food technology, Proceedings of a workshop held in Nairobi, Kenya, 12-16 October, 1987, UNICEF, New York, U.S.
2. Jelliffe DB. World trends in infant feeding. *Am. J. Cl. Nutr.* (1976) ; 29 (11) : 1227-1235.
3. Choudhry M. Procedures for domestic value addition in food grains, National Training Course on Post Harvest Technology for grains. December 14-21, 1998.
4. Gopalan C, Ramasastri BV, Balasubramanium SC. Nutritive value of Indian Foods. Revised and updated by Narsingha Rao BS, Deosthale YG, Pant KC. NIN, ICMR, Hyderabad, 1991.
5. Prakash J, Indira C.S. Nutritonal quality and cost of some processed health foods and infant foods. *Proc. Nutr. Soc. India, NIN.* 1985 ; 31 : 109.