

CARDIOVASCULAR DISEASE IN U.A.E. : AN OVERVIEW

A.O. MUSAIGER¹, A. BENER², S.A.M. BIN-ISHAQ³ and
H. AL-HOSANI³

¹*Department of Food Sciences and Nutrition, Faculty of Agricultural Sciences;* ²*Faculty of Medicine and Health Sciences, UAE University;*
³*Preventive Medicine Department, Ministry of Health, Abu Dhabi, UAE.*

ABSTRACT

The current situation on morbidity and mortality, due to cardiovascular diseases (CVD) in UAE, is reviewed based on statistics of the Ministry of Health for the period 1988-1992. CVD is the leading cause of death in UAE over the last five years and constitutes 20% of total deaths. Acute myocardial infarction is the main type of CVD (37%), followed by cerebrovascular disease (24.5%), ischaemic heart disease (18%) and hypertensive disease (12%). The prevalence of CVD is higher among males than females, and about 75% of all CVD deaths occurred in the age group 45 years and above. Factors contributing to CVD in the UAE have not been investigated. However, indicators from several preliminary studies show that obesity, diabetes, hypertension and high cholesterol blood levels are highly prevalent in adults. The prevalence of obesity was 70% and 56% in adult married females and males, respectively. In a study among Emirati women aged 20-80 years, it was found that 17% had diabetes and 20% had hypertension. About 9% of these women were current smokers. A comprehensive and well designed study on CVD risk factors in UAE community is urgently needed. Strategies to prevent CVD should be given a high priority.

Key Words : Cardiovascular disease, diabetes, hypertension, smoking, obesity, UAE.

INTRODUCTION

The epidemiological transition phenomenon has been well identified in many Middle East countries including the United Arab Emirates. Economic development and improved health care have played an important role in increasing in life expectancy. Lifestyle changes have also occurred and accidents and chronic diseases have become more common. In the United Arab Emirates, the leading causes of death are cardiovascular diseases (20%), accidents and injuries (15%), cancer (5.5%) and congenital anomalies (5.3%) (MOH, 1993). There has been no clear strategy to prevent these diseases in the UAE community. This is mainly due to lack of reliable information on the magnitude of chronic disease incidence as well as absence of epidemiological community-based studies.

The objective of this paper is to highlight the current situation of morbidity and mortality due to CVD in UAE and to discuss the possible risk factors for CVD based on the few preliminary studies that have been carried out in the country. Such information should be of great value for any future studies on the prevalence of chronic diseases in UAE in general and CVD in particular.

CVD MORBIDITY

Data on morbidity from CVD in UAE is scarce and inconsistent. The only information available is that related to numbers of patients attending primary health care centers (PHC). These data revealed that 40 and 1.9 per 1000 population had morbidity due to hypertensive disease and ischaemic heart disease, respectively (MOH, 1993). It is not clear whether these figures reflect the total number of attendances at PHC or the number of new cases. The rate provided by Ministry of Health for hypertensive disease is relatively high when compared to other Middle East countries (Alwan, 1993). The morbidity due to hypertensive diseases was more common among females in UAE citizens, whereas it was higher among males in non-UAE citizens. This may be attributed to high percentage of male expatriates in UAE compared to female (ratio is 3:1).

CVD MORTALITY

Death registration in UAE has improved remarkably during the past 5 years and therefore, more information on CVD mortality has become available. Acute myocardial infarction (AMI) is the main type of CVD leading to death in UAE (37%), followed by cerebrovascular disease (24.5%) and ischaemic heart disease (18%) (Table 1). No significant differences were reported between males and females in death due to various types of CVD except for rheumatic heart disease and hypertensive disease. Deaths due to rheumatic heart disease occurred more in males (17.8%) than females (6.6%). In contrast, deaths due hypertensive disease occurred more in females than males (17.6% and 9.7%, respectively). The proportions of deaths due to several types of CVD indicated no difference between Emiratis and non-Emirati females, whereas the Emirati males were more susceptible to deaths due to cerebrovascular and hypertensive diseases. The non-Emirati males were more likely to die due to acute myocardial infarction and rheumatic heart disease (Tables 2 and 3).

There is no obvious explanation for the difference in CVD between Emiratis and non-Emiratis. It could be related to different age and sex distribution. The non-Emiratis living in UAE are composed of many nationalities each with various ethnic groups and

TABLE 1

Distribution of CVD deaths in UAE by types during 1989-1992

Causes of death	1989		1990		1991		1992	
	No.	%	No.	%	No.	%	No.	%
Acute Myocardial Infarction	198	37.8	208	35.3	255	31.0	309	36.9
Cerebrovascular Disease	102	19.5	120	20.3	214	26.0	205	24.5
Ischaemic Heart Disease	89	17.0	123	20.8	204	24.8	151	18.0
Hypertensive Disease	75	14.3	70	11.9	68	8.3	100	11.9
Chronic Rheumatic Heart Disease	37	7.1	52	8.8	52	6.3	48	5.7
Artherosclerosis	23	4.4	15	2.5	29	3.5	24	2.9
Other CVD	0	0.0	2	0.3	1	0.1	0	0.0
Total								

Source : Ministry of Health (1993)

TABLE 2

Distribution of CVD deaths in UAE among males by type and nationality (1992)

Type of CVD	UAE		Non-UAE		Total	
	No.	%	No.	%	No.	%
Rheumatic Heart Disease	5	2.3	33	15.4	38	17.8
Hypertensive Disease	27	12.6	31	8.1	58	9.7
Ischaemic Heart Disease	37	17.3	76	19.7	113	18.9
Acute Myocardial Infarction	67	31.3	161	41.8	228	38.1
Cerebrovascular Disease	71	33.2	76	19.7	147	24.5
Artherosclerosis	7	3.3	8	2.1	15	2.5
T o t a l	214	100.0	385	100.0	599	100.0

Source : Ministry of Health (1993)

TABLE 3

Distribution of CVD deaths in UAE among females by type and nationality (1992)

Type of CVD	UAE		Non-UAE		Total	
	No.	%	No.	%	No.	%
Rheumatic Heart Disease	2	1.3	8	5.3	10	6.6
Hypertensive Disease	29	19.1	13	15.1	42	17.6
Ischaemic Heart Disease	23	15.1	15	17.4	38	16.0
Acute Myocardial Infarction	53	34.9	28	32.6	81	34.0
Cerebrovascular Disease	38	25.0	20	23.3	58	24.4
Artherosclerosis	7	4.6	2	2.3	9	3.8
Total	152	100.0	86	100.0	238	100.0

Source : Ministry of Health (1993)

this could make any explanation a difficult task. WHO (1990) reported that there are sharp contrasts among countries or among social or ethnic groups within a country and these special or environmental conditions can well place a population at risk for CVD.

The distribution of CVD deaths by age and sex is presented in Table 4. By age 15-44 years, 25% of males died due to CVD compared to only 9% females. At age 45-59 years, the death rate increased to 36% in males and 15% in females. No significant increase in death has been found in males aged above 59 years, but among females the rate increase dramatically to reach 70%. It is well documented that the incidence of CVD increase with age, and men have higher rates than women. Some reports show that an increase in the incidence of CVD has been observed in post-menopausal women (Isles and Holes, 1992).

Geographically, the distribution of common CVD deaths by sex is similar throughout the main areas in UAE (Table 5). Exceptions are Umm Al-Qwain and Fujairah where the deaths due to CVD were higher among women compared to other geographical areas. Numbers are small but these two areas are mostly rural and are inhabited by more UAE citizens than in other areas.

RISK FACTORS FOR CVD

Little information exists on the prevalence of risk factors for CVD in UAE. Diabetes and hypertension are the most common risk factors which may contribute to the high incidence of CVD in the country. Smoking is another important risk factor, especially among men. The prevalence of obesity has been shown to be high among both males and females in the UAE.

Diabetes Mellitus

The incidence of diabetes mellitus in UAE is increasing, and makes a high demand on the existing health services. Diabetic patients occupied 8% of available day-bed units in Al Ain Hospital and the average stay of a diabetic was 14.6 days (Omar et al., 1985). The Ministry of Health (MOH, 1993) reported that 3.5% of deaths in 1992 in UAE were due to diabetes mellitus. About 55% of deaths due to diabetes were among citizens, and the rest among non-citizens. Omar et al. (1985) found that 41% of hospitalized diabetics were nationals, while the rest were expatriates. Most of the nationals were females (62%), but the expatriates showed a greater proportion of males (67%). Type II diabetes mellitus featured predominantly (71.7%)

TABLE 4

Distribution of common CVD deaths in UAE by age and sex for 1992 (only death records include age)

Age (Years)	SEX		Total			
	Male No.	%	Female No.	%	No.	%
0 - 1	3	0.7	5	3.0	8	1.4
1 - 4	0	0.0	2	1.2	2	0.3
5 - 14	4	1.0	2	1.2	6	1.0
15 - 44	107	25.1	15	9.0	122	20.6
45 - 59	154	36.0	25	15.1	179	30.2
> 60	159	37.2	117	70.5	276	46.5
Total	427	100.0	166	100.0	593	100.0

Source : Ministry of Health (1993)

TABLE 5

Distribution of common CVD deaths in UAE by geographical areas and sex

Geographical Area	SEX				Total	
	Male No.	Male %	Female No.	Female %	No.	%
Abu Dhabi	134	77.5	39	22.5	173	100.0
Western	12	80.0	3	20.0	15	100.0
Al-Ain	78	70.2	33	29.8	111	100.0
Dubai	170	70.2	72	29.8	242	100.0
Sharjah	98	71.0	40	29.0	138	100.0
Ajman	27	73.0	10	27.0	37	100.0
Umm Al Qwain	15	62.5	9	37.5	24	100.0
Ras Al Khaimah	47	74.6	16	25.4	63	100.0
Fujairah	18	52.9	16	47.1	34	100.0
Total	599	71.6	238	28.4	837	100.0

Source : Ministry of Health (1993)

in the national group, but was only 57% for non-nationals. The remaining patients in each group were type I diabetes mellitus.

A recent study on the nutritional status of Emirati women aged 20-60 years showed that 17.1% of these women had a history of diabetes (Musaiger and Hanaya, unpublished). This figure is higher than that reported in other Middle Eastern countries (King and Alwan 1992), and indicates that diabetes in the UAE is a major public health problem among women, especially after 45 years of age.

Hypertension

It is well documented that hypertension is one of the major risk factors for CVD (NDC, 1991). The statistics of the Ministry of Health (1993) showed that deaths due to hypertensive disease occurred more among men aged over than 59 years (86%), while 50% of women died due to this disease at age 45-59 years, and 32% at age over than 59 years. Musaiger and Hanaya (unpublished) found that the prevalence of hypertension among Emirati women aged 20-80 years was high (20%), and may be the highest in the region. Alwan (1993) reported that the prevalence rates of hypertension in Eastern Mediterranean Region have been found to range from 10% to over 17% of the adult population. The prevalence of hypertension in this region appears to parallel affluence. In many of the countries in the region, including the UAE, the present epidemiological and clinical patterns of hypertension do not appear to differ markedly from those in Western countries.

Smoking

Cigarette smoking is the most preventable cause of CVD morbidity and mortality. Smoking has been associated with a two to fourfold increased risk of coronary heart disease, a greater than 70% excess rate of death from coronary heart disease, and an elevated risk of sudden death (Lakier, 1992). Little attention has been given to studies on prevalence of smoking in UAE. In a preliminary study (unpublished) it was found that 9% of women aged 20-80 years were current smokers; however, 37% of these women were exposed to a smoking environment at home, making them passive smokers. Leone (1993) reported that both active and passive smoking seem to act negatively on the heart causing atherosclerotic coronary alterations, focal myocardial lesions and arrhythmias. Acute exposure to passive smoking impairs cardiac performance in healthy people and subjects who survived a first acute myocardial infarction.

A recent study (Bener, Gomes and Anderson, 1993) demonstrates that smoking is highly prevalent among physicians in the UAE, although the majority (91%) agreed that smoking was

hazardous to health. Of 275 physicians studied, 36% were current smokers, and 12.7% were ex-smokers. This is a source of worry as physicians should have good health behaviour to be examples for others and anti-smoking campaigns should start with physicians.

Hypercholesterolemia

The relationship between elevated serum cholesterol and cardiovascular disease, especially CHD has been well documented in a number of studies, both within and between countries (La Rosa, 1992). A preliminary study in UAE showed that the prevalence of hypercholesterolemia varied from 47% to 53% in the Arab nationals in UAE and from 22.7% to 44.5% in the non-Arabs. There was no statistical difference in the distribution of cholesterol levels among Emiratis and other nationalities which indicates that hypercholesterolemia is a problem in most nationalities living in the UAE. Overall, it afflicts nearly 50% of the adult population (Agarwal, et al. 1994).

Overweight and Obesity

Across the Emirati population, over recent years there has been a steady increase in food-energy consumption : a lack of physical exercise is also apparent (Musaiger, 1987). Overweight and obesity, therefore, have risen dramatically in UAE over the past decade. The recent data from National Nutrition Survey (1992) revealed that 33% of married women were overweight and 38% were obese, based on Body Mass Index criteria (Table 6). The prevalence of obesity increased rapidly with age, and reached its peak at age 30-39 years. The prevalence declined slightly at age 40 years and above (40.5%) (Musaiger, 1992).

The prevalence of obesity for married men was much less when compared with women. Of men studied, 40.3% were overweight, but only 15.8% were obese. The prevalence of overweight increased slightly with age. However, it fluctuated with age, it was 18.8% at age 20-29 years, decreased to 15.0% at age 30-39, then increased to 18.2% at age 40-49 years, and decreased again to 13.9% at age 50 years and over (Table 7). In general, the prevalence of obesity in UAE is similar to that reported in other Gulf countries (Al-Awadi and Amine, 1989; Musaiger and Al-Ansari, 1992), but it is higher than that reported in most Western countries for the same age group (Bray, 1990). Obesity is a major public health problem in the UAE community, and may play an important role in increasing the occurrence of other chronic diseases. It is debatable whether obesity is an independent risk factor for CVD, but it is associated with an increased prevalence of risk factors such as hypertension

TABLE 6
Obesity among married women in the UAE by age (N = 927)

Age (years)	Underweight BMI < 20 %	Acceptable weight BMI 20-24.9 %	Overweight BMI 25-29.9 %	Obese BMI > 30 %	Total %
17 - 19.9	5.9	35.3	47.1	11.8	100.0
20 - 29.9	6.7	34.6	31.7	26.9	100.0
30 - 39.9	3.3	19.2	33.9	43.6	100.0
> 40	2.7	24.9	31.5	40.8	100.0
Total	% 3.9 No. (36)	% 25.0 No. (232)	% 32.8 No. (304)	% 38.3 No. (355)	% 100.0 No. (927)

Source : Ministry of Health (1993)

TABLE 7

Obesity among married men in the UAE by age (N = 799)

Age (years)	Underweight BMI < 20 %	Acceptable weight BMI 20-24.9 %	Overweight BMI 25-29.9 %	Obese BMI > 30 %	Total %
20 - 29.9	7.8	37.5	35.9	18.8	100.0
30 - 39.9	1.5	47.0	36.5	15.0	100.0
40 - 49.9	3.1	34.7	44.0	18.2	100.0
> 50	4.5	40.6	41.0	13.9	100.0
Total	3.6	40.3	40.3	15.8	100.0
	No. (29)	(322)	(322)	(126)	(799)

Source : Ministry of Health (1993)

and diabetes. Overweight and obese subjects also tend to be less active and may have lower glucose tolerance (NDC, 1992).

CONCLUSION

Cardiovascular diseases are the major cause of death among the adult population in UAE. Indicators from several small scale studies suggest that the standard international risk factors such as hypertension, diabetes and high blood cholesterol level are widely present in the UAE. It is essential, therefore, to conduct a community-based study to determine the prevalence of non-communicable diseases, and the risk factors involved. Such a study should not be done without a well designed plan and fully agreed coordination among several sectors especially involving the Ministry of Health and the UAE University.

REFERENCES

- Agarwal, M.M., P.F. Hughes, A.A. Haliga, P. Newman, M.M. Sheekh-Hussein and A.G. Shalabi. (1994). Relevance of cholesterol screening in UAE : A preliminary study. (Abstract), Workshop on Nutrition and Chronic Diseases in the Arab Middle East Countries, UAE University, Al Ain.
- Al-Awadi, F. and E.K. Amine. (1989). Overweight and obesity in Kuwait. J. Royal Soc. Hlth. 109 : 175-177.
- Alwan, A.A.S. (1993). Diseases of modern lifestyle : the need for action, Hlth. Serv. J. WHO/EMRO 1:7, 24-34.
- Bener, A., J. Gomes and J.A.D. Anderson. (1993). Smoking habits among physicians in two Gulf countries. J. Roy. Soc. Hlth.
- Bray, G.A. (1990). Obesity. In Brown, ML (editor). Present Knowledge in Nutrition. International Life Sciences Institute, Nutrition Foundation, Washington, D.C. 23-58.
- Isles, C.G. and D.J. Hole. (1992). Changing trend in vascular disease : coronary risk factors today. In Lorimer A.R. and Scheperd J. (editors). Preventive Cardiology, Oxford, U.K., 1-29.
- King, H. and Alwan, A. (1992). Diabetes in the Eastern Mediterranean Region. World Hlth. Statistics Quarterly, 45:355-359.
- Lakier, J.B. (1992). Smoking and cardiovascular disease. Am. J. Med. 93 (1A) : 85-125.

- La-Rosa J.C. (1992). Cholesterol and cardiovascular disease: how strong is the evidence ? *Clinical Cardiology* 15 : 1112-1117.
- Leone, A. (1993). Cardiovascular damage from smoking : a fact or belief ? *Int. J. Cardio.*, 38 113-117.
- Ministry of Health, MOH. (1993). Annual Report, 1992. Department of Preventive Medicine, Abu Dhabi.
- Musaiger, A.O. (1987). The state of food and nutrition in the Arabian Gulf countries. *Wld. Rev. Nutr. Diet* 54:105-173.
- Musaiger, A.O. (1992). The State of Food, Nutrition and Health in UAE. Ministry of Health, Department of Preventive Medicine, Abu Dhabi, UAE.
- Musaiger, A.O. and M. Al-Ansari. (1994). Factors associated with obesity among women in Bahrain. *Int. Quart. Comm. Hlth. Educ.* 12:129-136.
- National Dairy Council (1991). *Coronary Heart Disease - I*. London, U.K.
- Omar, A., K. Elsir, M. Muneer, M. Hamed, D.H. Nazeela, T.K. Moideen, et al. (1985). Diabetes mellitus in Al-Ain : the impact of hospital services. *Emirates Med. J.* 3 : 119-122.
- WHO. (1990). *Diet, Nutrition and the Prevention of Chronic Diseases*. Technical Report Series 797, Geneva.