

**NUTRITION UNIT  
PUBLIC HEALTH DIRECTORATE  
MINISTRY OF HEALTH  
BAHRAIN**

**TOWARDS FOOD AND NUTRITION  
POLICY IN BAHRAIN**

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## Introduction

Bahrain is one of the Arabian Gulf countries which have faced a progressive change in socio-economic status due to oil revenues and this resulted in a tremendous alteration in food and nutrition status. The per capita income has increased rapidly and therefore most essential foods are become within the purchasing power of the people. The nutritive value of the diet has improved as a result of the increased consumption of animal protein foods. However, the advent of the oil industry caused many workers to shift from agriculture as well as fishing and pearl diving for better paying jobs in the oil industry. Agricultural production therefore has declined steeply, and the country has become heavily dependent on food imports which represents 90% of the total foods consumed.<sup>1</sup>

Health status have improved remarkably. This can be noticed through changes in patterns of diseases and increase in life expectancy. The major notified diseases in the past were malaria, eye diseases,

parasitic infections, respiratory diseases, severe malnutrition especially among children and other infectious diseases.

Recently, most of these diseases have been eradicated, and non-communicable diseases have become the major health problems.<sup>2</sup>

Nutritional status have improved too. It is well documented that the prevalence of undernutrition and other nutritional deficiencies have decreased significantly during 1975-1986. Nutritional disorders associated with overnutrition have now become the main public health problems.

All these changes in nutritional and health situation creates the need for effective health plan, where food and nutrition programme should occupy a wide space in this plan. Unfortunately, nutrition is given less priority in health planning. The aims of this paper therefore are to analyse the nutritional problems in Bahrain, identify the current food and nutrition

programmes and suggest some measures to control such problems. These will be the main elements to formulate a food and nutrition policy for the country.

### Analysis of nutritional problems

Before food and nutrition policy can be formulated it is essential to analyse the existing situation. In this case problems can be identified and priorities for food and nutrition programmes determined.<sup>3</sup> Based on limited researches and surveys which were carried out during the past 10 years, food and nutritional problems in Bahrain could be divided into three main groups:

#### 1. Nutritional problems associated with underdevelopment

These are mainly underweight, stunting and iron deficiency anaemia. It was found that the prevalence of stunting (using Harvard Standard) among preschool childrens was 14.3%, while that of low weight for age

(underweight) was 76.6%. For school children aged 6 to 18 years the percentages were 69% and 54% respectively.<sup>4</sup> Zaghloul<sup>5</sup> showed that a noticeable improvement among pre-school children as the percentage of stunting was 6.9%, a decline by 7.4% compared to 1980.

Iron deficiency anaemia is one of the common public health problems among preschool children, teenage girls and adult females. It was reported that 34% of preschool children were anaemic (Hb<11g/100ml). Among school children aged 6-18 years the prevalence of anaemia was 32% (Hb<12g/100ml). The prevalence was almost double among females than males in both urban and rural areas of Bahrain.<sup>4</sup> However, iron deficiency anaemia among school girls has declined by 18.8% during the period 1980-1985, as demonstrated by Blair and Gregory.<sup>6</sup>

In general the nutritional status of children in Bahrain has improved, mainly due

to improvement in health services and hygienic conditions. Nevertheless, underweight and iron deficiency anaemia are still existent in the country.

## 2. Nutritional problems associated with affluence

The rapid change in socio-economic status due to oil revenues during the past 30 years has led to a great change in food habits and life style of the population. It is now recognized that over-consumption of animal foods, sugar, and fat contributes to many diseases such as obesity, diabetes and heart diseases. These health disorders are becoming the major public health problems in Bahrain.

Heart diseases are the first cause of death in the country, which represents 36% of total deaths.<sup>7</sup> The high intake of animal fat, sodium and lack of physical exercise (sedentary life style) may play a significant role in increasing the risk

of heart diseases in the country. Statistics have shown that there is a sharp increase in the per capita intake of red meats, chicken, eggs and animal fat during the period 1972-1984.<sup>8</sup>

Obesity is a problem of concern, especially among women. It was found that about 39% of adult females in Bahrain were obese (+120% of Harvard Standard for weight for height)<sup>4</sup>. A recent study by Musaiger et al<sup>9</sup> showed a high subcutaneous fat among school children in Bahrain. The lack of physical exercise and high dietary energy intake are considered to be the main factors responsible for accumulation of fat among these children. It is well evident that obesity is a risk factor for several diseases, such as diabetes, coronary heart diseases, hypertension and some types of cancer.

Diabetes mellitus is another important health problem. Although the cause of death due to diabetes is under-reported,

it was estimated that about 4% of total deaths were due to diabetes. Such deaths occurred at 45 years and over. In 1987, the death rates of diabetes for 65-74 years old were 242 and 345 per 100,000 for males and females respectively.<sup>8</sup> The main type of diabetes in Bahrain is non-insulin dependent diabetes (type II). This kind of diabetes is mostly linked with obesity.

Cancer has become the second cause of death in the country. Deaths due to cancer have increased from 2.5% to 12% during the period 1976-1985.<sup>8</sup> Epidemiological studies showed that a correlation between dietary fat intake and the incidence of cancer of the breast, colon, prostate and endometrium. Low intake of dietary fiber is also linked with colon cancer.<sup>10</sup> Statistics showed that Bahraini inhabitant eat more animal fat and less fibrous foods.<sup>11</sup> Lung, gasterointestinal, liver and breast cancers were the main types of cancer in Bahrain.

Dental caries are also considered a nutritional problem because dietary carbohydrates play a significant role in its occurrence. A recent report showed that the prevalence of dental caries among school children aged 6, 12 and 15 years were 68.1%, 45.9% and 54.3% respectively.<sup>12</sup> The high consumption of sweets, soft drinks, chocolates and cake between meals is responsible in part for the occurrence of such a disease. Low oral hygienic practices is another contributing factor.

### 3. Food and Nutritional problems associated with hygiene and environmental pollution

Although health and hygienic conditions have improved in Bahrain, foodborne disease outbreaks are occurring from time to time, with typhoid fever and paratyphoid fever as the main diseases. The notified food poisoning cases have increased remarkably during the recent years. This is mainly due

to changes in food habits as more families eat outside homes, ignorance, unhygienic preparation of foods, bad food storage and infected food handlers.<sup>13</sup>

Toxic matters in foods such as pesticide residues, aflatoxin and heavy metals are another serious problem which is given low priority in preventive health programmes. It is highly acceptable that the risk of intake of food contaminated with such toxic matters is great in the country. This is because the current food control system is mainly depended on physical examination of foods and limited microbiological and chemical examinations exist. Bahrain imports 90% of their foods from numerous countries all over the world. Therefore, it is not surprising when some of these countries dumped unfit or less quality foods to Bahrain. It was reported that 12% of total food examined in the Public Health Laboratory of the Ministry of Health are found unfit for human consumption.<sup>7</sup>

## MAJOR CAUSES OF NUTRITIONAL PROBLEMS

It is rather difficult to underline all the possible causes leading to specific nutritional problems. This is mainly due to the lack of research in factors associated with malnutrition in Bahrain. However, several indicators which have been obtained either from the limited studies or hospital records can provide some important causes of nutritional problems. These can be summarized as follows:

1. Lack of health and nutrition awareness.
2. The relatively high incidence of illiteracy especially among women (40%).
3. Unsound food habits particularly among the young and school children.
4. Deficiency in some nutrients in local dishes such as vitamins D and C and iron.
5. Early introduction of weaning foods combined with unhygienic and incorrect preparation of these foods.
6. Decline of breast-feeding and highly dependence on bottle feeding and commercial baby foods.

7. The prevalence rate of **intestinal parasitic infections among the young and school children especially in rural areas.**
8. **Lack of physical exercise, together with high intake of energetic foods are highly responsible for prevalence of obesity and its complications.**
9. **High intake of fat and animal foods is responsible in part for coronary heart diseases.**
10. **Lack of effective nutrition regulations.**

### **Main programmes related to food and nutrition**

There is no specific food and nutrition policy in Bahrain. The country carries out projects and programmes of various types in the field of agriculture, health, social and education that are directly and indirectly related to the problems of food and nutrition. These programmes are often developed in isolation from other activities. The programmes linked with nutrition can be briefly described.

## HEALTH SECTOR

There is no specific programme for nutrition in the health sector. Nutrition activities are mostly linked with other health activities that are provided in health centres and hospitals. These activities can be summarized as follows:

### Growth monitoring for preschool children

Weight, height and head circumference measurements are taken regularly for all preschool children attending MCH clinics in the health centres. These anthropometric measures are taken frequently during the first year, because the mothers bring their children for immunization. However, after the first year of child's life the height and weight are rarely taken mainly due to the fact that the visits of mothers to MCH clinics become infrequently. In general, the child is medically examined (including growth monitoring) at 2nd, 4th, 6th, 9th, 18th, 24th, 36th and 60th months of his life. These times are parallel with immunization appointments.

### Promotion of breast-feeding

Several activities have been undertaken to promote breast-feeding patterns in the community. These activities are: (1) prohibition of advertisements in television, radio and newspapers concerning infant formula. (2) Entitle female workers to maternity leave with full pay for 45 days. (3) The allotment of one hour each day for nursing mothers for the first six months of infant life, in order to breast-feed their infants at home. (4) Establishment of some regulations of distributions of free infant formulas in health centres. (5) Increasing promotion of breast-feeding campaign through various mass media.

### Supplementary feeding for pregnant mothers

General medical checkup, weight and haemoglobin determination are routinely carried out for all pregnant mothers visiting perinatal clinic in health centres. Vitamin and iron tables are usually given to pregnant mothers at

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### Supplementary feeding for pregnant mothers

General medical checkup, weight and haemoglobin determination are routinely carried out for all pregnant mothers visiting perinatal clinic in health centres. Vitamin and iron tables are usually given to pregnant mothers at

second and third trimesters. Advises on balanced diet and sound dietary practices are also provided to mothers.

### Nutrition education

Nutrition and health education through various mass media is a continued process. Posters, booklets and radio broadcasting are widely used as a tool for nutrition education. Televised nutrition education is very limited because of lack of specialized people in mass media. Lectures to women, students and others are often given from time to time. In general, there is no special policy in nutrition and health education. The main topics covered by nutrition education are sound food habits, management of breast-feeding and diarrhoeal diseases, sound weaning practices, nutrition during pregnancy and lactation, and dietary management of diabetes, obesity and hypertension.

## Food and nutrition regulations

The health sector has the major responsibility for establishing food and nutrition regulations. These regulations can be classified into three criteria: Regulations related to food hygiene and sanitation in food premises; Regulations related to labelling and shelf-life of food; Regulations related to standards for toxic chemicals in foods such as pesticide residues, mycotoxin, additives, and heavy metals in foods.

More progress has been done in food hygiene and sanitation as well as in food labelling, but less progress has been done in the regulations of toxic matters in foods. This is mainly due to lack of equipment and specialized personnel.

## Food inspections

The inspection of imported foods at the entry points (land, sea and air) is also the responsibility of health sector.

All foodstuffs entering the country are physically inspected, and where necessary some foods are taken for bacteriological tests. Chemical examination is mostly done on oil and bottled water.<sup>14</sup>

Food premises that produce, handle or sell foodstuffs are inspected regularly by food inspectors to ensure that foods are prepared under good hygienic conditions and are fit for human consumption. Monitoring of radiation levels in consignments of foodstuffs arriving from affected countries started towards the end of 1986.

The quality of public drinking water is monitored by bacteriological and chemical examination of samples from all public water sources.

#### Oral hygiene programme

A comprehensive oral hygiene programme was launched in the early months of 1987. The programme includes the following

activities: Training dental hygienist, teeth examination and treatment in health centres, dental screening for school children, preventive programme for primary school children, fluoridation of piped water, and oral health education in schools and colleges.<sup>15</sup>

### Nutrition research

Several studies and researches were carried out during the period 1980-1989. These researches covered three main areas, composition of foods commonly consumed in the country, nutritional surveys and nutrition regulations. Unfortunately the results of these researches were rarely utilized in health programmes. However, most of these surveys are cross-sectional and limited in their objectives and scopes.

### Nutrition training

Training in nutrition for teachers and health staff has started recently (in 1988). The objective of such training is

to improve knowledge and skills related to nutrition of health and social workers. Three training courses were carried out during 1988-1989; for female secondary school teachers, home economic teachers and community workers (health and social workers).

Training in nutrition research is carried out annually since 1982 for students of College of Health Sciences. Most of the training activities are focused on the methodology of community nutrition surveys.

#### AGRICULTURAL AND INDUSTRIAL SECTOR

##### Improving food production

The contribution of agriculture to gross domestic product does not exceed 1%. Efforts to improve food production are facing several constraints such as low quality of cultivated land, decline in arable land due to urbanization, shortage of water resources and lack of qualified manpower.<sup>2</sup>

Intensive agricultural practices aimed at increasing the yield per hectare by adopting good soil management, proper fertilization, insect and disease control, improved seed varieties and mechanized farming operations coupled with modern irrigation system have been incorporated in the long term plans to increase food production in the country. It is planned that Bahrain will be self-sufficient in eggs and chicken by 1990-1991, at this time the country should be able to meet 75% of its vegetables and half of its dairy requirements. Cereals, meat, fruits and oil and fat will have to be imported in large amounts.<sup>16</sup>

Bahrain has a relatively good resource for fish production, however, there are some difficulties in utilizing such resources. A five year plan (1980-1985) for development of the fishing sectors was launched. Slight improvement in fish production was noticed. Nevertheless, more efforts are needed to reach self-sufficiency in fish consumption.<sup>17</sup>

### Food subsidy policy

The government has established the food subsidy policy since 1974. The objective of this policy is to keep the price of staple foods within the purchasing power of the majority of population. The main foods subsidized are rice, wheat, sugar, ghee, barley, mutton, beef and chicken. The government expenditure on food subsidies has increased from 15 million to 25 million US dollars during the period 1975-1983.<sup>18</sup>

### Food pricing control

The pricing control policy for food products in Bahrain depends on limiting the profit margin of food traders. The pricing regulations do not allow the food traders to get more than 10% profit in food products. Prices of vegetables and fruits are controlled by different regulation. The government allow the traders to get profit not more than 100 fils (0.3 US Dollars) for each kilogram of vegetables or fruits.

## Encouraging and supporting food manufacturing

The government has issued a law to encourage and protect the local industries (including food industry). Custom and cost of raw materials are reduced for local food manufactures. The main food industries in Bahrain are dairy products, soft drinks, snacks, dates, and pickles industries.

## SOCIAL SECTOR

The Ministry of Labor and Social Affairs has a family education programme. This activity is aimed to increase the awareness of women in family planning, health and nutrition matters. Nutrition takes the bulk of such programme. Information on diarrhoeal management, breast-feeding, proper weaning habits and sound food preparation are given to the women especially in rural areas.

## EDUCATION SECTOR

### School curriculum

Nutrition is included in the school curriculum at all levels in the programmes of science, home economics, public health and agriculture. There is no sole programme for nutrition in the schools. College of Health Sciences is providing nutrition programme for nurses and public health inspectors, but mostly in basic nature. There is no information on local nutrition problems and measures to prevent and to solve such problems in school or university curriculum.

### Adult literacy programme

A programme on family awareness for mothers attending adult literacy programmes has been recently established. The objective of this programme is to improve knowledge and skills of the mothers in home management, health, first aid and nutrition.

## Organization and Coordination of Food and Nutrition Programmes

The success of a food and nutrition policy is depended on integrated planning and effective implementation. Therefore it is important to ensure an adequate coordination of programmes or activities, and a clear-cut division of responsibilities among the various sectors.<sup>3</sup>

The food and nutrition policy should identify the programmes which are expected to be carried out by each sector in a certain period of time in order to reach the targets. Once the responsibilities of each sector have been identified, a coordination mechanism will be necessary through which the different sectors could interact with each other in order to avoid duplication and start to develop a comprehensive food and nutrition strategy.<sup>19</sup>

Formulation of a national food and nutrition board is therefore very essential to coordinate the responsibility of

each sector through intersectorial collaboration. The board should consist of representatives from all sectors involved in food and nutrition activities. It is recommended that the board can be attached to Ministry of Planning to overcome many operational activities.<sup>19</sup> However, such a Ministry is not available in Bahrain. In this case the food and nutrition board is best attached to the Council of Ministers in order to operate punctually. The board should be chaired by a powerful policy maker and report directly to the Council of Ministers, in order to strengthen the decisions and plans taken by such board.

#### Measures to be taken into consideration in implementation of a food and nutrition policy in Bahrain

A food and nutrition policy should include three main measures:<sup>20</sup>

1. Measures that affect food availability such as food production, prices, marketing, processing and storage, food exports and imports and food safety.

2. Measures that affect the demand on foods such as per capita income, food subsidies, consumer preferences, nutrition education, supplementary feeding programmes and population policy.
3. Measures that affect the utilization of foods such as parasitic and infectious diseases, hygiene, pregnancy and lactation, physical activities and food intolerance.

In the case of Bahrain, in addition to the above programmes which are carried out by several sectors, there are many measures which should be considered in any food and nutrition policy:

### Measures on Food Availability

#### Percapita food intake

The percapita food intake in Bahrain is based on food availability either through food balance sheet or household expenditure survey. These data do not

represent actual percapita food consumption, and therefore cannot provide feedback information for planning purposes.

It is essential to establish nutrition surveillance to ensure continuous flow of information on food intake as well as other nutrition indicators.

#### Food subsidy policy

The current food subsidy policy may encourage to increase the intake of energy-rich foods such as rice, fat and sugar. This trend in dietary intake adversely affects the health status of the population by increasing the risk of obesity and heart diseases. It is recommended that the government should use this policy to promote the consumption of high nutritive value foods such as vegetables, fruits and fish.

## Food safety and regulations

To attain adequate and effective food quality control system in the country it is important to improve quality and quantity of analytical services. Standards relating to mycotoxin, pesticide residues, additives, and heavy metals in foods are urgently needed. Food standards and regulations should be prepared taking into consideration the local circumstances.

## Food manufacturing

One way to make the proposed change in diet in Bahrain, is to alter manufacturing practices to allow the provision of foods with a higher nutritive value. The local food factories should be encouraged to produce food free from artificial additives and preservatives, as well as with good nutritive value. Many nutritious traditional foods can be produced commercially if equipment and government support are available.

### Food fortification

Fortification is one of the methods used for improving the nutritional value of foods commonly consumed. Such a programme is not practiced in Bahrain. It is recommended to fortify the common foods like wheat flour and milk with minerals and vitamins. This will help in part to prevent some nutritional disorders.

### Food production

Studies<sup>21</sup> showed that Bahrain can successfully grows some vegetables and fruits. Attention should be made to increase production of these foods. Expanding dairy and poultry industries should be supported. Fish production must be given a high priority in any food and nutrition policy. The consumption of fish has decreased during the recent years because it has been replaced by meat and chicken, as these foods are cheaper than fish. It is documented that consumption of fish help in reducing the risk of heart

diseases.<sup>22</sup> As coronary heart diseases are highly prevalent in Bahrain, increasing consumption of fish is one of the preventive measures which should be considered.

## Measures on Food Demands

### Nutrition education

The current health and nutrition education is less effective. This is mainly due to lack of specialized people in mass communication and the concentration on use of booklets and posters in education which have a low influence on changing beliefs and attitudes. Nutrition should be introduced in school curriculum, medical colleges and other health institutes. Local nutritional problems must be considered in such curriculum. Emphasis should be paid to efficient use of mass media, especially the television which is widely spread in the country. The use of advertising technique in nutrition education seems to have profound influence than the classic

technique (giving advices, and interviewing health professionals).

Educational materials should be developed locally as possible and must show the way to prevent or manage nutritional problems commonly relevant in the community such as iron-deficiency anaemia, heart diseases, diabetes and obesity. Attention should be given to involve the community in nutrition education, especially the religious leaders who have a respectable position.

#### Control of food advertisement claims

Food advertisements particularly those viewed on television have a negative influence on food habits of the public, such as high consumption of junk foods. Additionally many advertisements provide misleading or false claims which deceive the people. This is especially true in Bahrain where the television occupy most of the leisure time of mothers and

children. Musaiger<sup>23</sup> found that advertising plays an important role in shaping food attitudes and practices of Bahraini housewives. Therefore it is essential to control food and health advertisement claims in mass media particular in television, radio, and news papers. This can be achieved through establishing a committee from related institutes to evaluate the advertisement claims before advertise to the public.

### Measures on the biological utilization of foods

#### Control of parasitic and infectious diseases

Diarrhoea and intestinal parasitic infection are still prevalent in the country. It was found that the main parasitic infections among school children in Bahrain were Giardia lamblia, Trichuris trichiura and Hymenolepis nana. The prevalence of intestinal infections decreased by 22% among boys and 27% among girls aged 6-11 years during the period 1980-

1986.<sup>24</sup> This is because of the improvement in health services and hygienic conditions. However, some rural areas and slums in the cities are still characterized by low sanitation. Additionally food handlers play an important role in spreading parasitic infections and food poisoning.<sup>13</sup> Early detection of parasites in preschool and school children is an essential measure to control parasitic infections. Increase the wareness of the public regarding personal hygiene and other sanitation practices should be taken into consideration in any health education programme. Regular screening of food handlers, proper inspection of food premises and proper disposal of wastes are all among the measures to control diarrhoeal and parasitic infection in the country.

### Iron-deficiency anaemia

A specific programme to eradicate iron deficiency anaemia is an essential element in any food and nutrition policy.

The following measures should be considered in such programme: proper weaning foods with emphasis on food rich in iron and vitamin C, proper antenatal care for pregnant and lactating mothers, health education to encourage consumption of iron-rich foods and reduce foods inhibit iron absorption such as tea and coffee, control intestinal parasitic infection, iron supplementation to pregnant mothers, school feeding programme and food fortification with iron and other important minerals.

### Maternal Malnutrition

The mother and child health (MCH) services in health centres should be expanded to include more activities related to promote nutrition of mothers and their children. Activities such as including teen-age girls in MCH services, encouraging spacing between pregnancies, discouragement of unsound food beliefs and attitudes during pregnancy and lactation, and assessment of nutritional deficiencies are all examples for activities to promote nutrition of mother.

## Control of diseases of affluence

It is clearly evident that the problems of overnutrition are common in Bahrain. These problems, should be given a priority in the nutrition policy. Measures to control obesity, diabetes, coronary heart diseases and hypertension are the most important. Emphasis should be paid to early detection of obesity especially during childhood period, increase physical exercise, reduce intake of fat and high carbohydrate foods and restriction of sodium intake.

## Food and nutrition research

There is an urgent need to deal with two types of research; maintenance of the safety and quality of food supplies, and the role of nutrition in diseases commonly prevalent in the community. Determination of carcinogenic matters in foods such as pesticide residues, artificial hormones in meat, mycotoxin in feeds and foods, and heavy metals in water and food is utmost important.

Research should also focus on non-communicable diseases. Research on the link between dietary habits and aetiology of cancer, coronary heart diseases, hypertension, obesity and diabetes are first priority. Social and environmental factors associated with incidence of these diseases should be investigated.

## Conclusions

In many developing countries nutrition is not given enough priority in health planning. This may be one of the major causes for insufficient measures taken to overcome nutritional problems in these societies. In Bahrain, as in other Gulf states, the nutrition situation differs as both overnutrition and undernutrition are problems of concern. Although there are several programmes related to food and nutrition which are being carried out, these programmes lack coordination and cooperation among them. The need for formulating food and nutrition policy is essential to facilitate inter and intrasectoral activities regarding the control programmes. Once the policy has been developed, nutritional disorders associated with affluence and iron-deficiency anaemia must be assigned a high priority within its context. As Bahrain is almost a net food importer the role of agricultural sector

in promoting nutritional status is limited, and therefore the health sector should initiate the steps to formulate the food and nutrition policy. This is particularly true because most of programmes linked with food and nutrition are run by health sector.

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