

Evaluation of hypertension treatment, prevention and diagnosis for human beings

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ABSTRACT

High blood pressure, or hypertension as the disease is known medically, is our most common chronic illness. The number of people affected and the amount of the nation's health budget that goes toward treating high blood pressure or its complications are huge. Hypertension is an increasingly important medical and public health issue. The National Health and Morbidity Survey (NHMS) 2011 has shown that the prevalence of hypertension in Malaysia for adults ≥ 18 years has increased from 32.2% in 2006 to 32.7% in 2011. For those >30 years old, the prevalence has increased from 42.6% to 43.5% unfortunately, 60.6% of total hypertensive were "undiagnosed". Hence BP should be measured at every opportunity. In this article we will come across about the symptoms, causes and remedial actions for hypertension.

Keywords: Hypertension, symptoms, analysis, treatment, blood sugar etc.

INTRODUCTION

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms. Long term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and disease. High blood pressure is classified as either primary (essential) high blood pressure or secondary high blood pressure. About 90–95% of cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors. Lifestyle factors that increase the risk include excess salt, excess body weight, smoking, and alcohol. The remaining 5–10% of cases are categorized as secondary high blood pressure, defined as high blood pressure due to an identifiable cause, such as chronic kidney disease, narrowing of the kidney arteries, an endocrine disorder, or the use of birth control pills.

Blood pressure is expressed by two measurements, the systolic and diastolic pressures, which are the maximum and minimum pressures, respectively. Normal blood pressure at rest is within the range of 100–140 millimeters mercury (mmHg) systolic and 60–90 mmHg diastolic. High blood pressure is present if the resting blood pressure is persistently at or above 140/90 mmHg for most adults. Different numbers apply to children. Ambulatory blood pressure monitoring over a 24-hour period appears more accurate than office best blood pressure measurement. Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications. Lifestyle changes include weight loss, decreased salt intake, physical exercise, and a healthy diet. If lifestyle changes are not sufficient blood pressure medications are used. Up to three medications controls blood pressure in 90% of people. The treatment of moderately high arterial blood pressure (defined as $>160/100$ mmHg) with medications is associated with an improved life expectancy. The effect of treatment of blood pressure between 140/90 mmHg and 160/100 mmHg is less clear, with some reviews finding benefit and others not finding benefit. High blood pressure affects between 16 and 37% of the population globally

SIGNS AND SYMPTOMS

There are usually no symptoms or signs of hypertension, and thus it is called the "silent killer". Since humans are completely unaware of excessive blood pressure, it is only through measurements that it becomes detected. The exception is malignant hypertension, which can cause headache, congestive heart failure, stroke, seizure, papilledema, renal failure and anuria. Hypertension is rarely accompanied by any symptoms, and its identification is usually through screening, or when seeking healthcare for an unrelated problem. Some with high blood pressure report headaches (particularly at the back of the head and in the morning), as well as light

headedness, vertigo, tinnitus (buzzing or hissing in the ears), altered vision or fainting episodes. These symptoms, however, might be related to associated anxiety rather than the high blood pressure itself.

On physical examination, hypertension may be associated with the presence of changes in the optic fundus seen by ophthalmoscopy. The severity of the changes typical of hypertensive retinopathy is graded from I–IV; grades I and II may be difficult to differentiate. The severity of the retinopathy correlates roughly with the duration and/or the severity of the hypertension.

Category	systolic, mm Hg	diastolic, mm Hg
Normal	90–119	60–79
High normal (Prehypertension)	120–139	80–89
Stage 1 hypertension	140–159	90–99
Stage 2 hypertension	160–179	100–109
Stage 3 hypertension (Hypertensive emergency)	≥180	≥110
Isolated systolic hypertension	≥140	<90

Fig. 1: Classification of Blood Pressure for adults

PREVENTION

Much of the disease burden of high blood pressure is experienced by people who are not labeled as hypertensive. Consequently, population strategies are required to reduce the consequences of high blood pressure and reduce the need for antihypertensive drug therapy. Lifestyle changes are recommended to lower blood pressure, before starting drug therapy. The 2004 British Hypertension Society guidelines proposed the following lifestyle changes consistent with those outlined by the US National High BP Education Program in 2002 for the primary prevention of hypertension:

- maintain normal body weight for adults (e.g. body mass index 20–25 kg/m²)
- reduce dietary sodium intake to <100 mmol/ day (<6 g of sodium chloride or <2.4 g of sodium per day)
- engage in regular aerobic physical activity such as brisk walking (≥30 min per day, most days of the week)
- limit alcohol consumption to no more than 3 units/day in men and no more than 2 units/day in women
- consume a diet rich in fruit and vegetables (e.g. at least five portions per day)



Fig. 2: View of Hypertension patients



Fig. 3: Preventive measure (Eat less Salt)

TREATING HYPERTENSION

As a first principle, one should always couple any chemical therapy with lifestyle modifications (maintaining ideal body weight, engaging in aerobic physical exercise, eating a healthy diet low in saturated and total fats, limiting sodium intake and reducing alcohol intake). Each of these lifestyle modifications has been shown to reduce blood pressure modestly. These modifications are inexpensive and pose very little risk. Compliance remains the primary trouble with these methodologies. As a second principle, additional risk factors for coronary artery disease and stroke should be aggressively managed in all patients with hypertension. In particular, patients should be counseled on smoking cessation, lipid reduction and diabetic management. When these diseases occur in combination, the probability of end-organ damage goes up significantly and careful management of each of the co-morbidities is all the more important.

Does treating hypertension ameliorate the long-standing negative consequences of having hypertension?

There is overwhelming evidence that normalization of the blood pressure (using a variety of therapies) is very effective in reducing end-organ damage such as left ventricular hypertrophy (LVH), myocardial infarction, stroke and renal failure. There are studies addressing each particular end-organ and its responsiveness to reductions in blood pressure.

Lifestyle Changes:

A healthy lifestyle is the first line of defense against high blood pressure. Habits that help control blood pressure are:

- a) eating a healthy diet
- b) staying physically active
- c) maintaining a healthy weight
- d) avoiding excessive alcohol
- e) quitting smoking and avoiding secondhand smoke
- f) managing stress
- g) eating less salt
- h) limiting caffeine
- i) monitoring blood pressure at home
- j) getting support from family and friends

Tobacco cessation:

Quitting smoking, a primary risk factor for cardiac disease, has immediate as well as long-term benefits for patients with hypertension and the people with whom they live. See the Group Health Tobacco Use Screening and Intervention Guideline for recommendations.

Weight management:

The risk of serious health conditions—such as diabetes, heart disease, arthritis, and stroke, as well as high blood pressure—increases with a body mass index (BMI) of 25 or higher. (BMI = weight in kilograms divided by height in meters squared [kg/m²].) Overweight is defined as a BMI of 25 to 29.9, obesity as a BMI of 30 or higher. While most overweight or obese adults can lose weight by eating a healthy diet or increasing physical activity, doing both is most effective. See the Group Health Adult Weight Management Screening and Intervention Guideline for recommendations and further information.

Diet:

Patients with hypertension should be advised to reduce their dietary sodium intake to no more than 2,400 mg per day; further reduction to 1,500 mg/day is desirable as it leads to even greater decreases in BP. If the desired sodium level is not achieved, consider an alternative goal of reducing current sodium intake by 1,000 mg/day. Additionally, all patients should strive to:

- Make smart choices from every food group to meet their caloric needs.
- Get the most and best nutrition from the calories consumed.
- The DASH eating plan provides the following key elements: an abundance of plant foods (fruits, vegetables, whole-grain breads or other forms of cereals, beans, nuts, and seeds), minimally processed foods, lean meats, poultry, and fish, and seasonally fresh foods.

Physical activity:

Advise adults to engage in aerobic physical activity 3 to 4 sessions per week. Each session should be of moderate-to-vigorous intensity and last an average of 40 minutes. For patients who have been inactive for a while, recommend starting slowly and working up, at a comfortable pace, to at least 30 minutes per day. If a patient is unable to be active for 30 minutes at one time, suggest accumulating activity over the course of the day in 10- to 15-minute sessions.

Moderation of alcohol consumption:

Because alcohol use can raise blood pressure, patients with hypertension should use alcohol in moderation, if at all. Screen patients using the AUDIT-C Alcohol Questionnaire, and provide brief guidance when appropriate. See the Group Health Adult Unhealthy Drinking Screening and Intervention Guideline for more detailed recommendations.

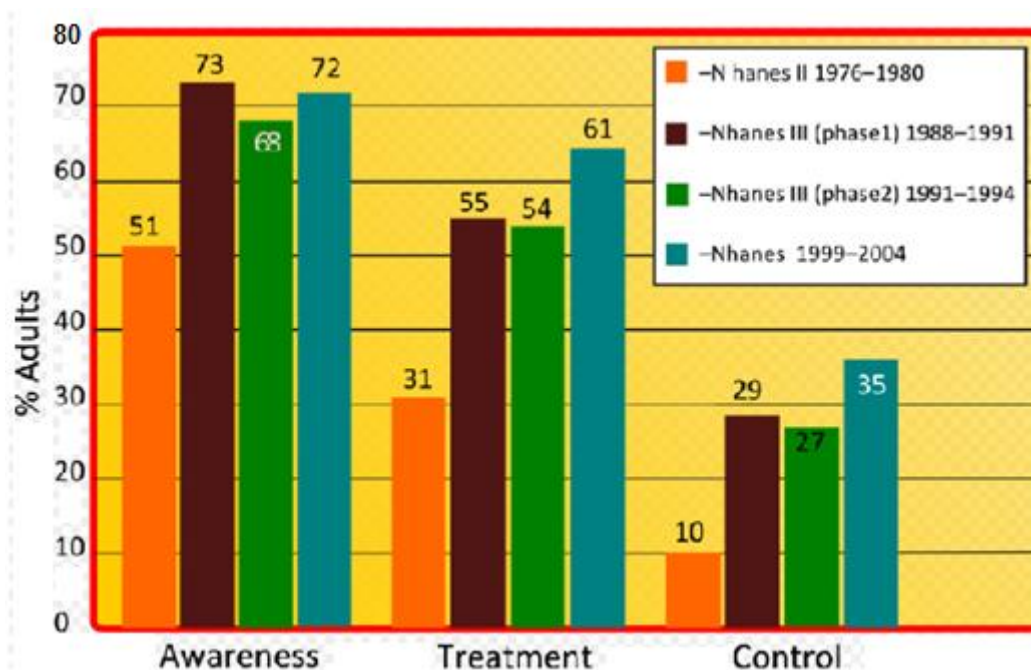


Fig 4. Graph showing, prevalence of awareness, treatment and control of hypertension



Fig 5: Diet for hypertension patients

CONCLUSION

In this paper the author has studied and identified hypertension, or high blood pressure, as the leading cause of cardiovascular mortality. The (WHL), an umbrella organization of 85 national hypertension societies and leagues, recognized that more than 50% of the hypertensive population worldwide are unaware of their condition. To address this problem, the WHL initiated a global awareness campaign on hypertension in 2005 and dedicated May 17 of each year as World Hypertension Day (WHD). Over the past three years, more national societies have been engaging in WHD and have been innovative in their activities to get the message to the public. In 2007, there was record participation from 47 member countries of the WHL. During the week of WHD, all these countries – in partnership with their local governments, professional societies, nongovernmental organizations and private industries – promoted hypertension awareness among the public through several media and public rallies. Using mass media such as Internet and television, the message reached more than 250 million people. As the momentum picks up year after year, the WHL is confident that almost all the estimated 1.5 billion people affected by elevated blood pressure can be reached.

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