

Hypertension *the Silent Killer*

Part I

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ارتفاع ضغط الدم "القاتل الصامت"

يعتبر مرض ارتفاع ضغط الدم من أكثر الأمراض الغير معدية انتشاراً في الدول النامية حيث إن مجموعة الأمراض الغير معدية والتي تشكل 47% من إجمالي المشاكل المرضية في هذه الدول لديها عوامل مخاطرة مشتركة ولكن بالإمكان الوقاية منها. وتتمثل هذه العوامل في التدخين، شرب الكحول، ارتفاع ضغط الدم وارتفاع الكوليسترول والسمنة وعدم ممارسة الرياضة وكذلك الاعتماد على الأغذية التي يقل في مكوناتها الفواكه والخضروات.

إن نسبة حدوث مرض ارتفاع الضغط في دول شرق البحر الأبيض المتوسط عالية تصل إلى 25% والنسبة في القارة الأمريكية تتراوح بين 14% إلى 40% إلا إن نسبة المرض مع نسبة البدانة في دول مجلس التعاون الخليجي تعتبر من أعلى النسب في العالم وهي في ازدياد مضطرد. ويعزو ارتفاع النسبة إلى جهل الناس بالمرض (حيث يصل إلى 75%).

لقد حددت منظمة الصحة العالمية عدة معايير عند تحديد درجة مرض ارتفاع الضغط بناء على ما يلي:

- ارتفاع ضغط الدم دون حدوث مضاعفات في القلب والأوردة الدموية والأعضاء.
- ارتفاع ضغط الدم مع وجود عوامل مخاطرة في القلب والأوردة الدموية.
- ارتفاع ضغط الدم مع وجود مضاعفات في الأعضاء.
- ارتفاع ضغط الدم مع وجود مضاعفات في القلب والأعضاء.

تحاول هذه الدراسة بعد مراجعة الأدبيات العلمية توفير معلومات أوضح عن مدى خطورة وانتشار هذا المرض وسرد عوامل المخاطرة عند حدوثه وكيفية الوقاية منه ومن مضاعفاته.

مفتاح الكلمات: ارتفاع ضغط الدم , الأمراض الغير معدية, الإدراك ,الوقاية

Hypertension *the Silent Killer*

Abstract:

Hypertension is one of the non-communicable diseases that are very common world wide, especially in the developing countries. The non-communicable diseases are a group of illnesses that are not only preventable but have common preventable risk factors. The most important risk factors are smoking, drinking alcohol, high blood pressure [BP], high cholesterol, overweight, low fruit and vegetable intake and poor physical activity. Such diseases form the biggest challenge to the public health services in the Eastern Mediterranean Region, as they constitute 47% of the whole burden of disease, a figure expected to rise to 60% by the year 2020. The incidence of hypertension in the Eastern Mediterranean Region countries can reach up to 25% in the adult population, while its incidence in the American continent ranges from 14% to 40% among those 35 to 64. The prevalence of hypertension and obesity in this region, especially the Gulf Cooperation Council [GCC] countries, is increasing tremendously. Without a doubt the major causative factor for this increase is related to the rapid social changes in life style, attitude and eating habits. The high prevalence of hypertension in the GCC countries may also indicate low awareness rates among its people which studies have shown can reach up to 75%.

It is a common practice to diagnose hypertension when BP is >140/90 and to classify it as mild, moderate or severe. However, since hypertension has serious consequences on various target organs, WHO recommended that it should be classified as follows:

- hypertension with no other cardio vascular risk factors and no target organ damage
- hypertension with other cardio vascular risk factors
- hypertension with evidence of target organ damage
- hypertension with other cardiovascular risk factors and evidence of target organ damage.

This review highlights the extent of the problem, its definition, the major risk factors and complications and effective methods of controlling and preventing hypertension.

Key Words: Hypertension, Non Communicable diseases, Awareness, Prevention

Hypertension

Hypertension is one of the non-communicable diseases (NCDs) which are common but preventable. In 2002, NCDs caused 86% of deaths in the Eastern Mediterranean Region (EMR) WHO region and accounted for 77% of the disease burden, while they formed the biggest challenge to public health (1).

The WHO Director for the EMR, Dr Hussein A. Gezairy, in highlighting the extent and the dangerous effect of hypertension stated:

"The World Health Organization has estimated that high blood pressure causes one in every eight deaths, making hypertension the third leading killer in the world. Globally, there are one billion hypertensives and four million people die annually as a direct result of hypertension. In the Eastern Mediterranean Region, specifically, cardiovascular diseases and stroke are becoming major causes of illness and death."

Extent of the problem:

In 2002 the cardiovascular diseases (CVDs), mainly heart disease and stroke, were the leading causes of death among the NCDs, causing more than half of all deaths. In terms of burden of disease, the chief contributions also came from CVD (23%). Seven risk factors have been indicated to be the main contributors to this burden: High blood pressure, tobacco use, alcohol abuse, high cholesterol, overweight, low fruit and vegetable intake and physical inactivity.

1-In the world:

It is estimated that by 2010, 1.2 billion people will be suffering from hypertension worldwide [2] which will increase to 1.5 billion by 2025 (3). It is also recorded that the prevalence of hypertension can reach up to 20% to 26% of the adult population in some countries (4,5) rising to 30% in other countries (6).

Health authorities in the United States have indicated that the prevalence of hypertension is increasing to an epidemic level, ranging from 14% to 40% among 35 to 64 years old (7). In Canada, its prevalence is about 17.3% of the population, of whom had untreated hypertension (68.6%) (8).

2-In the Eastern Mediterranean Region (EMR):

The incidence of NCD in the EMR is rising significantly. Currently, 47% of the region's burden of disease is due to NCD and it is expected that this will rise by the year 2020 to 60%. This high prevalence is due to a group of modifiable risk factors which are prevalent in this region including smoking, unhealthy diet and poor physical activity, which is reflected by the increased incidence of diabetes, obesity and patients with hyperlipidemia. Studies have shown that, among the

adult population. 60% have at least 1 risk factor and 8% have 6 risk factors. Thus around 30 million people have 4 risk factors, 36 million have 5 risk factors and 24 million have 6 risk factors (9).

The prevalence of NCD risk factors among people of the EMR is greater than other nations because of marked changes in the pattern of living in many countries of the region, particularly the Gulf Cooperation Council countries, where rapid increases in income, modernization and change in habits and attitudes have all led to an increased prevalence of obesity, which has grown two fold or more since 1980.

Changes in food processing, production and type of food consumed (especially fast food) have also affected health in the majority of countries in the region, leading to increased overweight and obesity levels. Obesity has become a major problem within all age groups in the EMR region (10).

Table 1 from Khatib, 2004 shows the prevalence of obesity in different countries (9).

Country	Overweight/obesity (%)	
	Males	Females
Saudi Arabia	64.0	70.0
Lebanon	60.0	53.0
Islamic Republic of Iran	57.0	67.7
Bahrain	56.4	79.0
Jordan	46.0	43.7
Egypt	43.8	41.0
Libyan Arab Jamahiriya	42.5	74.9
Oman	40.5	43.5
Morocco	37.2	21.7
United Arab Emirates	25.5	39.9
Tunisia	13.1	41.9
Pakistan	10.5	34.6

Table 1. Prevalence of overweight and obesity among some countries of the Eastern Mediterranean Region WHO, 2004 (Khatib, 2004).

Hypertension can reach up to 26% in the EMR region and it affects adults at the rate of one in four. The number of patients who are hypertensive can reach around 125 million people each year (11). In Saudi Arabia, studies have estimated that the prevalence of hypertension among adults ranges from 4% to 15% (12). However, in another study in the kingdom it was found that it may be as high as 20.4% for systolic hypertension and 25.9% for diastolic hypertension (13). The overall prevalence of hypertension in south-western Saudi Arabia was 11.1%. The prevalence increased significantly with age (14).

In the UAE the rapid economic growth has affected both lifestyle and patterns of health and disease tremendously. A more relaxed and indolent home environment because of freely available sophisticated technology in the form of household appliances, has made the lifestyle of the UAE people more sedentary, leading to increased caloric intake and ultimately obesity and overweight. Hence, hypertension has become one of the leading public health problems (15).

It has been also estimated that individuals in EMR region who are normotensive at the age of 55 have a 90% lifetime risk for developing hypertension (16). It is important to know that in many countries blood pressure is under control in less than 20% of patients with hypertension (17). For this reason and due to the high prevalence and seriousness of the problems related to hypertension and its consequences on the health of the nations in the EMR region, the World Health Organization's Regional Office held a Regional Consultation on Hypertension Management in Beirut, Lebanon, from 4 to 5 August 1995 to plan and set policies for overcoming this problem and implementing preventive strategies (1).

Awareness of Hypertension:

Although the prevalence of hypertension in the EMR region is high, there is a low awareness rate (4,13). Almost fifty percent of those who are hypertensive are unaware of their problem (3,18). Alnasir, 2004, surveyed the knowledge of 1140 school teachers in Bahrain about hypertension, along with other non-communicable diseases, and found that teachers, who were supposed to transfer knowledge to students, had themselves very poor knowledge about hypertension as a disease (19) [Table 2 from Alnasir 2004].

Problem	No. of responders	No. of questions	Range Of Scores	Mean Score of Knowledge	Median Score	Standard Deviation
Sickle Cell	1053 (92.4%)	10	1-10	4.88	5	1.98
Smoking	1067 (93.6%)	8	1-8	5.28	6	1.852
Asthma	1029 (90.3%)	10	1-10	5.16	5	2.185
Hypertension	969 (85%)	10	1-10	3	3	1.899
Diabetes Mellitus	1064 (93.3%)	10	1-10	5.34	5.5	2.133

Table 2. Teachers' Knowledge Scores for common medical problems based on them answering 10 questions about specific aspects of those diseases.(19)

Another study showed that up to 75% of hypertensive people in the EMR were found to be unaware of their high blood pressure prior to their diagnosis (4).

The National Hypertension Project in Egypt indicated that only 37.5% of hypertensives were aware of having high blood pressure (20). Populations surveys in three countries—the United States, Chile, and Cuba—have showed low awareness rate as well (32%, 37%, and 39% respectively) (21).

The National Health and Nutrition Examination Survey III in the United States of America reported that 35% of the participants with a systolic blood pressure of ≥ 140 mmHg or diastolic blood pressure ≥ 95 mmHg reported a lack of awareness of their blood pressure elevation (22).

Ultimately, the low awareness rate, among other factors, will lead to an increased burden of illness.

Control of Hypertension:

Very poor control of hypertension is reported worldwide.

In Egypt it was reported that only 23.9% of hypertensives were receiving treatment and only 8% had their blood pressure controlled (20). In Canada only 15.8% had their blood pressure treated and controlled (8). In India a study found that 43% of hypertensives were on medication and only 10.5% were controlled (18). Among previously known cases in Saudi Arabia, 76 % were receiving treatment, but only 20 % were found to be controlled (14).

Responsibility for management of hypertension:

The diagnosis, prevention and management of hypertension need continuous follow up and long term policy. The only health care providers who could fulfill such obligations are family physicians, because they are on the front lines of the battle to reduce morbidity and mortality and are the key partners for patients in primary health care (17). However, it has been reported that little effort is being exerted by family physicians to share in that responsibility. Almustaf (2003) in his study in Saudi Arabia found that the number of consultations of hypertensives to primary health care (PHC) physicians constituted only 11-8.4% of the total consultations. Documents from primary health care registers constituted 16-35.9% of the expected total number of adult hypertensives diagnosed in the community which is very low. The author also reported that the hypertensives followed up in PHC constituted 13.8% and 17% of the expected number of diagnosed male and female adult hypertensives in the community. He concluded by stating that "the magnitude of service offered by PHC to diagnosed hypertensives is less than one fifth of the expected number of patients" (23).

Classification of hypertension:

For adults, normal blood pressure would be defined as having a systolic BP < 140 mmHg and diastolic DP < 90 mmHg (17). While any BP reading > 140 , and > 90 is

considered to be high, hypertension should be defined not only by considering the diastolic BP reading but the systolic as well.

Although hypertension has been classified according to the degree of blood pressure elevation into mild, moderate and severe hypertension, this classification may not reflect the complication and severity of the condition.

Persistently raised diastolic blood pressure at or above 90 mmHg will lead to increased risk of cardiovascular mortality and morbidity. It is well known that, when managing hypertension, all cardiovascular risk factors should be assessed and controlled (17). Therefore, a different classification has been used for the blood pressure level, namely, the International Society for Hypertension and the European Society of Hypertension and the European Society of Cardiology (ESH/ESC) classification of blood pressure, (24,25). [Table 3 From WHO 1999]

Category	Systolic BP (mmHg)	Diastolic BP (mmHg)
Optimal	< 120	< 80
Normal	< 130	< 85
High-normal	130–139	85–89
Grade 1 hypertension (mild)	140–159	90–99
Subgroup: borderline	140–149	90–94
Grade 2 hypertension (moderate)	160–179	100–109
Grade 3 hypertension (severe)	≥ 180	≥ 110
Isolated systolic hypertension	≥ 140	< 90
Subgroup: borderline	140–149	< 90

Table 3. ESH/ESC Classification of blood pressure for adults

Another classification is suggested by the Eastern Mediterranean Regional Office [EMRO] for adults aged > 18, (16). [Table 4 From EMRO].

BP classification	Systolic BP (mmHg)		Diastolic BP (mmHg)
Normal	<120	and	<80
Prehypertension	120–139	or	80–89
Stage 1 hypertension	140–159	or	90–99
Stage 2 hypertension	≥160	or	≥100

Table 4. The EMRO classification of blood pressure for adults aged ≥18 years

Classification according to the extent of organ damage:

The extent of organ damage correlates with the level of blood pressure elevation, and the rate of progression of organ damage varies from one individual to another

depending on many factors. Therefore, the WHO recommended the following classification (1,17).

- hypertension with no other cardio-vascular risk factors and no target organ damage
- hypertension with other cardio-vascular risk factors
- hypertension with evidence of target organ damage
- hypertension with other cardiovascular risk factors and evidence of target organ damage.

Causes of hypertension

Cause of hypertension can be categorized into two main groups.

1-Primary hypertension

Almost 95% of cases of hypertension are considered as primary hypertension with usually no specific cause.

2-Secondary hypertension

Secondary hypertension can occur due to various causes that lead to target organ damages which are as follows (26):

- * **Renal**, e.g. renal parenchymal, renovascular causes
- * **Drugs**, e.g. oral contraceptives, corticosteroids.
- * **Endocrine**, e.g. acromegaly, Cushing syndrome, primary hyperaldosteronism.
Primary hyperaldosteronism is found in less than 0.5% of hypertensives.
Cushing syndrome is associated with hypertension in at least 70% of patients.
- * **Coarctation of the aorta and aortitis.**
- * **Pregnancy-induced hypertension.**

Risk of Hypertension:

The presence of high blood pressure increases the risk of morbidity and mortality due to various complications; the most important are cardiovascular disease and renal dysfunction. The risk of CVD doubles in every increase of 20/10 mm in BP (27). Failure to manage hypertension adequately may lead to congestive heart failure. In the American region hypertension is reported to be the most important risk factor for premature death in adults, especially women, due to cardiovascular complications. During the next 10 years, it is estimated it will account for about 2.4 million deaths (21). Studies have reported associations between hypertension and the development of atherosclerosis. Increased BP is also one of the most

important modifiable causes of stroke (whether hemorrhagic, lacunar or thrombotic). Moreover, a patient may develop renal insufficiency within a few years if he has severe and malignant (accelerated) hypertension.

Advantages of Controlling Hypertension:

Any effort made to decrease any degree of blood pressure which is above the normal range is beneficial for related organs and for the whole body. Such measures will help in decreasing the risk of complications (28, 29).

It has been estimated that a 2 mmHg reduction in systolic blood pressure is likely to reduce the annual mortality from stroke, coronary heart disease and all other causes by 6%, 4% and 3%, respectively (30). A reduction of 5-6 mmHg in diastolic BP will also reduce the incidence of stroke by about 40% and ischemic heart disease by 15%-20%, or even by as much as 35%-40% (31). Studies have shown that the benefits from a 3 mmHg reduction in systolic BP will reduce the annual mortality from stroke, coronary heart diseases and all other causes by 8%, 5% and 4%, respectively (22). The chances of mortality from CVD in elderly hypertensive people when taking anti-hypertensive medications is decreased by 34% (32).

Conclusion:

Hypertension is a serious problem that could be called "the silent killer". Its prevalence is high especially in the GCC countries. Effective efforts ought to be taken in order to prevent, discover and treat hypertension. Such efforts will collectively help in the reduction of mortality and morbidity. 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. Because the risk relationship between blood pressure and cardiovascular diseases is continuous and progressive, complications may occur even within the conventionally defined normotensive range.

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