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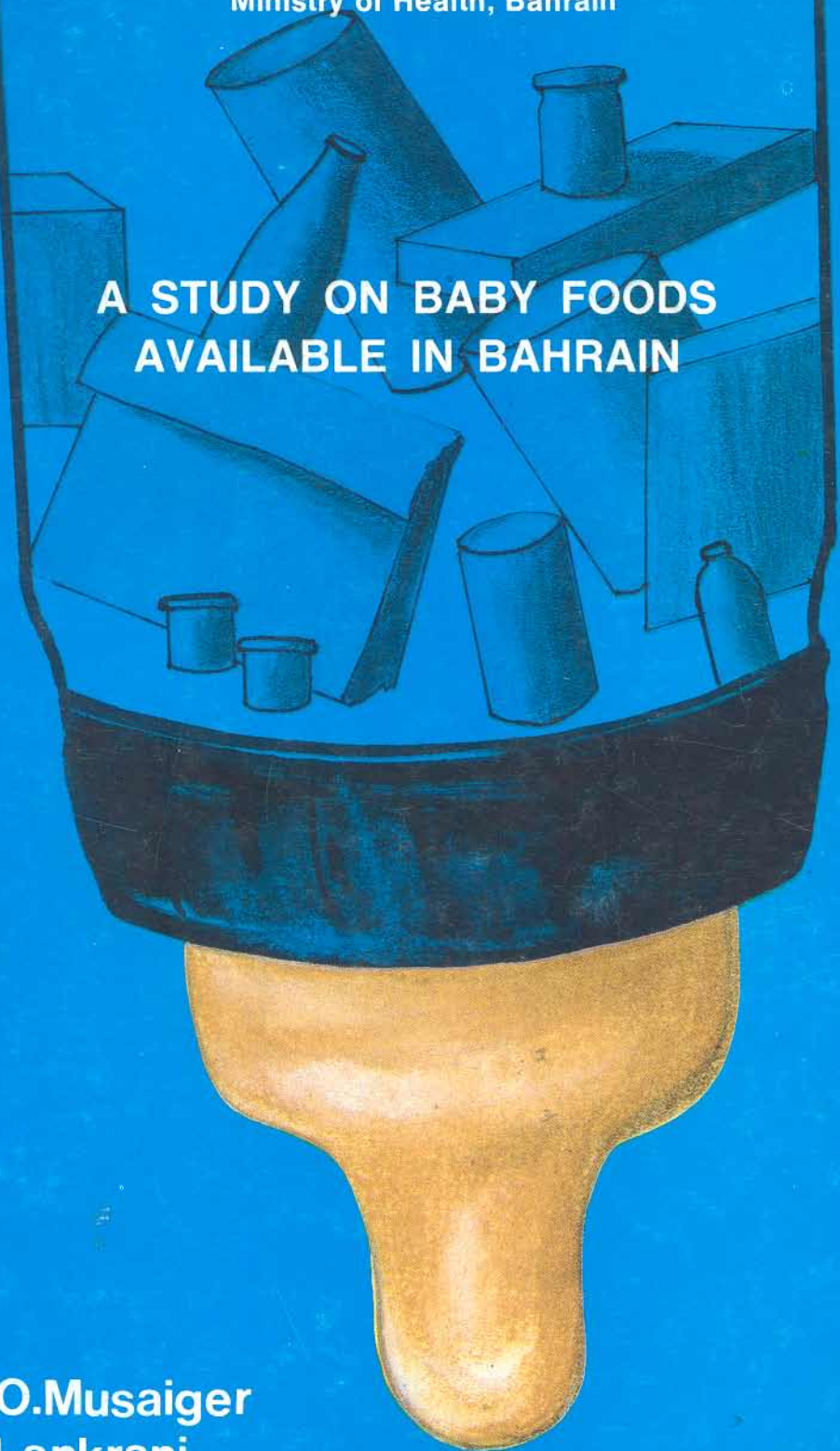

A STUDY ON BABY FOODS AVAILABLE IN BAHRAIN

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A STUDY ON BABY FOODS AVAILABLE IN BAHRAIN

(Labelling information, nutrient composition and cost)

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CONTENT

INTRODUCTION

The state of Bahrain imports annually more than 1900 tonnes of powdered milk. Nowadays the consumption of milk and milk products has increased rapidly. Consequently the expenditure on milk and milk products has risen. For example, in 1974 it was estimated that the annual household expenditure on milk and milk products was 80 Dinars[1], increasing to 309 Dinars in 1984[2]. However, a high proportion of the powdered milk consumed is fed to infants. In 1978 it was reported that the Ministry of Health alone spent 29,592 Dinars (78493 US Dollars) for purchasing infant formula for maternity hospitals and health centers[3].

A high percentage of mothers in Bahrain start to use infant formula either to supplement breast milk or to replace it, despite that these mothers can breast feed their infant sufficiently . The availability of a wide variety of infant formula and other baby foods in the market are some of the reasons which influence the Bahraini mothers to use these commercial foods. In addition there are no requlations and legislations concerning the marketing of baby foods in Bahrain. Nevertheless, the question arises; what are the properities of the canned baby foods available in the market of Bahrain? This survey was attempted to answer this question.

OBJECTIVES

The main objectives of this survey were:

1. To study the information declared on the label of canned baby foods that are available in the market of Bahrain.
2. To study the cost of the different brands of canned baby foods.
3. To study and compare the mineral and vitamin composition of infant formula (based on declared information).
4. To determine and compare the cost of protein and calories in infant formula and canned baby cereal.

METHODS

The survey was carried out through collection of all baby foods available in the market of Bahrain, during April, 1984. The supermarkets, pharmacies and groceries were visited by a nutritionist. The collection of samples was done by selecting one item from each brand name of infant formula and other baby foods. Different mixtures of canned baby cereals and strained baby foods from each brand name were also included.

The retail price of infant formula and canned baby cereals was obtained. All the information declared on the labels of the selected baby foods was studied and analysed.

During the collection of samples there were 203 types of baby foods available in the market. Of whom 17 were infant formulas and 37 were cereal based products. Table 1 shows the type and number of baby foods included in the survey.

Table (1): Type and number of baby foods included in the survey.

Baby food	No.	%
Infant formula	17	8.4
Cereal based products	19	9.4
Powdered cereals & vegetables	5	2.5
Powdered cereals & fruits	13	6.4
Strained meat & chicken	34	16.7
Strained vegetables	18	8.9
Strained fruits	45	22.2
Dessert	23	11.3
Fruit juice	26	12.8
Biscuit	3	1.4
Total	203	100.0

RESULTS AND DISCUSSION

1. INFORMATION DECLARED ON THE LABELS OF BABY FOODS AVAILABLE IN THE MARKET OF BAHRAIN.

1.1. Commercial definition

It was found that all the 203 varieties of baby foods studied were commercially defined on their labels.

1.2. Production date

In many countries production date is not mandatory, the expiry date is sufficient. In Bahrain, the labelling regulation[4] has recommended that production and expiry dates should be declared on the label of prepackged foods. As shown in Table (2) the production date was declared on the labels of all infant formulas and canned baby cereals studied.Production date was not declared on the labels of many other baby foods. For instance 83% of strained vegetables and 62%of fruit juices had no production dates on their labels.

The purpose of date marking is providing information about the quality of product, assuming that it has been properly stored[5]. In Bahrain many grocery shops have no good storage facilities.Additionally,the high humidity and high temperature of the Bahraini climate may affect the shelf life of the product. For these reasons production date is important in

order to know the durability of the products for consumption, especially when the date of minimum durability (best before) is put according to the climate condition of the country of origin, which, in many cases, is not similar to that in the country of import.

1.3. Expiry date

According to the Codex Alimentarius the expiry date is the date which shows the end of the period of selling the product (under stated storage condition)[5]. The consumer in Bahrain has become more aware of the expiry date of the product. In fact the consumer neglects much other important information such as ingredients and nutrition information and concentrates on the expiry date. The pressure from consumers regarding this matter and the recommendation of the authoritative bodies (Ministry of Health and Ministry of Commerce and Agriculture) have forced the food manufacturers to declare the expiry date on almost all the food labels. Table (3) clearly illustrates that only 4.9% of baby foods studied had no expiry date on their labels.

1.4. Arabic instruction

The Codex Alimentarius Commission[5] recommended that the language used on the label should be a language acceptable to the country in which the food is intended for sale. For the

State of Bahrain, the language used on the lable should be Arabic, in addition to another acceptable language(English). Unfortunately,45% of the labels of baby foods studied were written only in English (Table 4).Most of the infant formula and baby cereals have some information in Arabic on their labels. But this was not the case with strained meat, vegetables and fruits, dessert and fruit juices;where more than 50% of these products had no information in Arabic on their labels.

An interesting fact observed in this study is that most of the Arabic information was typically translated from English. This kind of translation is not well understood by the public because of use of many strange Arabic words, i.e., words which are not commonly used by the public. Clear and understandable Arabic information should be declared on the labels. This can be achieved by joint efforts between professional staff, and somebody who understands Arabic.

1.5. Net content

The net contents (either by volume or weight) were declared on all the baby foods studied.

Table (2)

The percentage of declaration of production date on the lable of baby foods available in Bahrain.

Baby food	Total No.	Production date			
		Declared		Not declared	
		No.	%	No.	%
Infant formula	17	17	100.0	-	-
Cereal products	19	17	89.5	2	10.5
Powdered cereals & vegetables	5	5	100.0	-	-
Powdered cereals & fruits	13	13	100.0	-	-
Strained meat & chicken	34	15	44.0	19	56.0
Strained vegetables	18	3	17.0	15	83.0
Strained fruits	45	27	60.0	18	40.0
Desserts	23	6	26.0	17	74.0
Fruit juice	26	10	38.0	16	62.0
Biscuit	3	3	100.0	-	-
Total	203	146	71.9	57	28.1

Table (3)

The percentage of declaration of expiry date on the label of baby foods available in Bahrain.

Baby food	Total No.	Expiry date			
		Declared		Not declared	
		No.	%	No.	%
Infant formula	17	17	100.0	-	-
Cereal products	19	19	100.0	-	-
Powdered cereals & vegetables	5	5	100.0	-	-
Powdered cereals & fruits	13	13	100.0	-	-
Strained meat & chicken	34	32	94.0	2	6.0
Strained vegetables	18	17	94.0	1	6.0
Strained fruits	45	45	100.0	-	-
Desserts	23	23	100.0	-	-
Fruit juice	26	20	77.0	6	23.0
Biscuit	3	3	100.0	-	-
Total	203	193	95.1	10	4.9

Table (4)

The percentage of declaration of Arabic instruction on the label of bbay foods available in Bahrain.

Baby food	Total	Arabic instruction			
		Declared		Not declared	
	No.	No.	%	No.	%
Infant formula	17	16	94.1	1	5.9
Cereal products	19	17*	89.0	2	11.0
Powdered cereals & vegetables	5	5	100.0	-	-
Powdered cereals & fruits	13	13*	100.0	-	-
Strained meat & chicken	34	17	50.0	17	50.0
Strained vegetables	18	3	17.0	15	83.0
Strained fruits	45	17	38.0	28	28.0
Desserts	23	9	39.0	14	61.0
Fruit juice	26	10	38.0	16	62.0
Biscuit	3	3	100.0	-	-
Total	203	111	54.7	92	45.3

* One product had only the ingredient in Arabic.

1.6. List of ingredients

Only two products had no information on the ingredients, one of them was infant formula, while the second was a dessert product.

1.7. Baby picture

A picture of a healthy smilling baby is one of the concepts to attract the mother to purchase baby products. The majority of the mothers in Bahrain are illiterate and little educated, so the baby picture is the only way for such mothers to know whether this product concerns their babies or not . The code of Marketing of Human Milk Substitute[6] has reported that neither the container nor the lable of infant formula should have pictures of infants. However, the present study showed that 41% of infant formulas have a baby picture on their labels. Also it was found that the baby picture was shown on almost all baby foods studied (see Table 5) .

1.8. Breast-feeding statement

An attempt was made to study whether the label contained any statement advocating breast-feeding over infant formula and other baby foods. Table 6 shows that breast-feeding statements were printed only on infant formula lables (88% of the infant formulas), while all the other baby foods had no

statement whatsoever regarding breast-feeding. The Code of Marketing[6] recommends that a statement of the superiority of breast-feeding should be declared on the label of infant formula. However, we believe that such a statement should be declared on other baby foods such as canned baby cereals. This is because most of the mothers in Bahrain are using these foods at an early month of infant life; thus an encouraging statement saying that"these foods should be used as a supplement to breast-feeding",would be very helpful to the mother to continue breast-feeding. It was observed that once the mother starts using the baby cereals and other baby foods, she discontinues breast-feeding. Therefore we strongly stress that a clear statement such as " certain baby foods cannot replace breast-milk but serve only as supplementary foods " , should appear on labels for a country like Bahrain.

1.9 Nutrition information

What kind of nutrition information should be declared on the label of baby foods ? Nutrients content would be a good guide for health workers and nutritionists, but would this information help most consumers to prepare a balanced diet for an infant ? The nutrition information printed on the labels of baby foods is too scientific, and in many cases is difficult for the consumers to understand. In fact, in some

circumstances, it is misleading. From our experience we have found that the consumers can not interprate correctly the nutrition information, even if they are well educated. For instance, many consumers could not distinguish whether the nutrietns content is written for solid or liquid matter (after preparation). They do not know what is meant by gram per 100 grams; they think that the amount of nutrients declared on the label are for the whole food in the can, instead of only 100 grams of the food in the can. Grose[7] has reported that most individuals do not want precise scientific data, because however intelligent the individuals may be, they do not have the time or inclination to master such data.

The present study showed that most of the nutrition information declared on the labels was nutrient composition of the food. Table(7)illustrates the percentage of declaration of nutrition information on the label of baby foods. All the infant formula, canned baby cereal products and biscuit had nutritive value information on their labels. Nutrition information was not declared on some other baby foods.Grose[7] believed that the listing of nutrients in processed foods could only mislead people into thinking they are of better food value than fresh foods. In Bahrain, we noticed that

consumers purchase certain weaning food because of the list of nutrients which includes vitamins. However, we know that many local fresh foods contain higher amounts of vitamins than that present in the weaning foods; in addition to the lower cost of the fresh foods.

1.10. Age of child

A recent study[8] carried out in Bahrain showed that a high percentage of the mothers introduced bottle-feeding (27%) at an early age in the infant's life (less than 3 months). For this reasons mothers should know at what time the solid food should be introduced to the infant, and what kind of foods shoud be given to the infant. We strongly believe that information regarding the age of infants to recieve such food should be declared on the lable of baby foods. From Table (8) we notice that infant formula and canned baby cereals had some information concerning the recommended age in which the infant could be given the foods. Sadly, all the other foods had no such information.

It is interesting to note that the information declared regarding the recommended age of infant (in many cases) is not clear or is misleading.

Table (5)

The percentage of printing of baby picture on the label of baby foods available in Bahrain.

Baby food	Total No.	Baby picture: Printed No.	Printed %	Not printed No.	Not printed %
Infant formula	17	7	41.0	10	59.0
Cereal products	19	14	74.0	5	26.0
Powdered cereals & vegetables	5	3	60.0	2	40.0
Powdered cereals & fruits	13	10	77.0	3	33.0
Strained meat & chicken	34	34	100.0	-	-
Strained vegetables	18	18	100.0	-	-
Strained fruits	45	38	84.0	7	16.0
Desserts	23	23	100.0	-	-
Fruit juice	26	26	100.0	-	-
Biscuit	3	3	100.0	-	-
Total	203	176	86.7	27	13.3

Table (6)

The percentage of declaration of breast-feeding statement on the label of baby foods available in Bahrain.

Baby food	Total No.	Breast-feeding statement			
		Declared		Not declared	
		No.	%	No.	%
Infant formula	17	15	88.0	2	12.0
Cereal products	19	-	-	19	100.0
Powdered cereals & vegetables	5	-	-	5	100.0
Powdered cereals & fruits	13	-	-	13	100.0
Strained meat & chicken	34	-	-	34	100.0
Strained vegetables	18	-	-	18	100.0
Strained fruits	45	-	-	45	100.0
Desserts	23	-	-	23	100.0
Fruit juice	26	-	-	26	100.0
Biscuit	3	-	-	3	100.0
Total	203	15	7.4	188	92.6

Table (7)

The percentage of declaration of nutrition information on baby foods available in Bahrain.

Baby food	Total No.	Nutrition information			
		Declared		Not declared	
		No.	%	No.	%
Infant formula	17	17	100.0	-	-
Cereal products	19	19	100.0	-	-
Powdered cereals & vegetables	5	5	100.0	-	-
Powdered cereals & fruits	13	13	100.0	-	-
Strained meat & chicken	34	2	6.0	32	94.0
Strained vegetables	18	14	78.0	4	22.0
Strained fruits	45	28	62.0	17	38.0
Desserts	23	17	74.0	6	26.0
Fruit juice	26	14	54.0	12	46.0
Biscuit	3	3	100.0	-	-
Total	203	132	65.0	71	35.0

Table (8)

The percentage of declaration of age of child on the label of baby foods available in Bahrain.

Baby food	Total	Age of child			
		Declared		Not declared	
	No.	No.	%	No.	%
Infant formula	17	17	100.0	-	-
Cereal products	19	16	84.0	3	16.0
Powdered cereals & vegetables	5	5	100.0	-	-
Powdered cereals & fruits	13	11	85.0	2	15.0
Strained meat & chicken	34	-	-	34	100.0
Strained vegetables	18	-	-	18	100.0
Strained fruits	45	-	-	45	100.0
Desserts	23	1	4.0	22	96.0
Fruit juice	26	-	-	26	100.0
Biscuit	3	2	67.0	1	33.0
Total	203	52	25.6	151	74.4

1.11. Storage instructions

Although most of the households in Bahrain have refrigerators, the use of the refrigerator is not correct. Many mothers do not know where to store baby foods after opening. Additionally the unfavarouble climate (high humidity and high temperature) provide unsuitable conditions for storage of the foods outside the refrigerator. Therefore information regarding the best place or temperature for storing the baby foods especially after opening is essential for the consumers in Bahrain.

Table (9) presents the percentage of declaration of storage instructions on the labels of baby foods in Bahrain. All the infant formulas had such information, but many other baby foods did not have this information. The percentages were 37% for cereal products, 100% for cereal mixed with vegetables and 92% for cereal mixed with fruits.

1.12. Preparation instruction

Information regarding how to prepare the infant foods (either by adding water or by mixing with other foods) is important, at least for the educated mother, and for health workers to instruct the mother in the correct method of preparation. Fortunately it was found that all the baby foods studied had information regarding method of

preparation, simply because most of such foods do not require any preparation, i.e. they are ready to eat.

Gastroentritis is very common in Bahrain, and about 12.8% of infant deaths are due to infectious and parasitic diseases[9]. The contamination of infant foods during preparation, as well as the method of preparation are some of the factors which lead to infection in infants. The dangers of bottle-feeding could come from unhygenic preparation of formula and unclean utensils. The study of Musaiger and Al-Shehabi[10] showed that only 9% of mothers stated that they boiled the bottle after each use. Boiling the bottle daily was indicated by 20% of the mothers.

Another important factor is the wide use of whole milk powder in infant feeding. This kind of milk is not recommended for infants, however, the availability of this product at home leads to its use for infant feeding as this was more economic and convenient for them. The whole milk is not standardized and it is not intended for infant feeding. But a previous study demonstrated that 16.6% of the Bahraini mothers used whole powder milk for their infants. Other milk like evaported milk was also used by 3.9% of the mothers[8].

In the United Arab Emirates, it was reported that some whole powdered milk and infant formula had a high microbial load. It was suggested that more qualiyt control measures have to be implemented regarding these products. Also it was observed that some weaning foods showed oxidative rancidity under prolonged storage[11]. These findings supports our recommendation that more information regarding storage and preparation of infant foods should be declared on the label.

1.13. Country of origin

The country of origin was printed on the label of all the baby foods studied.

1.14. Name and address of the manufacture

Information regarding the name and address of the manufacture was printed on the labels of baby foods studied.

Table (9)

The percentage of declaration of storage instruction on the label of baby foods available in Bahrain.

Baby food	Total	Storage instruction			
		Declared		Not declared	
	No.	No.	%	No.	%
Infant formula	17	17	100.0	-	-
Cereal products	19	12	63.0	7	37.0
Powdered cereals & vegetables	5	-	-	5	100.0
Powdered cereals & fruits	13	1	8.0	12	92.0
Strained meat & chicken	34	34	100.0	-	-
Strained vegetables	18	18	100.0	-	-
Strained fruits	45	41	91.0	4	9.0
Desserts	23	22	96.0	1	4.0
Fruit juice	26	22	85.0	4	15.0
Biscuit	3	2	67.0	1	33.0
Total	203	169	83.2	34	16.8

2. MINERAL AND VITAMIN COMPOSITION OF INFANT FORMULA (BASED ON LABEL INFORMATION)

During the survey there were 17 formulas available in the market for use in infant feeding. They are produced by 8 manufactures, who represent 7 countries. All these formulas (except one) were made from cow's milk which was modified and supplemented with vitamins and minerals. The milk fat is partially replaced with vegetable oils in eight formulas, and compeletly replaced with vegetable oils in the other formulas.

The mineral composition of infant formulas used in Bahrain is shown in Table (10). The average content of minerals per 100 grams, as well as the content per 100 kilocalories showed that all these formulas are within the range recommended by the Codex Alimentarius. However,the findings indicate that there is a wide variation in mineral contents among different infant formula. The amount of sodium (for example) ranged from 22 mg/100 kcal in one product(Mamex) to 61 mg/100 kcal in another product (Nestogen 2). There is evidence that overconcentrated infant formulas increase the risk of hypernatraemis[12].Unfortunately a high percentage(53%) of infant formulas used in Bahrain are high solute. Musaiger and Al-Shehabi found that 30% of Bahraini mothers did not

prepare infant formula correctly[10]. A recent study in Saudi Arabia reported similar findings; about 60% of the feeds prepared by the mothers were overconcentrated, 14% too dilute and only 17% were correctly diluted[12].

The vitmain compostition of infant formulas used in Bahrain is shown in Table (11). It was also observed that the average content of vitmains is within the range recommended by the Codex Alimentarius; but the amount of each vitamin varies from one product to another.For example,the amount of vitamin A ranged from 266 IU/100 kcal in one product (Milumil)to 499/100 kcal in another product(Ostermilk).

The difference in mineral and vitmain contents of the infant formulas may be attributed to several factors. Firstly, some formulas are special ones, which are intended for sick children, and these have a high contents of some minerals and vitamins, compared to other formulas. Secondly, recommendations of authoritative bodies and legislation, such as FAO and WHO. Thirdly,local preferences;and finally developments in nutritional knowledge[13].

There is no legislation in Bahrain specifically and comprehensively covering the formulation of infant formula. Though, Bahrain is following the Codex Alimentarius regula-

tion, the shortage in laboratory facilities, lack of trained staff, and lack of the regulations have made it difficult for the local authorities to control the marketing of infant foods. Recently the Ministry of Health has become more interested in developing a food laboratory and training staff; also the Code of marketing of infant formula is still under study. We hope that in the near future, something will be done with regard to marketing and regulating of infant foods.

Table (10)

The mineral composition of infant formula used in Bahrain compared with recommendation of Codex Alimentarius.

Mineral (mg)	Infant formula	Codex Alimentarius	
	Range (per 100 kcal)	Minimum (per 100 kcal)	Maximum
Sodium	22 - 61	20	60
Potassium	81 - 189	80	200
Chloride	55 - 138	55	150
Calcium	66 - 146	50	N.S.
Phosphorus	45 - 113	25	N.S.
Magnesium	6.7 - 12.5	6	N.S.
Iron	0.6 - 2.2	0.15	N.S.
Copper (ug)	59 - 84	60	N.S.
Zinc	0.3 - 1.0	0.5	N.S.

N.S. : Not specified

Table (11)

Vitamin composition of infant formula used in Bahrain compared with recommendation of Codex Alimentarius.

Vitamin	Infant formula	Codex Alimentarius	
	Range (per 100 kcal)	Minimum (per 100 kcal)	Maximum
Vitamin A (I.U.)	266 - 499	250	500
Vitamin D (I.U.)	48 - 74	40	80
Vitamin C (mg)	8.0 - 11.4	8	N.S.
Vitamin B_1 (ug) (Thiamine)	44 - 124	40	N.S.
Vitamin B_2 (ug) (Riboflavin)	68 - 193	60	N.S.
Folic acid (ug)	4.0 - 15.5	4	N.S.
Niacin (ug)	269 - 1754	250	N.S.
Pantothenic acid (ug)	336 - 738	300	N.S.
Vitamin K (ug)	4.1 - 21.0	4	N.S.

N.S. : Not specified.

3. THE COST OF INFANT FORMULA AND CANNED BABY CEREALS

How much does the consumer pay for baby foods? How much does he pay for 100 grams of protein and 1000 kilocalories? Is this cost worthwhile when compared to fresh foods? This chapter deals with answers to these questions.

An attempt was made to study the cost of 100 grams protein and 1000 kilocalories of infant formula and canned baby cereals. Table (12) shows a comparison in price (Bahraini Dinars and US Dollars) of various infant formulas calculated as 100 grams, of protein and 1000 kilocalories. It was noticed that the price of 100 grams protein ranged from 2.60 US dollars for Nestogen (2) to 7.60 US dollars for S-26. While the price of 1000 kilocalories ranged from 1.0 US dollar for both Lactogen and Nestogen (1), to 2.1 US dollars for Isomil.

With regard to canned baby cereals, the price of 100 grams of protein ranged from 4.05 US dollars for Cerelac to 9.90 US dollars for Milupa 3 cereals. For 1000 kilocalories the priced ranged from 1.03 for Cerelac to 2.70 US dollars for both Farlene and Farex (Table 13).

The comparison in price between foods on the market and baby cereals is summarized in Table (14). From this table we can conclude that the prices of canned baby cereals were more expensive than that of fresh foods (in terms of kg).The price of 100 grams of protein is two to seven times more expensive than local foods such as meat, chicken, wheat flour and rice. The price of 1000 kcal from wheat flour is less than 1/13 price of canned cereal food for children.

The price of a product is one of the determining factors that influence the choice of the product.In Bahrain, Musaiger[14] found that the price of foods was the second determining factor affecting purchase of the food product. The use of baby foods in Bahrain is affected by several factors:

A. Recommendations from health workers

Many mothers believe that the baby food recommended by health workers is the best one for the growth of their children, and consequently they continue using a certain brand name even for the next child. A previous study[8] showed that 69% of the Bahraini mothers said that they were told to use bottle-feeding by health workers.

B. The influence of advertising

Although advertising of infant formulas was banned from TV, radio and press in Bahrain; there are other techniques of advertising which are still carried on. The distribution of leaflets, posters, free samples and display of baby foods in the shop are all kinds of advertising techniques. A study by Musaiger[15] showed that 83% of mothers in Bahrain believed that the claim on Farley's Baby Foods in their advertisement is true. The claim stated " watch your child grow strong with Farley's " .

C. The influence of private clinic

Unfortunately, many private clinics are becoming a good place for promoting baby foods. The food companies offer samples, leaflets, toys and other medical equipment free of charge to the private clinics. Certainly, this will influence the mother who attends these clinics. The surrounding environment in such clinics is full of advertisements on baby foods. Private doctors also recommend certain infant formulas for the baby.

D. The influence of relatives and friends

Relatives and friends play an important role in determining food products in Bahraini Society.The mother follows

the advice of her friends or relatives, especially if these people have used certain baby food products. In many cases when we asked the mother "Why are you using this baby food?" The answer was "Because my sister or friend used it and she found it useful for her baby". Another answer was "Because the doctor recommended this product for my friend's baby" . It was reported[14] that 93.7% of the mothers in Manama City (in Bahrain) said that friends and relatives were the main source of nutritional knowledge and practice.

E. Beliefs and attitudes

Many wrong beliefs and attitudes have spread widely in Bahraini Society, and have influenced the purchasing habits of the consumer. For example,there is an established belief that a high price product is a high quality one. Therefore, many mothers prefer to purchase costly baby foods thinking that they are the most nutritious ones.

Table (12)

A comparison of prices of various infant formulas used in Bahrain, calculated as 100g of protein and 1000 kcal.

No.	Trade name of the product	Weight in gram	Price in B.D.	Price in US $	Price of 1000g in US $	Price of 100g protein in US $	Price of 1000 kcal in US $
1	Bebelac	454	1.200	3.18	7.01	5.00	1.4
2	Guigoz 1	454	1.100	2.91	6.42	4.40	1.3
3	Guigoz 2	454	1.100	2.91	6.42	3.70	1.4
4	Isomil	400	1.650	4.37	10.94	7.20	2.1
5	Nan	450	1.070	2.83	6.30	5.00	1.2
6	Nursic	454	1.250	3.31	7.30	5.40	1.4
7	S-26	453	1.560	4.13	9.13	7.60	1.7
8	Similac	454	1.220	3.23	7.12	6.00	1.4

contd...

Table (12)-continued

No.	Trade name of the product	Weight in gram	Price in B.D.	Price in US $	Price of 1000g in US $	Price of 100g protein in US $	Price of 1000 kcal in US $
9	Similac + iron	454	1.220	3.23	7.12	6.00	1.4
10	SMA	453	1.500	3.97	8.82	7.30	1.7
11	Mamex	400	0.970	2.57	6.43	5.30	1.2
12	Oster milk	450	1.250	3.31	7.36	6.10	1.5
13	Lactogen	454	0.850	2.25	5.00	3.00	1.0
14	Nestogen (1)	454	0.850	2.25	5.00	3.40	1.0
15	Nestogen (2)	454	0.900	2.38	5.00	2.60	1.1
16	Pelargon	454	0.940	2.49	5.52	3.90	1.1
17	Milumil	400	1.300	3.44	8.67	5.70	1.9

Table (13)

A comparison of prices of various canned baby cereals used in Bahrain calculated as 100g of protein and 1000 kcal.

No.	Trade name of the product	Weight in gram	Price in B.D.	Price in US $	Price of 1000g in US $	Price of 100g protein in US $	Price of 1000 kcal in US $
1	Cerelac	400	0.675	1.79	4.47	4.05	1.03
2	Cow & gate	400	1.100	2.92	7.29	4.11	1.72
3	Farlene	250	1.000	2.65	10.61	5.30	2.70
4	Farlac	350	1.200	3.18	9.09	5.03	2.15
5	Farex	250	1.000	2.65	10.61	8.83	2.70
6	Familia	370	0.750	1.99	5.37	6.63	1.35
7	Milupa seven cereal	300	1.000	2.65	8.84	6.68	1.99
8	Milupa rice with milk	300	1.000	2.65	8.84	8.25	2.06
9	Milupa (Germederiz)	250	0.700	1.85	7.42	9.90	2.00
10	Milupa three cereal	250	0.700	1.85	7.42	8.25	1.95

Table (14)

A comparison of prices between local foods and canned baby cereal available in Bahrain.

Foods	Price (US $)		
	Price/kg	Price per 1000 kcal	Price per 100g protein
Local foods			
Meat (beef)	3.60	1.3	2.00
Chicken	2.00	1.4	1.00
Dry whole milk (Nido)	3.60	1.25	0.71
Wheat flour	0.30	0.08	0.27
Rice	1.00	0.29	1.55
Canned baby cereal			
Cerelac	4.47	1.03	4.05
Cow & gate	7.29	1.72	4.11
Milupa 7 cereal	8.84	1.99	6.68
Farlene	10.61	2.70	5.30

CONSLUSIONS AND RECOMMENDATIONS

The present study showed that there was a lack of information declared on the labels of baby foods available in the market in Bahrain. Information such as production date, Arabic instructions, age of child and storage instructions were found to be deficient.

The vitamin and mineral composition of the infant formulas were within the range recommended by the Codex Alimentarius. However, the results showed that there was a wide variation in the nutrient composition in these formulas.

The prices of 100 grams of protein and 1000 kilocalories were found to be higher in canned baby cereals when compared to fresh foods avilable in the market such as meat, chicken, wheat flour and rice. This means that the mother could prepare a low cost meal for her baby from fresh food available in the market.

Recommendations

1. Labelling

1.1. Appropriate information should be declared on the labels of baby foods. This information should include the following: Commercial definition, production date, expiry date, Arabic

instructions, net contents, list of ingredients, the composition/analysis of the product, storage conditions required (befor and after opening the product), preparation instructions, country of origin,name and address of the manufacture.

1.2. The use of the Arabic language on the label of baby foods should be mandatory. The information mentioned above should be declared in Arabic.Clear,easily readable and understandable Arabic information should be printed on the labels.

1.3. A baby's picture should not be printed on the label or the container of infant formula, since this picture may idealize the use of these product.

1.4. A statement of superiority of breast-feeding should preferably be printed on other baby foods such as baby cereal proudcts,in order to encourage the mother to continue breast-feeding.

1.5. The weaning foods should have on their labels a statement saying that "such food is a complement to breast-milk or to infant formula" .

1.6. The recommended age at which the baby could be given the food product should be printed clearly on the label. This age should be based on scientific fact not on a commercial basis.

2. Marketing

2.1. The proposal of the Code of Marketing presented by the Health Secretary of the Arab Gulf should be approved as early as possible. This will help to organize the marketing of infant formula in Bahrain.

2.2. Regulations concerning marketing of other baby foods should be established as soon as possible.

3. Food control

3.1. The food laboratory should be strengthened either with equipement or staff, in order to anlayse the composition of baby foods and to check whether this analysis is within the regulations or not.

3.2. Food control should be extended to the market to check the labelling information, storage conditions of the product, and any physical damage to the product.

4. Nutrition education

4.1. A well-planned nutrition education programme should be established. This programme should include the following information: the advantage of breast-feeding, the correct preparation of infant formula, the disadvantage of bottle-feeding, proper weaning practices, the proper age for

introducing solid food to the child, hygienic condition in preparation of infant foods, the correct use of the refrigerator particularly for storage of baby foods after opening and wise selection of fresh foods for use in baby-feeding.

introducing solid food to the child, hygienic condition in preparation of infant foods, the correct use of the refrigerator particularly for storage of baby foods after opening and wise selection of fresh foods for use in baby-feeding.

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Infant formulas included in the survey

Some of the baby foods studied

Baby cereal products included in the survey

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