HYPERTENSION: A GLOBAL HEALTH CHALLENGE

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1. Introduction

Hypertension, also known as high blood pressure, is a chronic medical condition where the blood pressure in the arteries is persistently elevated. It is often called the "silent killer" because it typically has no symptoms until significant organ damage occurs. According to the World Health Organization (WHO), hypertension affects more than 1.28 billion adults worldwide, and nearly 46% of adults with hypertension are unaware they have the condition.

2. Epidemiology

Hypertension is prevalent across all populations, but its incidence increases with age, urbanization, dietary habits, and sedentary lifestyles. Globally, about 34% of men and 32% of women are affected. The prevalence in low- and middle-income countries is significantly high due to limited healthcare access.

3. Risk Factors

Risk factors for hypertension are categorized into modifiable and non-modifiable types. Modifiable factors are lifestyle-related and can be improved through behavioral changes, while non-modifiable factors are related to age, genetics, or medical conditions.

4. Classification and Pathophysiology

The ACC/AHA 2017 Guidelines classify hypertension as follows:

- Normal: <120 / <80 mmHg
- Elevated: 120–129 / <80 mmHg
- Stage 1 Hypertension: 130–139 / 80–89 mmHg

- Stage 2 Hypertension: ≥140 / ≥90 mmHg

Primary (essential) hypertension accounts for about 90–95% of cases and results from a combination of genetic and environmental factors. Secondary hypertension is caused by identifiable medical conditions such as kidney disease, endocrine disorders, or medication use.

5. Clinical Impact

If left untreated, hypertension can cause stroke, heart attack, heart failure, chronic kidney disease, vision loss, and cognitive decline. According to the CDC (2023), around 685,000 deaths in the U.S. in 2022 were directly related to hypertension.

Graph 1 Description: Bar graph showing increasing global mortality attributed to hypertension from 2000 to 2022, peaking around 10.5 million deaths annually.

6. Diagnosis and Monitoring

Diagnosis requires multiple blood pressure readings over time. Methods include office BP measurements, home BP monitoring, and ambulatory BP monitoring.

Graph 2 Description: A line graph illustrating that although diagnosis and treatment rates have improved slightly since 2000, control rates remain low.

7. Management

Lifestyle Modifications:

- Adopt the DASH diet
- Reduce salt intake (<5g/day)
- Engage in regular physical activity
- Limit alcohol and stop smoking

Medications:

- ACE inhibitors / ARBs
- Calcium channel blockers
- Thiazide diuretics
- Beta-blockers

Combination therapy is often necessary to achieve target BP levels.

8. Public Health and Prevention

WHO's 'HEARTS' initiative promotes public education, community screening, salt reduction policies, access to affordable medications, and health system strengthening.

WHO Goal: Reduce the global prevalence of hypertension by 25% by 2025.

Among individuals with untreated or uncontrolled hypertension, elevated systolic blood pressure with a diastolic pressure of less than 90 mm Hg often remains a problem. Hyman and Pavlik, using the same NHANES data set, conducted an analysis of blood pressure levels in individuals with uncontrolled hypertension (Hyman and Pavlik, 2001). They found that close to 80 percent of individuals with hypertension present but who were unaware had a systolic blood pressure ≥140 mm Hg and a diastolic blood pressure <90 mm Hg. The actual awareness, treatment, and control rates are likely higher than the NHANES estimates due to the definition of hypertension in the study. In the NHANES, the diagnosis of hypertension was based on blood pressure measurement at a single clinical visit, whereas national guidelines recommend that the classification of hypertension be based on the mean of two or more blood pressure readings taken during two or more office visits (Chobanian et al., 2003). Thus, some of the

individuals classified as unaware and untreated hypertensive might not meet the criteria for hypertension in the clinical setting. Although the proportion of individuals with controlled hypertension has increased substantially, the majority (65 percent) of individuals with hypertension are not under control. Wang and Vasan (2005) highlighted factors associated with uncontrolled hypertension in the United States, categorized by patient and physician factors. Patient factors related to uncontrolled hypertension include lack of insurance and provider, increased susceptibility due to advanced age and obesity, therapy nonadherence because of medication cost, complicated regimens, lack of social support, and poor physician-patient communication. Physician factors related to uncontrolled hypertension include lack of knowledge about guidelines, overestimating guideline adherence, concerns about medication side effects, and limited office visit time.

Table 1. Global Hypertension Prevalence

Region	Prevalence (%)
Global (Men)	34
Global (Women)	32
United States	47.7
Sri Lanka	34.8
LMICs (average)	~40–50

Table 2. Risk Factors for Hypertension

Modifiable Factors	Non-Modifiable Factors

High sodium intake	Age (>65 years)
Obesity	Family history
Physical inactivity	Ethnicity (e.g., African)
Alcohol and tobacco use	Chronic kidney disease

Table 3. U.S. Hypertension Cascade (2021–2023)

Stage	Percentage (%)
Diagnosed	59.2
On medication	51.2
Blood pressure controlled	22.5

9. Conclusion

Hypertension is one of the leading causes of death and disability worldwide. Early detection, lifestyle changes, and consistent treatment can prevent complications. Global cooperation, policy changes, and community engagement are essential to reduce the burden of this silent killer. Data collection is fundamental to addressing any public health problem. Data are critical for determining the burden of hypertension, characterizing the patterns among subgroups of the population, assessing changes in the problem over time, and evaluating the success of interventions. Given the challenges posed by the changing methodologies used to collect blood pressure measurements, the committee believes that efforts to strengthen hypertension surveillance and monitoring are critical.

References

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