CONTEMPORARY ESTIMATES OF LIFETIME RISK OF HYPERTENSION IN THE UNITED STATES

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BACKGROUND

- Lifetime risk estimates are valuable as a measure of disease burden and for public health policymaking.
- Yet, there are no contemporary estimates of the lifetime risk of hypertension across Whites, Blacks, Hispanics, and Asians in the United States.

OBJECTIVES

To obtain the national estimates of lifetime risk of hypertension in the US using its contemporary definition among Whites, Blacks, Hispanics, and Asians in the US.

METHODS

• Data Sources

1. National Health and Nutrition Examination Survey (NHANES) data from 2011–2018.
2. National vital statistics data for population estimates.

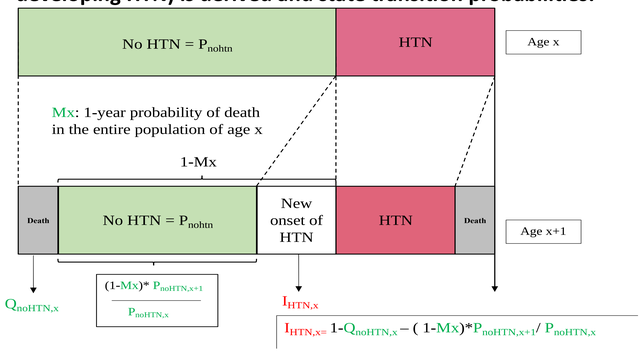
• Study Population

The study included a nationally representative U.S. sample from birth to age 80 years, with hypertension defined as BP ≥130/80 mmHg or antihypertensive medication use, stratified by sex and race/ethnicity (White, Black, Hispanic, Asian)

• Analysis

We estimated age-specific prevalence and incidence of hypertension and used Monte Carlo simulations (N=100,000) with a population-based transition model to calculate lifetime risk (birth to 80 years).

Figure 1. Conceptual illustration of how I_{HTN} (1-year risk of developing HTN) is derived and state transition probabilities.



RESULTS

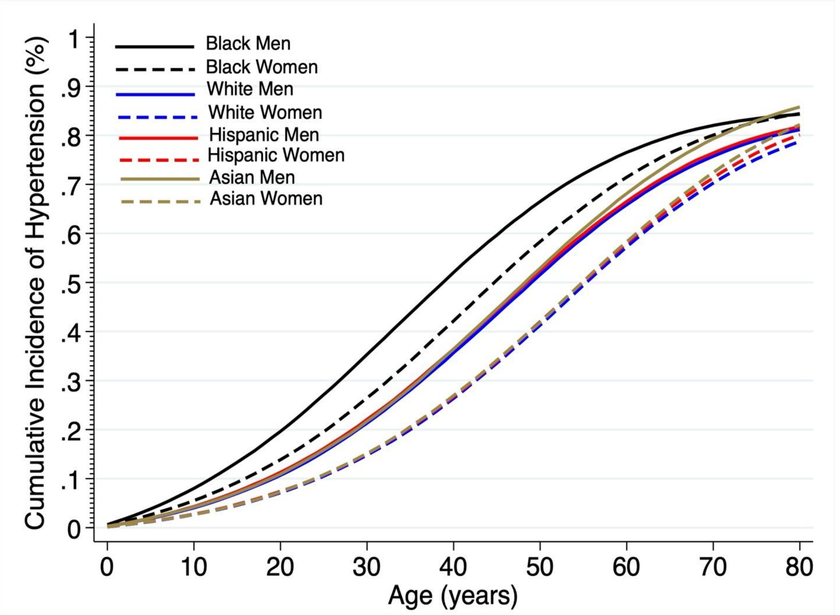
Table 1. Participant Characteristics by Hypertension Status, National Health and Nutrition Examination Survey, 2011-2018

Characteristics	Hypertension = no	Hypertension = yes
N, Unweighted	12,896	6,644
N, Weighted	146, 982, 205	63, 391, 195
Age, mean (SE), years	40.4 (0.32)	57.9 (0.20)
Female (%)	51.1	49.6
Race/Ethnicity, (%)		
Non-Hispanic White	65.4	67.8
Non-Hispanic Black	10.4	15.9
Hispanic	18.1	11.5
Non-Hispanic Asian	6.1	4.7
Blood pressure, mean (SE), mmHg		
Systolic	115.7 (0.17)	135.8 (0.44)
Diastolic	69.5 (0.23)	75.2 (0.37)
Lipid lowering medication, (%)	8.0	38.4
Cholesterol, mean (SE), mmol/L		
Total	4.9 (0.02)	5.0 (0.03)
HDL	1.06 (0.02)	1.0 (0.02)
Diabetes, (%)	6.6	28.5
Hypoglycemic treatment	3.5	21.2
Smoking Status, (%)		
Never Smoker	60.8	50.1
Former Smoker	19.8	32.2
Current Smoker	19.4	17.8

Table 2. Table 2: Adjusted Odds ratios (95% CI) of hypertension and Hazard ratios of all-cause mortality for hypertension

Predictors	Odds Ratio (95% CI)	Hazard Ratio (95% CI)
Hypertension	-	**1.45 (1.13-186)**
Age, per 10 years	**2.02 (1.98-2.07)**	**1.91 (1.77- 2.07)**
Sex		
Men	1.00 [Reference]	1.00 [Reference]
Women	**0.68 (0.64-0.73)**	**0.64 (0.55-0.76)**
Race/ethnicity		
Non-Hispanic White	1.00 [Reference]	1.00 [Reference]
Non-Hispanic Black	**2.10 (1.92-2.29)**	**1.34 (1.07-1.68)**
Hispanic	0.98 (0.90-1.07)	0.81 (0.60-1.09)

Figure 2. Estimated Lifetime Risk of Hypertension by Sex and Race/Ethnicity



LIMITATIONS

- Cumulative incidence estimates restricted to up to age of 80 years
- Exclusion of other racial/ethnic groups due to limited data

CONCLUSIONS

Approximately **80-85% of Americans** develop hypertension in their lifetime, regardless of **sex and race/ethnicity**. However, **Black individuals develop hypertension earlier**, with **50% incidence occurring by ~38 years in Black men and ~43 years in Black women**, compared to **46-55 years in other racial/ethnic groups**. These findings highlight the **urgent need for early-life public health interventions**, particularly targeting **Black youth and younger adults**, to prevent hypertension across the lifespan.

DISCLOSURES

Nothing to disclose and no conflicts of interest.