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**CARDIOVASCULAR DISEASES PREVENTION AND CONTROL**

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## EXECUTIVE SUMMARY

Developing countries are experiencing dramatic changes in the health needs of their populations. Although many countries currently face a double burden of infectious diseases and noncommunicable diseases, the latter, including cardiovascular diseases (CVD), are fast replacing such traditional enemies as infectious diseases and malnutrition as the leading causes of disability and premature death. This so-called "epidemiological transition" is taking place partly because of the rapid aging of the developing world's populations, progressive urbanization and socioeconomic transformation. Other major factors involved include changes in nutritional patterns experienced over the last few decades, the twentieth century mass habit of cigarette smoking, and a sedentary lifestyle.

The last 30 years have seen a considerable change in food consumption patterns. The per capita food energy and protein availability has doubled and fat availability has increased threefold. At the same time, the increase in the availability of vegetables was not consistent; indeed there was a general decrease in some countries. Only a slight increase in the per capita supply of fruits occurred during this period.

Available data indicate a considerable and progressive increase in tobacco consumption over the last three decades. Imports and manufacture of cigarettes are progressively increasing. Data also demonstrate high rates of smoking in populations of the Region, especially among men. Very little is known about physical activity in the Region on a population basis. With the exception of one recent assignment in Oman, physical inactivity as a CVD risk factor has not been evaluated in the Region. Diabetes and impaired glucose tolerance, recognized risk factors for CHD, are increasingly encountered.

Several epidemiological surveys on diabetes have been conducted in the Region over the last decade. Those that employed comparable methodology and diagnostic criteria, based on WHO recommendations, deliver a consistent and disturbing message: diabetes in these populations is considerably more prevalent than in Europe and North America. With the exception of Sudan, published results of epidemiological studies report a prevalence of diabetes in sample populations aged 20 years and over of around 10%. In many countries of the Eastern Mediterranean Region, this important feature of the "epidemiological transition" is already much further advanced than many health policy-makers appreciate. Although health officials and the medical profession have a general awareness of the increasing occurrence of CVD, the problem has, in general, not received the attention it deserves and its extent has not been sufficiently examined.

Reliable and complete mortality data are difficult to obtain and many countries still do not report death by cause. However, data reported from Bahrain, Cyprus, Egypt, Iraq, Jordan, Kuwait and Qatar over the last few years provide useful indicators of mortality trends. In these countries CVD is the leading identifiable cause of death. CHD seems to be the predominant type of cardiopathy encountered in many countries. Data on hypertension have been reported from many countries and hypertension has been reported to affect more than 20% of adults.

Since treatment of established CVD is expensive and often ineffective, prevention is the best way of avoiding growth in the burden of these diseases and in unnecessary health care expenditure. There is considerable evidence from various scientific disciplines testifying to the preventability of CHD. Generally speaking, four levels of prevention can be identified, corresponding to different phases in the development of disease: primordial, primary, secondary and tertiary. All are important and complementary, although primordial and primary prevention have the most to contribute to the health and well-being of the whole population. These four levels of prevention are reviewed with special emphasis on approaches and priorities for the Eastern Mediterranean Region.

Several countries have now recognized the need to initiate demonstration or pilot projects for community-based interventions for the primary prevention of cardiovascular diseases. WHO is collaborating with the Islamic Republic of Iran, Lebanon and Oman in establishing such projects.

A regional plan for CVD prevention and control was discussed and endorsed during the intercountry workshop in 1994. The plan was published and is reproduced in the Annex. Since the plan was formulated, many countries have made significant progress towards the achievement of the targets set for 1997. However, although standardized data is now available in more than 60% of countries, the studies conducted during the past few years in Bahrain, Cyprus, Djibouti, Egypt, Islamic Republic of Iran, Jordan, Lebanon, Oman, Pakistan, Tunisia, Saudi Arabia and Sudan focused primarily on the epidemiology of cardiovascular risk factors. Little progress has been made in strengthening mortality statistics and accurate data on the causes of death are still not available in many countries. Similarly, although several countries have, over the last four years, taken action to control CVD, only a few have developed comprehensive action plans.

In conclusion, CVD is emerging as the single leading cause of mortality in many countries of the Region. The enormous burden caused, in terms of suffering and health care costs, is escalating. The Regional Committee may wish to advise on mechanisms that would stimulate action by countries to address this major problem.

## 1. INTRODUCTION

Developing countries are experiencing dramatic changes in the health needs of their populations. Although many countries currently face a double burden of infectious diseases and noncommunicable diseases, the latter, including cardiovascular diseases (CVD), are fast replacing such traditional enemies as infectious diseases and malnutrition as the leading causes of disability and premature death. This trend will continue and by the year 2020, noncommunicable diseases are expected to account for seven out of every 10 deaths in the developing regions, compared with less than half that figure today [1].

This so-called "epidemiological transition" is taking place partly because of the rapid aging of the developing world's populations, progressive urbanization and socioeconomic transformation. Other major factors involved include changes in nutritional patterns experienced over the last few decades. As diet changes, usually to include a smaller proportion of complex carbohydrates and more sugar and animal fat, people become more susceptible to CVD. Obesity becomes more prevalent and when coupled with less physical activity, it increases the risk of morbidity and premature death, particularly from CVD and diabetes. High salt intake increases hypertension, raising the risk of stroke and coronary heart disease (CHD). Decades of research, involving all the major types of biomedical investigation, have conclusively shown that modern "disturbances of human culture", operating from early childhood onwards are responsible for the epidemic of atherosclerotic diseases [2]. These disturbances include a "rich" diet associated with elevated levels of blood pressure, serum cholesterol and body weight, as well as high prevalence of diabetes, the twentieth century mass habit of cigarette smoking, and a sedentary lifestyle.

In many countries of the Eastern Mediterranean Region, this important feature of the "epidemiological transition" is already much further advanced than many health policy-makers appreciate. Although health officials and the medical profession have a general awareness of the increasing occurrence of CVD, the problem has, in general, not received the attention it deserves and its extent has not been sufficiently examined. Awareness among the general population of the adverse health consequences of the new behaviours and lifestyles is likewise inadequate. Largely because of the long delay between cause and effect, people tend to misjudge the hazards of these lifestyles. For example, when young adults begin to smoke, they do not witness the high mortality associated with their behaviour until they reach middle age.

Since treatment of established CVD is expensive and often ineffective, prevention is the best way of avoiding growth in the burden of these diseases and in unnecessary health care expenditure.

This report provides a brief review of the magnitude and epidemiological patterns of CVD in the Region, examines feasible interventions and appropriate preventive strategies and discusses proposals for action to combat these diseases in the Region. The Regional Committee is invited to advise on ways and means of strengthening CVD control activities and motivating the establishment of effective national programmes in countries.

## **2. EPIDEMIOLOGICAL FACTORS RELATED TO THE OCCURRENCE OF CARDIOVASCULAR DISEASES IN THE REGION**

### **2.1 Demographic and socioeconomic trends**

During the last three decades, countries in general have made considerable progress in the control of communicable diseases of childhood. At present, the infant mortality rate is lower than 50 per 1000 live births in 16 countries of the Region compared with only two countries in 1970 [3,4]. These changes are perhaps more apparent in the Member States of the Gulf Cooperation Council (GCC) where infant mortality has dropped significantly and where fertility rates remain comparatively high. In Oman, for example, the infant mortality rate dropped from 159 per 1000 live births in 1970 to below 30 per 1000 live births in 1990 [5], while the fertility rate changed comparatively little, from 7.2 in 1970 to 6.8 in 1990 [6].

With the decline in infant and child mortality, there has been a rapid growth in the population. In 1970, the life expectancy at birth was under 50 years in nine countries, a figure which now applies in only three countries. Currently, the life expectancy in the majority (16) of the countries exceeds 65 years of age [3,4] and in six countries the life expectancy is 70 years or over. The global average is 66 years [7]. Thus, large numbers of the population are advancing to ages previous generations were not able to reach.

While the GNP per capita ranges from US\$ 170 to US\$ 18 642, many countries have experienced economic growth and socioeconomic development over the last three decades. For the GCC countries this growth and development has been dramatic, bringing about benefits such as improved access to health care, education, safe drinking water and sanitation. Unfortunately, they have also brought about changes in lifestyle, nutrition and other factors related to the occurrence of CVD.

### **2.2 Nutritional trends**

The last 30 years have seen a considerable change in food consumption patterns. Analysis of the data collected from some countries on dietary consumption trends demonstrates a rapid rise in food energy availability and consumption beyond requirements [8]. Data from the FAO Regional Office for the Near East, based on food balance sheets for certain Arab countries, indicate that the per capita food energy and protein availability has doubled and fat availability has increased threefold [9]. Cereals, which contribute more than half the energy and protein supply to Arab populations, also increased in terms of per capita availability during the period 1961–1990. The degree of this increase varied from one country to another but rice availability increased fivefold in some countries. During the same period, sugar availability was reported to have increased by 100% for Egypt, Libyan Arab Jamahiriya and Syrian Arab Republic and by 300% for Saudi Arabia. Similarly, all countries showed a very high increase in the per capita edible oil availability. At the same time, the increase in the availability of vegetables was not consistent; indeed there was a general decrease in some countries. Only a slight increase in the per capita supply of fruits occurred during this period.

It is important to note that these enormous changes in food consumption patterns were not restricted to oil-rich countries but were also seen in countries with lower incomes where wheat and rice are replacing the traditional high-fibre cereals.

It is predicted that if the increase in caloric consumption continues at the present rate, the consumption of calories will exceed that in developed countries in less than a decade. In one country, up to 53% of males and 63% of females are reported to be obese. Among Saudi Arabian adults aged 18 to 74 years attending a primary health care centre (PHC), 51.5% of the men and 65.4% of the women were obese (body mass index of  $>25 \text{ kg/m}^2$ ). Overall, marked obesity (defined as a body mass index of  $\geq 30 \text{ kg/m}^2$ ) was seen in 25% of people attending the centre [10].

### 2.3 Other risk factors

In addition to the nutritional factors, there are other risk factors contributing to the increasing magnitude of cardiovascular diseases. These include smoking, lack of physical activity and diabetes.

Available data indicate a considerable and progressive increase in tobacco consumption over the last three decades [11]. Imports and manufacture of cigarettes are progressively increasing. Data also demonstrate high rates of smoking in populations of the Region, especially among men. Smoking prevalence among adult males is reported from some countries to be higher than 40% [12]. A high prevalence of smoking has also been reported consistently among patients who have had an acute myocardial infarction [13].

Hypertension is found in 22%–47% of cases of CHD and diabetes in over 30%; most patients have at least one coronary risk factor.

Very little is known about physical activity in the Region on a population basis. With the exception of one recent assignment in Oman, physical inactivity as a CVD risk factor has not been evaluated in the Region. Although some government facilities are available for sport, these facilities are often restricted to team sports and they are not necessarily available to the general public. Several barriers to promoting physical activity, particularly among women, exist.

Diabetes and impaired glucose tolerance, recognized risk factors for CHD, are increasingly encountered. Several epidemiological surveys on diabetes have been conducted in the Region over the last decade [14]. Those that employed comparable methodology and diagnostic criteria, based on WHO recommendations, deliver a consistent and disturbing message: diabetes in EMR populations is considerably more prevalent than in Europe and North America. Data on the epidemiological and clinical characteristics of the two types of diabetes have been reported from Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Pakistan, Saudi Arabia, Sudan, Tunisia and Republic of Yemen. With the exception of Sudan, published results of epidemiological studies report a prevalence of diabetes in sample populations aged 20 years and over of around 10% [15–18]. There are rural/urban differences in prevalence. The Egyptian study reported an overall prevalence of 9.3% but the prevalence went up to 20% in population

samples taken from higher socioeconomic classes in urban areas [18]. In Oman, an additional 10% of the sample had impaired glucose tolerance [16]. In Sudan, the results of a recent survey conducted on a sample population aged 25 years and over revealed a crude prevalence of 2.4% for diabetes and 2.9% for impaired glucose tolerance (IGT) [17]. The highest prevalence was seen in the northern parts of Sudan (5.5%) and the lowest in the western desert-like parts (0.9%).

One consistent finding of all the surveys is the low detection rate. The proportion of undiagnosed diabetes ranges from 40% to over 60% [15].

Based on a conservative prevalence figure of 8% for diabetes and another 8% for IGT in people aged 20 years and over, the number of people with diabetes in the Region has been estimated to be more than 17 million, with another 17 million for IGT.

#### **2.4 Magnitude of cardiovascular diseases in the Region**

Reliable and complete mortality data are difficult to obtain and many countries still do not report death by cause [19]. However, data reported from Bahrain, Cyprus, Egypt, Iraq, Jordan, Kuwait and Qatar over the last few years provide useful indicators of mortality trends. In these countries CVD is the leading identifiable cause of death.

Data from Kuwait indicate an increasing death rate from CHD and hypertension [20]. Deaths from CVD, accidents and malignant neoplasms accounted for almost half the general mortality in 1984.

Diseases of the circulatory system were reported to be responsible for 37% of deaths in Qatar in 1992 and about 30% in Bahrain [21,22]. In Jordan, CVD was reported as the leading cause of death in 1991, accounting for 44.4% of male and 34.5% of female deaths [23]. In 1961, 1970, 1975, 1979 and 1985 the corresponding figures were 5%, 12.6%, 18.9%, 22.2% and 39.1% for males and 2.9%, 13%, 15.9%, 18.5% and 27.2% for females. There were concomitant reductions in mortality caused by communicable diseases.

Despite the fact that mortality data may be incomplete in some countries, there is enough evidence to indicate rising trends in mortality from CVD.

CHD seems to be the predominant type of cardiopathy encountered in many countries. For example, CHD including acute myocardial infarction is the fourth leading cause of admissions at the Salmaniya Medical Centre in Bahrain [22]. Hospital data confirm the increasing importance of CHD; in Jordan, a progressive increase in CHD cases between 1973 and 1987 was reported while at the same time the number of cases of RHD declined [24]. At Queen Alia Heart Centre, almost half the patients with angiographically-confirmed CHD were below the age of 50 years and only 17% were above the age of 60 years [24].

Data on hypertension (blood pressure  $\geq 140/90$ ) have been reported from many countries including Cyprus, Egypt, Islamic Republic of Iran, Iraq, Morocco, Oman, Pakistan and Saudi Arabia and hypertension has been reported to affect more than 20% of



adults [25–30]. Some surveys conducted over the last two decades were based on different diagnostic criteria and age composition of the sample studied and are therefore difficult to compare. However, according to a recent survey, 26% of adult Egyptians suffer from hypertension, a rate higher than figures reported for the US population [26]. A similar figure (23.6%) was reported by a survey conducted on a sample of Omani adults [27]. The prevalence of hypertension appears to be lower in rural than urban areas [28,29].

Studies have also shown a low detection rate among people with high blood pressure. Up to 60% of those discovered to have a blood pressure of 140/90 or higher were not aware of their elevated blood pressure before the survey.

Based on a conservative prevalence figure of 20% in the population aged 20 years and older, it can be estimated that there are over 44 million people in the Region with high blood pressure; more than 26 million of them are undiagnosed.

Rheumatic fever (RF) and rheumatic heart disease (RHD) continue to present major problems in certain countries of the Region, while apparently declining elsewhere. In Jordan, data from the national CVD centre indicate that the proportion of cases of RHD fell from 32.4% between 1975 and 1977 to 19% between 1985 and 1987.

The AGFUND-supported programme for the prevention of RF and RHD provided useful data on the extent of the problem in the four participating countries (Egypt, Iraq, Pakistan and Sudan). The prevalence among schoolchildren ranged between 0.9 and 10.2 per 1000. Sudan has the highest prevalence (10.2 per 1000) followed by Egypt (5.1 per 1000) [31].

### **3. POTENTIAL FOR PREVENTION OF CARDIOVASCULAR DISEASES**

#### **3.1 Coronary heart disease**

There is considerable evidence from various scientific disciplines testifying to the preventability of CHD. The time trends in CHD mortality indicate that the epidemic is modifiable and studies on CHD mortality rates among immigrants indicate that environmental factors readily and strongly influence the occurrence of disease. The results of community intervention studies provide further evidence that CHD is preventable.

Generally speaking, four levels of prevention can be identified, corresponding to different phases in the development of disease: primordial, primary, secondary and tertiary. All are important and complementary, although primordial and primary prevention have the most to contribute to the health and well-being of the whole population.

The aim of primordial prevention is to avoid the emergence and establishment of the social, economic and cultural patterns of living that are known to contribute to an elevated risk of disease. Primordial prevention for CHD should include national policies and programmes on food and nutrition, comprehensive policies to discourage smoking, programmes for the prevention of hypertension and programmes to promote regular physical activity.

The purpose of primary prevention is to limit the incidence of disease by controlling causes and risk factors. Primary prevention involves two strategies that are often complementary. It can focus on the whole population, with the aim of reducing average risk (the population strategy), or on people at high risk as a result of particular exposures (the high-risk approach). When the risk factors affect the population as a whole, e.g. in industrialized countries, the approach should be a population approach. In this case, primary prevention depends on widespread changes that reduce the average risk in the whole population.

Secondary prevention aims to cure patients and reduce the more serious consequences of disease through early diagnosis and treatment. It comprises the measures available to individuals and populations for early detection and prompt and effective intervention. It is directed at the period between onset of disease and the normal time of diagnosis, and aims to reduce the prevalence of disease.

Tertiary prevention is aimed at reducing the progress or complications of established disease and is an important aspect of therapeutic and rehabilitation medicine. It consists of measures to reduce impairment and disability, minimize suffering caused by the disease, and promote patients' adjustment to incurable conditions. Tertiary prevention is often difficult to separate from treatment since the treatment of chronic disease has, as one of its central aims, the prevention of recurrences.

Note: A more detailed review of prevention may be found in *Prevention and control of cardiovascular diseases*, Alexandria, WHO Regional Office for the Eastern Mediterranean, 1995 (EMRO Technical Publications Series No. 22).

### **3.2 Stroke**

Stroke is a major cause of premature death and avoidable ill health and is one of the most common causes of severe disability. There is much scope for prevention and it is possible to set objectives and realistic targets (for mortality, and first and recurrent events). It is also possible to monitor the progress in achieving these targets.

In primary prevention, priority should be given to controlling the risk factors, particularly smoking. This requires comprehensive action by central government to introduce national tobacco control policies and legislation.

Secondary prevention aims to reduce the more serious consequences of stroke through early diagnosis and treatment.

Tertiary prevention is aimed at reducing the progress or complications of established disease and is an important aspect of therapeutic and rehabilitation medicine after stroke. It consists of measures to reduce impairment and disability, minimize the consequences of stroke, and assist the patient's adjustment to prolonged disability.

### 3.3 Hypertension

Based on the same principles discussed under 3.1 and 3.2, the prevention of hypertension requires both reduction of the risk of developing high blood pressure in the population as a whole and identification of individuals with high blood pressure who are at an increased risk for complications.

The two approaches are complementary and not conflicting. A shift of the population distribution of blood pressure levels to a lower range, with benefits across the whole range of risk, along with targeted interventions of persons who are at a higher individual risk, will provide a comprehensive preventive strategy for hypertension.

The prevention of hypertension is achieved through the reduction of modifiable risk factors that contribute to the risk of high blood pressure. This strategy, which is also effective in preventing CHD, aims to maintain healthier lifestyles through promotion of lower salt intake, maintenance of normal body weight and physical activity. The benefits of effective interventions to reduce blood pressure have been clearly demonstrated over a wide range of high blood pressure levels. The greater the cumulative risk of cardiovascular events and other adverse outcomes, the greater the benefit of effective blood pressure reduction and, therefore, the greater the need for early and effective intervention.

Strategies for the control of hypertension should address the need to detect individuals with high blood pressure and provide timely and effective treatment, and the need to integrate primary prevention of hypertension with the prevention of coronary artery disease, stroke and other noncommunicable diseases, such as diabetes, through a comprehensive noncommunicable disease control programme focusing on promotion of healthy lifestyles.

The lifestyle components of the programme, which include nutrition and dietary modifications, promotion of physical activity and prevention of obesity, are effective in preventing hypertension and are equally applicable to the management of established cases.

Note: Further details can be found in *Prevention and management of hypertension*, Alexandria, WHO Regional Office for the Eastern Mediterranean, 1996 (EMRO Technical Publications Series No. 23).

### 3.4 Rheumatic fever/rheumatic heart disease

Primary prevention is the detection and treatment of upper respiratory tract infection due to group A streptococci to prevent an initial attack of acute RF. The infection can usually be controlled by appropriate therapy with penicillin which remains the drug of choice as it is safe, effective and inexpensive.

Secondary prevention comprises the regular administration of an antibiotic (usually penicillin) to a patient who has had RF, in order to prevent infection of the upper respiratory tract due to group A streptococci and the subsequent development of recurrent attacks of RF. It has been shown to be cost-effective in reducing morbidity and mortality due to RHD.

At the community level, primary prevention of RF is best achieved as a part of primary health care and should focus on health education of the general public on the importance of early diagnosis and effective treatment of streptococcal pharyngitis in order to reduce its incidence. While primary prevention programmes may not be feasible in all situations, their implementation is strongly recommended where possible. In many developing countries, however, the immediate need is probably to focus on secondary prevention programmes as the most realistic approach to the prevention of RF and RHD at present.

#### **4. COMMUNITY-BASED INTERVENTION PROGRAMMES**

Good and relevant information on risk factors and on healthy lifestyles should be ensured to all citizens. Particular emphasis should be placed on education of children and adolescents at school. A well organized national health education system is a cornerstone of any intervention programme.

What is needed is not only the information on what causes CVD, but also the practical information on how to avoid these causes. Individuals should be taught practical skills on how to adopt and follow a healthy lifestyle, such as what sort of food to buy, how to prepare meals, etc. People and communities should also be taught the skills for support measures needed for such lifestyles.

Provision of information is not enough, however. People's health-related practices in any community are closely related to the general practices of the community, and to the general beliefs, norms and social values. Thus it is often difficult for the individual to make major changes in lifestyle, if respective changes do not take place in the community, and more generally, in the whole society. Therefore, successful large-scale preventive programmes attempt to change, instead of the individual, the whole community together with many of its social and environmental factors. This involves decisions and actions to institute health intervention programmes. Decision-makers should ensure that people can make informed choices and that following healthy lifestyles is a feasible option. Several government departments other than the ministry of health will have to be involved in a highly coordinated manner. Nongovernmental organizations should also be involved and, ultimately, mobilization of the whole community is needed.

An example of a successful programme is the Finnish experience with the North Karelia project [32]. Finland was faced with an exceptionally high mortality rate of CHD in the 1960s. Based on public concern and a specific petition from the province of North Karelia, the North Karelia project was formulated and launched in 1972 in collaboration with WHO. Initially, the project was planned as a five-year pilot project for prevention and control of CVD. The strategy and content of this comprehensive community-based intervention programme were designed taking into account the considerations mentioned above. Following the success achieved during the initial five-year experience, it was decided to continue the project and extend the application of the experience nationally. The 20-year programme resulted in marked reductions in the main risk factor levels in the population. Experience in general gained in community-based intervention programmes over the last

two decades has shown that such demonstration projects can have a major impact on chronic disease prevention and health promotion in the population.

A central role of carefully designed community programmes is to form a link between basic health research, large-scale public health programmes and government policy-making. Such a community programme thus forms a “pilot”, “demonstration”, or “model” for testing the approach for nationwide use.

Several countries have now recognized the need to initiate demonstration or pilot projects. WHO is collaborating with the Islamic Republic of Iran, Lebanon and Oman in establishing such projects. The objectives of the demonstration project would be:

1. To promote a healthy lifestyle, particularly with regard to tobacco use, diet and physical activity.
2. To reduce the risk factors in the community for noncommunicable diseases, such as cardiovascular diseases, non-insulin-dependent diabetes and certain types of cancer.

Based on a request from the *wali* and community leaders, the *wilaya* of Nizwa in Oman has been selected as the site of a pilot project and a comprehensive proposal for the establishment of the project has recently been finalized and endorsed.

## **5. APPROACHES AND PRIORITIES FOR THE PREVENTION OF CARDIOVASCULAR DISEASES IN THE REGION**

Given the considerable dimensions of the CVD problem in this Region and its enormous adverse impact on health and the economy, the need to intervene and initiate action for prevention is undoubtedly great.

Countries should benefit from experiences gained in CVD prevention and the lessons learnt in developed countries; however, the types and extent of CVD differ from region to region and available resources and socioeconomic and cultural factors vary from one country to another. These variations play a major role in influencing policies and in determining approaches and priorities that are region-specific and country-specific. The possible approaches and priorities for CVD prevention in the Eastern Mediterranean Region were discussed during the first intercountry workshop on CVD prevention and control, held in Amman, Jordan, from 27 to 30 March 1994. The conclusions of the workshop were published in 1995 [19]. During that and subsequent regional meetings the most important conclusions focused on data collection, primary prevention and secondary/tertiary prevention.

### *Data collection*

For intervention programmes to be effective, they should be supported by a solid database. Given the public health magnitude of CVD in the Region, the current lack of reliable data is striking. There is a pressing need to strengthen health information systems, provide a comprehensive situation analysis and promote essential epidemiological research and data collection. Each country should identify its own requirements according to the

local situation. However, basic or minimum data requirements necessary to initiate effective CVD control programmes should include reliable data on risk factors and mortality statistics according to age, sex and cause of death. Mortality data, when available, may be incomplete and/or inaccurate. There is a pressing need to improve and validate death certification by cause at the national level. Standardized data on the levels of CVD risk factors are essential for assessing the baseline magnitude and situation regarding the population distribution of these risk factors, for initiating appropriate interventions, and for monitoring future trends and evaluating progress of intervention. The extent of data and number of parameters required to be studied in these surveys will vary from one country to another. However, the core data needed as a minimum may include socioeconomic status, tobacco use, blood pressure, anthropometric measurements, diabetes and measurement of cholesterol levels. Data obtained should be of high quality and conform to epidemiological concepts and the survey protocols used should be standardized.

### *Primary prevention*

Priorities for prevention will be determined by the epidemiological situation in each country. However, at the regional level CHD, hypertension, stroke and RF/RHD are generally considered to be of highest priority. While the first three of these represent priority conditions in almost all countries of the Region, RF/RHD is also important in some countries where it may still be a cause of major public health concern, requiring urgent intervention.

For CHD, hypertension and stroke, both the population strategy and the high-risk strategy should be considered. The population strategy, aiming at reduction of the CVD risk factor profile in the community, should however receive more emphasis.

Tobacco control is a major area that requires intensified action. A comprehensive national plan of action for tobacco control should be formulated. Political commitment and support should be ensured. Special emphasis in the tobacco control plans in the Region should be given to prevention of tobacco use in women, amongst whom smoking rates are, fortunately, still relatively low, and on efforts to prevent children and adolescents from forming the smoking habit. Guidelines on tobacco control and an outline of a regional plan were developed during the second intercountry workshop on CVD prevention and control, held in Nicosia, Cyprus, in 1995. The regional plan was subsequently finalized and endorsed during a regional consultation organized in December 1995.

Activities to promote exercise and physical activity should be part of any CVD prevention programme. These activities should be feasible, culture-specific and able to be incorporated into daily life. They should include encouraging sports activities at schools and workplaces. In view of the increasing prevalence of obesity, emphasis should also be given to promoting physical exercise among women. Simple guidelines on physical exercise should be formulated and used. The attitudes and misconceptions of both the community in general and women in particular with regard obesity should be changed through health education.

In most countries of the Region, no specific policies exist to prevent diet-related noncommunicable diseases. A comprehensive national food and nutrition policy, with specific emphasis on promoting healthy dietary habits, should be established. Since the policy will involve action that covers all aspects of the food chain from production to consumption, multisectoral collaboration is essential. Such an approach will have to include the active participation of many government sectors, such as agriculture, education and industry, in addition to health. Health education and legislation and its enforcement are basic components in the implementation of such a policy.

Dietary guidelines, based on scientific and epidemiological evidence, need to be formulated. Such guidelines would help to ensure a balanced intake of calories, reduced salt content in the diet, reduced total saturated fat intake, a rise in the consumption of fruit and vegetables and prevention of unhealthy dietary habits, and reduce the impact of fast food.

Community-based intervention programmes were discussed in depth during the third intercountry workshop on CVD prevention and control, held in Tunis, Tunisia, in September 1997 and guidelines for the establishment of such programmes were developed.

#### *Secondary/tertiary prevention (management)*

In order to ensure early detection of cases and prevent complications, disabilities and premature death, there is an urgent need to set acceptable standards of health care for people suffering from the major CVD (hypertension, CHD and stroke) and to develop clinical practice guidelines for their management that are consistent with available resources and local circumstances. Special emphasis should be placed on integrating the management of CVD, particularly hypertension, into primary health care. The Regional Office for the Eastern Mediterranean has already published and disseminated to all countries extensive guidelines on the management of hypertension and diabetes, prepared in collaboration with international and regional experts.

For RH/RHD, primary prevention (prevention and prompt treatment of streptococcal infection) may be feasible in some countries through health education and better health care services. Otherwise, efforts should focus on secondary prevention and penicillin prophylaxis.

## **6. REGIONAL PLAN FOR THE CONTROL OF CARDIOVASCULAR DISEASES**

A regional plan for CVD prevention and control was discussed and endorsed during the intercountry workshop in 1994. The plan was published and is reproduced in the Annex. Since the plan was formulated, many countries have made significant progress towards the achievement of the targets set for 1997. However, although standardized data is now available in more than 60% of countries, the studies conducted during the past few years in Bahrain, Cyprus, Djibouti, Egypt, Islamic Republic of Iran, Jordan, Lebanon, Oman, Pakistan, Tunisia, Saudi Arabia and Sudan focused primarily on the epidemiology of cardiovascular risk factors. Little progress has been made in strengthening mortality statistics and accurate data on the causes of death are still not available in many countries.

Similarly, although several countries have, over the last four years, taken action to control CVD, only a few have developed comprehensive action plans.

To assist countries in reaching the targets set for 2000, WHO will channel its collaboration during the biennium 1998–99 through the following approaches:

- support for national initiatives that aim to obtain reliable and standardized data necessary for planning of national programmes
- development of guidelines for the primary prevention of CVD
- development of educational material on primary prevention of CVD
- development of a regional network of collaborating institutions on primary prevention and monitoring of national programmes
- assisting in initiating demonstration projects on the prevention and control of CVD.

However, progress will depend on the commitments made to CVD control by countries and there is therefore a pressing need to discuss ways and means of accelerating action at the national level, if the targets set for the year 2000 are to be realized.

## **7. CONCLUSIONS AND RECOMMENDATIONS**

CVD is emerging as the single leading cause of mortality in many countries of the Region. The enormous burden caused, in terms of suffering and health care costs, is escalating. The Regional Committee may wish to advise on mechanisms that would stimulate action by countries to address this major problem. In this respect it may be useful for members of the Regional Committee to review some of the recommendations that have already been made during the three intercountry workshops referred to above.

1. Member States are urged to initiate national programmes aiming at the prevention of CVD and reducing their enormous social and economic costs. Ministries of health should be asked to allocate appropriate resources for these programmes, establish a national committee if it does not already exist, and appoint a focal person (or point) responsible for the coordination of programme activities.
2. As a preliminary phase of the programmes, Member States should promote collection of data on the magnitude and impact of CVD. Existing information systems should be strengthened with special emphasis on improving all aspects of mortality statistics.
3. Both Member States and WHO should consider the development of community-based demonstration projects on the primary prevention of CVD and other major non-communicable diseases such as diabetes and cancer to test intervention methods, to generate public awareness and to serve as models for nationwide replication.
4. Member States should assess the availability of minimum standards of health care for people with established CVD. Appropriate measures should be taken to ensure the availability of the essential elements of health care at the various levels of care and at affordable costs. The role of primary health care in the prevention and management of CVD should be strengthened.



5. Special emphasis should be given to comprehensive tobacco control measures. In this respect, ministries of health should ensure that all health care institutions are smoke-free. In collaboration with other ministries, legislation banning smoking in all government offices should be considered. A national plan for tobacco control should be formulated and endorsed at the highest government levels.
6. Coordination and support is needed from WHO to establish a network of institutions in the Region capable of responding to regional needs in terms of research, training and health care services.
7. EMRO should continue to promote and support collaborative CVD research (particularly on the epidemiology of CVD risk factors) in the Region.
8. EMRO should support the development of a network of pilot projects for the integrated primary prevention of noncommunicable diseases and provide technical support to the network and promote exchange of experiences.

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## **Annex**

### **REGIONAL PLAN FOR THE CONTROL OF CARDIOVASCULAR DISEASES**

#### **General objective**

Prevention and control of the major CVD among Eastern Mediterranean Region populations.

#### **Specific objectives**

1. To support the formulation, implementation and evaluation of national CVD control programmes in all Member countries of the Eastern Mediterranean Region.
2. To strengthen activities and develop appropriate strategies for CVD control in the Eastern Mediterranean Region.

#### **Approaches**

##### *At the country level*

WHO will collaborate with Member States and promote:

- Lifestyles conducive to reduction of risk factors causing CVD.
- Development of national CVD control programmes as an integral part of the health care system.
- Implementation of the various components of such programmes, including data collection and epidemiological assessment of CVD in Member States.
- Development of trained health personnel in CVD prevention.

##### *At the regional level*

- Supporting activities aiming at situation analysis and research in priority areas.
- Supporting the development of a collaborating network of regional centres or institutions for the prevention and control of CVD.
- Dissemination of technical information and literature on appropriate intervention methodologies and guidelines for CVD control programmes.
- Collaboration with other international bodies to foster regional actions towards research in preventive, curative, and rehabilitation aspects of CVD control.
- Strengthen national human resources development in programme management and other CVD control activities.

#### **Targets**

1. By end of 1997
  - a) At least 60% of countries would have made a situation analysis and initiated data collection activities required for the establishment of a CVD control programme.
  - b) At least 40% of countries would have initiated the development of national plans for CVD control.

- c) At least 20% of countries would be implementing CVD control activities, focusing on problems of first priority through community-based control measures.
2. By the year 2000
- a) All countries would have assessed the magnitude and impact of the CVD problem and considered instituting measures for prevention and control.
  - b) At least 40% would have established national programmes and implemented measures to prevent CVD and to reduce risk factor profile.