

NUTRITION AND CHRONIC DISEASES IN JORDAN

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ABSTRACT

The prevalence of communicable diseases and diseases of undernutrition has decreased in Jordan whereas the malnutrition of affluence and the chronic diseases associated with it are of higher incidence than before. Available data indicate an increase in the incidence of obesity, diabetes mellitus, colon and breast cancer, hypertension and coronary heart diseases, dental caries and the uremic syndrome. The risk factors for these diseases in Jordan, as in many developing countries, include : changes in dietary habits with increases in food energy intake, and modern lifestyles with less physical activity. Subsidies for high-carbohydrate food commodities, particularly sugar, together with ignorance of health risks related to obesity are also important factors. Nutrition surveys and long-term nutritional surveillance are required to determine prevalence of these diseases. Accurate sources of food and nutrition data including evaluation of environmental pollution and food-borne contaminants such as pesticide residues in locally produced vegetables and their impact on human health are also necessary.

Key Words : Mortality, chronic disease, nutrition, Jordan.

INTRODUCTION

The affluent diet prevalent in industrialized countries and characterized by energy-rich foods that are high in fats and free sugars but low in complex carbohydrates and fibre, has by now become common in many developing countries. It has been demonstrated through epidemiological research that there is a close association of this type of diet and many chronic non-communicable diseases (WHO, 1990a). Cardiovascular diseases, diabetes mellitus and cancer top the list of such diseases. Hence the pattern of mortality is changing in the developing countries because of the increasing incidence of these diseases and as a result of the change in lifestyle and food habits (Alwan, 1993; WHO, 1990 b).

Jordan one of the Middle East Region countries has good primary health-care system and high level of education, though of relatively low Gross National Product (GNP). It has one of the lowest infant and child mortality rates and incidence of infectious diseases in the region (Faqih and Hijazi, 1993), yet it has an increasing

incidence of chronic non-infectious diseases. The following is a general view of the trend in the prevalence of such diseases, associated with changes in dietary patterns.

DEMOGRAPHIC AND HEALTH INDICATORS

Jordan is relatively a poor country with a very low GNP. A good percentage (21.3%) of Jordanian families are below the poverty line. Recently the Gulf War had a heavy impact on the severity of poverty and thus in the nutritional status of people (UNICEF, 1991). The unemployment rate increased from 10.3% in 1988 to 18.8% in 1991 (HKJ, 1993; KHJ/MDSA, 1989; Faqih et al., 1992).

The crude birth rate and population growth are relatively high being 34.6 per 1000 and 3.4% respectively. However, Jordan occupies an intermediate position among developing and developed countries regarding infant mortality and life expectancy. Although the infant mortality generally correlates well with GNP in Middle East countries, Jordan is an exception as the infant mortality is low with very low GNP. Infant and children mortality rate in Jordan has dropped from 275 deaths per 1000 living children in 1961 to 47 per 1000 in 1990 (Faqih et al., 1992). The relatively low mortality rate with the decrease in mortality due to infectious and malnutrition could be explained by the high educational level and the advances in the primary health care system. Improved health services have been developed with 96% of people in Jordan having access to a potable water supply through municipal pipelines in 1990 as compared with only 70% in 1970 (KHJ/MOH, 1992). Mother-childhood (MCH) centers have increased from 29 in 1970 to 229 in 1992.

These factors together with the changes in lifestyle and dietary patterns resulted in a reduction in mortality due to infectious diseases (Table 1) and to nutritional deficiencies. The situations for protein-energy malnutrition (PEM), anaemia, vitamin A and B₂ deficiencies have now improved (Faqih et al., 1992), whereas the mortality due to chronic diseases has increased.

CHANGE IN DIETARY PATTERN AND LIFESTYLE OF THE JORDANIAN COMMUNITY

Change in lifestyle which are taking place all over the world, the availability of imported processed foods, the improvement in transport facilities and international trade, the decrease in walking and hence in physical activity together with urbanization and better services have all contributed to changes in dietary pattern of the people.

TABLE 1.

Main Causes of Death in Jordan Distributed by Sex (1991)

Cause of death	Sex	
	Male %	Female %
Diseases of Cardiovascular system	44.2	34.5
Pneumonia	5.0	4.0
Malignant Neoplasm	2.2	3.1
Diseases of Urinary Tract	1.9	3.3
Diseases of the Liver	1.2	1.4
Accidents	15.4	6.7
Other Non-Specified Causes	29.8	46.7
Infectious Diseases	0.3	0.3
Total %	100	100
Cases	6758	4510

Source : HKJ/MOH (1992)

Government subsidies for many food commodities such as sugar, flour, rice and milk have helped in the availability of food energy particularly the cheap sources of energy which are not accompanied with a high nutrient content. In other words, energy malnutrition is not a problem despite poverty and low income. A comparison of food consumption patterns in 1987 and 5 years later in 1992 clarifies this point (Table 2) and shows that the consumption of subsidized foods has not changed. Sugar consumption, for example has increased in the 1980's and 1990's (Table 3) to contribute more than 15% of the energy intake (HKJ/DOS, 1992). Estimated energy intake (Table 4) increased from 2299 in the 1960's to reach about 3100 kcal in 1992. (HKJ/MOH, 1992).

CHANGE IN DISEASES PREVALENCE AND CAUSES OF MORTALITY

Diseases of affluence (chronic diseases) now top the list of mortality causes (Table 1). Cardiovascular diseases are the leading cause of death in Jordan; other chronic diseases such as tumours, kidney failure, diabetes mellitus have been increasing in occurrence (HKJ/MOH, 1992). The following is a brief review of these diseases.

Cardiovascular Diseases

Mortality due to cardiovascular disease has increased from 4.2% of total mortalities in 1961 to 39.7% in 1992 (Table 5). In males the figure is higher than in females (43.1% vs. 34.5%). Because of the paucity of vital registration data (Lopez, 1993) in developing countries the figures obtained are only approximate but still indicate prevalence trends.

The etiology of cardiovascular diseases is multifactorial and complicated. Overweight, less physical activity, the nature of the diet, especially the high fat and total food energy in the diet, smoking and alcohol consumption are contributing factors (Alwan, 1993; Williams, 1985).

Cancer

The trend in the prevalence of tumours is shown in Table 5. These increased from 1.6% of total mortalities in 1961 to 3.0% in 1992 (HKJ/MOH, 1992). Leukemia, colon, breast and lung cancers are the most common types of cancer. The dietary contribution to tumour development is considered high (Williams, 1985). There is now greater appreciation of the problem and a cancer treatment center has been recently established. Environmental pollution and the excessive use of pesticides in vegetable production should be evaluated as possible

TABLE 2

Food consumption Pattern in Jordan in 1987 and 1992
(g/capita/day)

Foods & Food Groups	1987	1992
Wheat products	443	478
Rice	96	95
Red Meat	56	25
Poultry Meat	92	70
Fish	20	17
Dairy Products	105	158
Eggs	26	25
Oils & Fats	67	56
Fruits	212	125
Vegetables	318	296
Legumes	19	16
Sugar	138	111

Source : HKJ/DOS (1992)

TABLE3

Sugar Consumption in Jordan and its Percentage Contribution to Dietary Energy 1972-1992.

	1972-74	1980-83	1985-87	1992
Sugar g/d	71	106	110	111
Carbohydrate g/d	--	--	515	507
Dietary Energy Kcal/d	2366	2900	3177	2915
Sugar Cal. as % Dietary Energy	12%	14.6%	13.9%	15.2%

Source : HKJ/DOS (1992)

TABLE 4

Nutrient Intakes in Jordan in Selected years

Nutrients & Energy	1964-1966	1969-1971	1975	1980-1983	1987	1990
Protein (g)	68	64	76	56	86	79
%	11.8%	9.8%	-	13.5%	10.5%	10.2%
Fat (g)	--	--	65	--	97.6	83.8
%					26.7	24.4
Carbohydrates (g)	--	--	399	--	515	507
%					62.7%	65.5
Energy (kcal)	2299	2617	2366	2900	3285	3099

Source : HKJ/DOS (1992)

TABLE 5

Percent mortality from cardiovascular diseases and tumours in Jordan from 1961-92

Year	Cardiovascular diseases			Tumours*		
	M	F	Total	M	F	Total
1961	5.0	2.9	4.2	1.9	1.1	1.6
1965	13.3	11.7	12.5	2.5	2.0	2.3
1970	12.6	13.0	12.8	3.1	2.1	2.8
1975	18.9	15.9	17.7	4.6	3.3	4.1
1979	22.2	18.5	21.0	5.0	4.2	4.7
1985	39.1	27.2	35.6	4.7	6.4	5.5
1992	43.1	34.5	39.7	3.0	3.1	3.0

Source : MOH (1992)

* Malignant tumours only

etiological factor in cancer development. The consumption of processed and canned foods with food additives has increased and may also be a contributing factor that should be investigated.

Obesity

Obesity seems to be increasing in all age groups. Table 6 presents the prevalence of obesity in pre-adolescent boys and girls in Irbed. There is an increase in obesity with age. The incidence of obesity among school children is probably higher, particularly in urban areas and is expected to rise due to the increase in fast foods intake and food advertising.

In adults, the extent of the problem has not been evaluated. However, preliminary studies and observations show an increase in the number of obese people (Takruri, 1989). Although the prevalence of obesity is not as high as it is in some neighbouring countries (Alwan, 1993; Musalger, 1990; Musaiger, 1993), further investigation and evaluation is required. Obesity is a major health problem and associated with increasing risk for many diseases (Neiman, et al., 1992; Williams, 1985). The association between obesity and diabetes mellitus is well established; it is estimated that the risk for diabetes mellitus is doubled with an increase in weight of 20% (Kause and Mahan, 1984).

Diabetes mellitus

Accurate studies on the prevalence of diabetes mellitus in Jordan have not been conducted. However, an indirect indicator of the high occurrence of the disease has come from a study on hospital diets conducted by Takruri et al., (1990). It was found that 8.5% of diets served in the 11 main hospitals, responsible for 51% of total hospital beds in Jordan, were diabetic diets.

A recent study in diabetes mellitus in Palestinian refugees in Jordan and four other countries was conducted by the medical services of UNRWA in 1993. The prevalence of diabetes mellitus in the 5 countries was 2.8% and in Jordan 3.4%. It is estimated that only 50% of patients visit the UNRWA clinics; thus the real figure for diabetes prevalence is probably at least twice this figure (Mabrouk, 1994). The UNRWA study concluded that the most important risk factor in diabetes mellitus causation was obesity (Table 7) which was present in 56.3% of patients.

Renal Failure

No data are available concerning renal failure and the uremia problem in Jordan. However, indicators come from a study on

hemodialysis (HD) units in the country. The total number treated in these units throughout the country was 456 patients in April, 1992. This is equivalent to 114 HD patients per 1 million population distributed mainly in the age group 40-59 years indicating that end stage renal disease (ESRD) occurs at relatively early age in Jordanians as compared with developed countries. In USA, for example, ESRD seems to be concentrated in the age group above 60 years (55.5% of HD patients vs. 17.3% only in this age group in Jordan) (Raine, 1992). The Jordan figure for HD patients is relatively high when compared with other developing countries. This may, however, reflect the status of health care facilities rather than renal failure.

The distribution of HD patients on different districts indicates that there is a higher prevalence of renal failure in Zarqa district where the environmental pollution and low living standards could be contributing factors (Howard and Speizer, 1994). Chronic glomerulonephritis was found to be responsible for 29.4% of cases whereas diabetes mellitus complications were reported in 10.5% of these patients.

Other Chronic Diseases

Iodine deficiency and goiter have been recently reported to be widespread in different parts of the country with an incidence of 6.8% in children and 15.7% in adults (Osman, 1993). The prevalence in females over 15 years of age was 6 times the rate in males. However, in a study by UNICEF (1990) on preschool children in the Jerash area, no goiter cases were detected. Similarly, Jilani et al., (1991) did not report high figures in their study on patients visiting health centres. The problem appears to need re-evaluation and further investigation.

Dental caries incidence is increasing. A study on school children showed that about 75% had dental caries. In preschool children (0-5 years of age), dental caries incidence was 13.2% showing that it is a problem in this age group (HKJ/MOH & UNICEF, 1993). The fluorine content in the water supply, the change in dietary habits with the consumption of high amount of sugar, host susceptibility, and poor dental hygiene are all suggested as contributing factors.

CONCLUSIONS

Present trends in the prevalence of chronic diseases related to the affluent diet should be evaluated using comprehensive nutrition surveys and long-term nutritional surveillance. Environmental

TABLE 6

Obesity Among Pre-adolescent Jordanians
(Weight for Height = > 2 SD above Median)

Age (Years)	Males		Females	
	No	%	No.	%
4 - 5	122	0.82	92	1.26
5 - 6	216	1.82	244	2.29
6 - 7	561	2.60	568	2.92
7 - 8	507	2.37	530	4.34
8 - 9	413	3.10	396	5.56

Source : Faqih et al. (1992)

TABLE 7

Some Statistical Data on Diabetes mellitus from UNRWA (1993)

Field	Jordan	Gaza	West Bank	S.A.R.	Lebanon	All Fields
1. Prevalence (Rate/100,000)	861	1210	816	866	802	922
2. Type of Diabetes % IDDM % NIDDM	13.2 86.8	5.5 94.5	16.5 83.5	6.8 93.2	9.6 90.4	10.5 89.5
3. Risk factors (%)						
a. Blood rel.	51.4	44	38.2	56.2	38.3	46.5
b. Obesity	6.3	59	54.5	64	30.7	55.1
c. Vascular ds.	9.7	10.4	10.4	21.4	8.2	11.1
d. Obstetric histor	3.4	3.1	2.5	1.0	1.9	2.8
4. Complications (%)						
a. Retinopathy	11.0	19.6	10.8	10.5	15.7	13.8
b. Nephropathy	7.7	8.8	5.1	3.6	4	7.1
c. Neuropathy	24.1	35.3	10.3	13.0	20.0	23.6
d. C.V.D.	18.9	18.3	22.0	16.4	23.7	19.4
e. Others	9.1	9.3	7.7	9.9	5.6	8.6
Total	70.7	91.3	55.9	53.4	72.5	72.6

Source : UNRWA (1993)

pollution from pesticide residues, as a causative factor should also be evaluated.

Nutrition education at all levels is necessary to reduce these problems. Policies regarding food subsidies, food processing and food advertising require to be established.

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