

- Raised BP remains the leading cause of death globally, accounting for 10.4 million deaths per year
- an estimated 1.39 billion people had hypertension in 2010
- BP trends show a clear shift of the highest BPs from highincome to low-income regions with an estimated 349 million with hypertension in HIC and 1.04 billion in LMICs

The large disparities in the regional burden of hypertension are accompanied by low levels of awareness, treatment and control rates in LMIC, when compared to HIC. In response to poor global awareness for hypertension (estimated 67% in HIC and 38% in LMIC)

hypertension is the most important modifiable risk factor for premature cardiovascular disease, being more common than cigarette smoking, dyslipidemia, or diabetes, which are the other major risk factors

The likelihood of having a cardiovascular event increases as blood pressure increases. In a meta-analysis of over one million adults, risk began to rise in all age groups with blood pressures greater than 115/75 mmHg . For every 20 mmHg higher systolic and 10 mmHg higher diastolic blood pressure, the risk of death from heart disease or strokes doubles

REVIEWS

The global epidemiology of hypertension

Katherine T. Mills^{1,2}, Andrei Stefanescu⁶ and Jiang He⁶

Abstract | Hypertension is the leading cause of cardiovascular disease and premature death worldwide. Owing to the widespread use of antihypertensive medications, global mean blood pressure (BP) has remained constant or has decreased slightly over the past four decades. By contrast, the prevalence of hypertension has increased, especially in low- and middle-income

REVIEWS



Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension

Bin Zhou ^{1,2,3}, Pablo Perel⁴, George A. Mensah ⁵ and Majid Ezzati ^{1,2,3,6} □

NCD Risk Factor Collaboration (NCD-RisC) Worldwide trends in hypertension prevalence and progress analysis of 1201 population-representative studies with n treatment and control from 1990 to 2019: a pooled .04 million participants

to measure the prevalence of hypertension and progress in its detection, treatment

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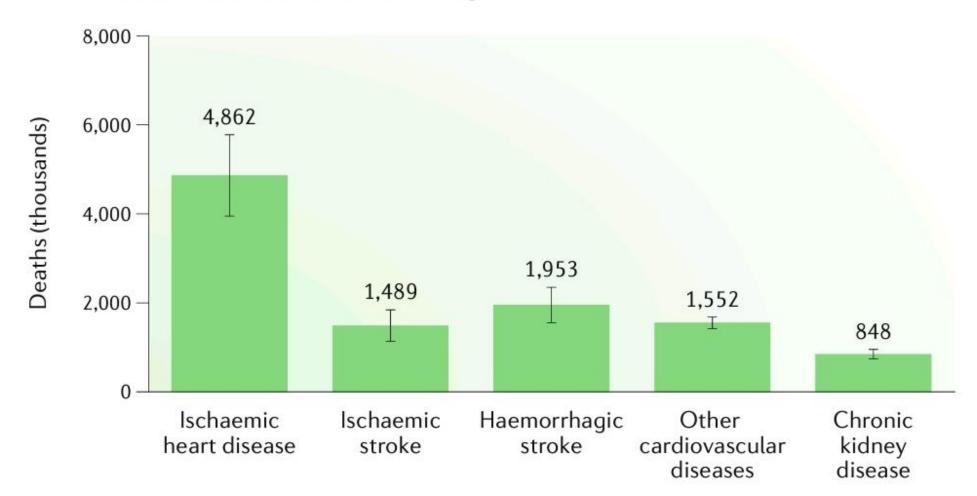




- High blood pressure is one of the most important risk factors for ischaemic heart disease, stroke, other cardio vascular diseases (CVDs), chronic kidney disease and dementia
- Elevated blood pressure is a leading preventable cause of CVD mortality and disease burden, globally and in most regions of the world
- One of the global non communicable disease (NCD) targets adopted by the World Health Assembly in 2013 is to lower the prevalence of raised blood pressure by 25% by 2025 compared with its 2010 level
- Raised blood pressure is defined as systolic blood pressure (SBP) ≥140 mmHg or diastolic blood pressure (DBP) ≥90 mmHg.

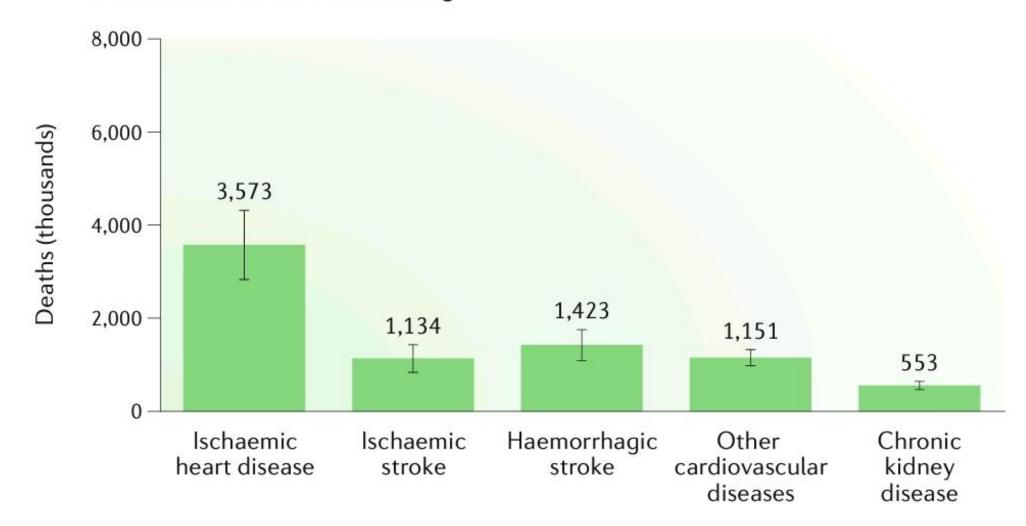
 Causes of deaths worldwide attributed to increased blood pressure in 2015. Estimated numbers of deaths attributed to systolic blood pressure (SBP) ≥110–115 mmHg

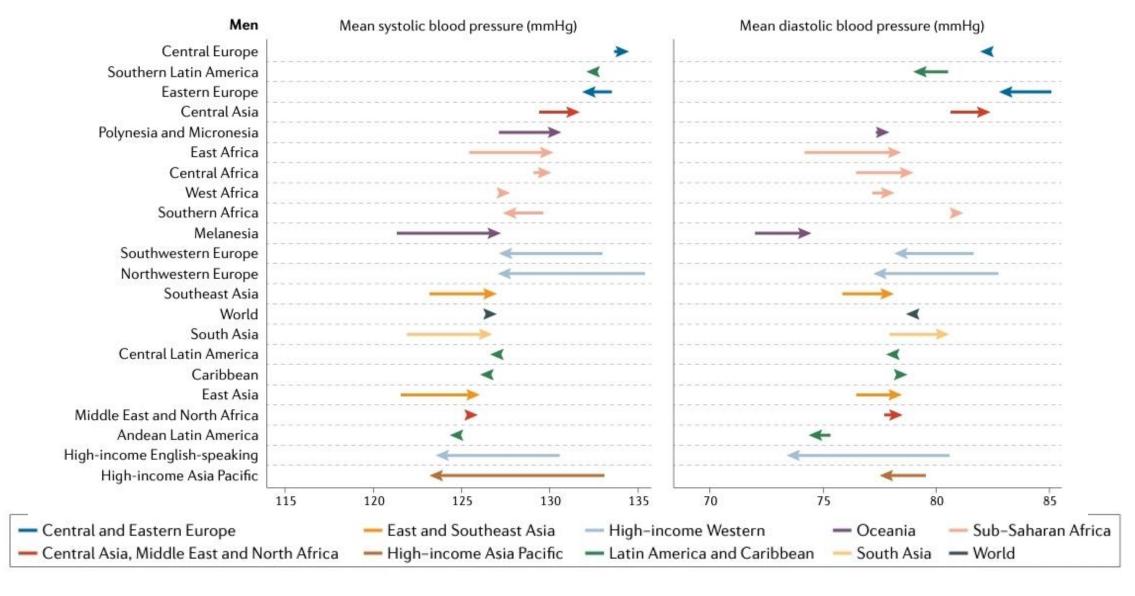
a Attributed to SBP ≥110-115 mmHg



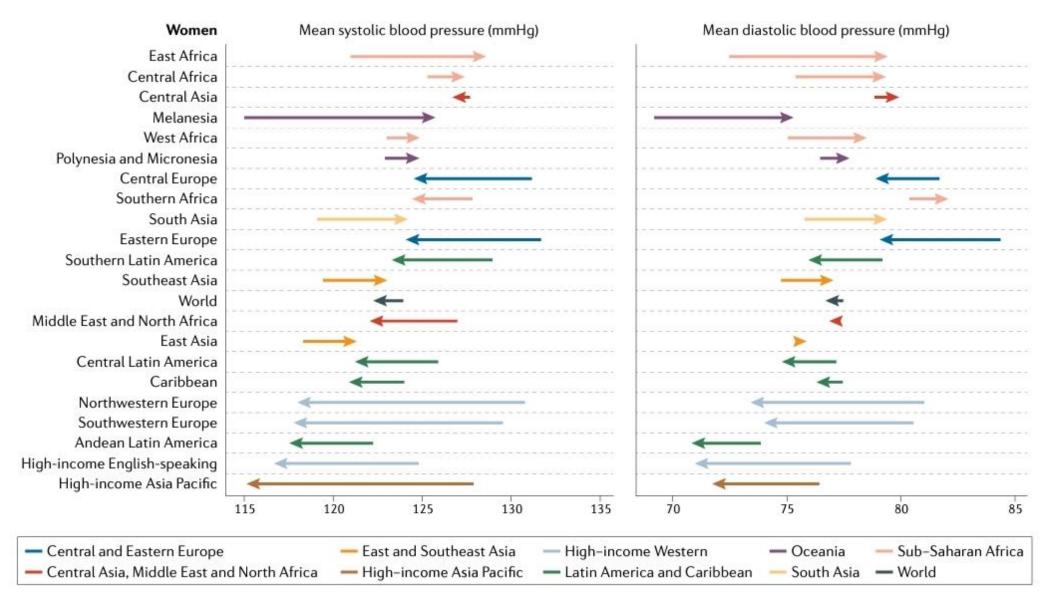
Causes of deaths worldwide attributed to increased blood pressure in 2015. Estimated numbers of deaths attributed to systolic blood pressure SBP ≥140 mmHg by cause of death

b Attributed to SBP ≥140 mmHg

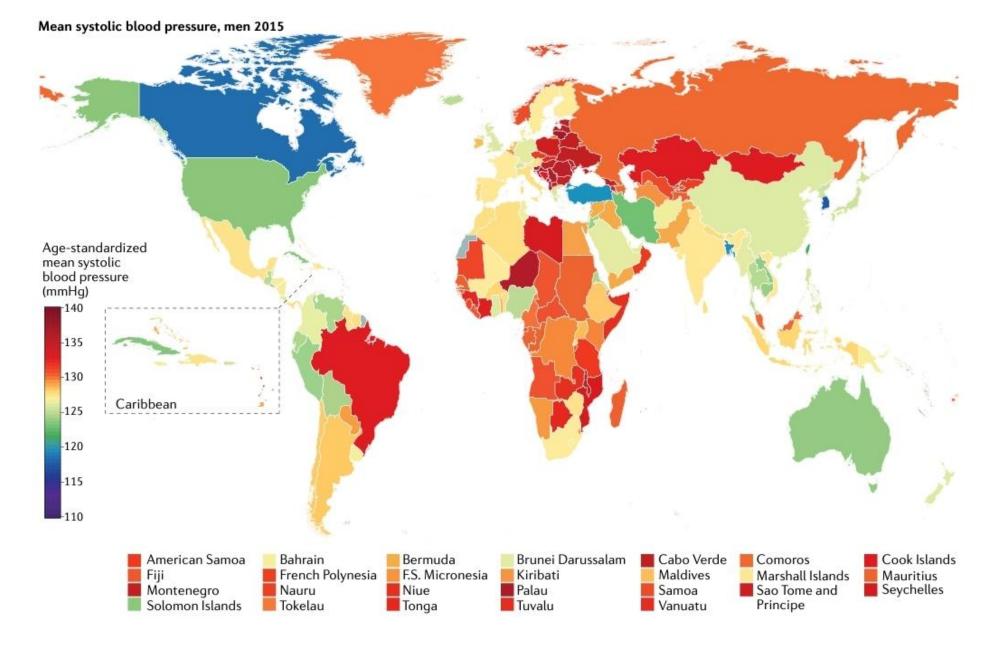




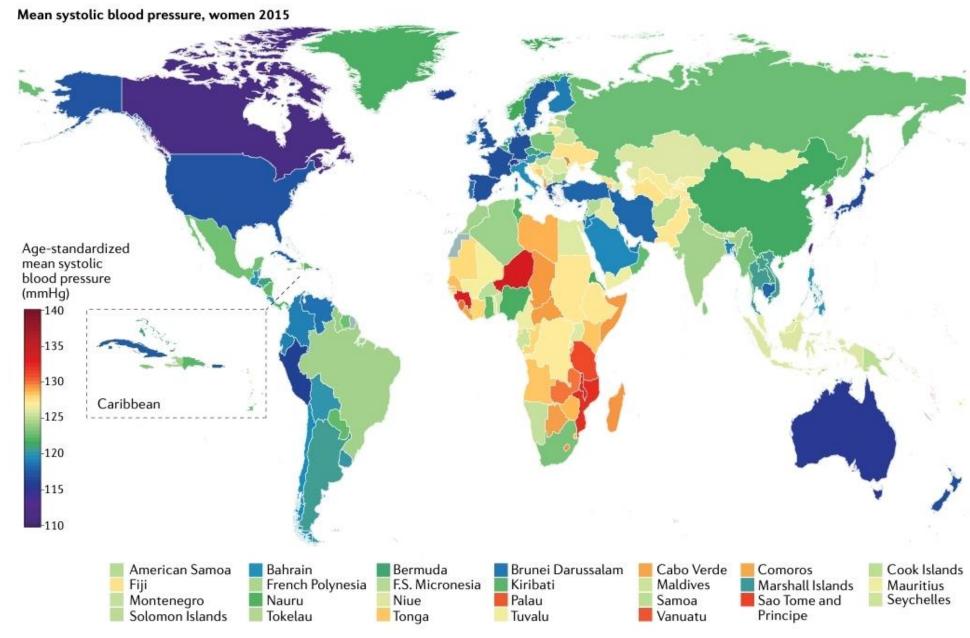
Changes in blood pressure by region. Changes in age- standardized mean systolic and diastolic blood pressure between 1975 and 2015 by region. The start and end points of each arrow represent the levels of blood pressure in 1975 and 2015, respectively. Rightward arrows indicate an increase in blood pressure, and leftward arrows indicate a decrease



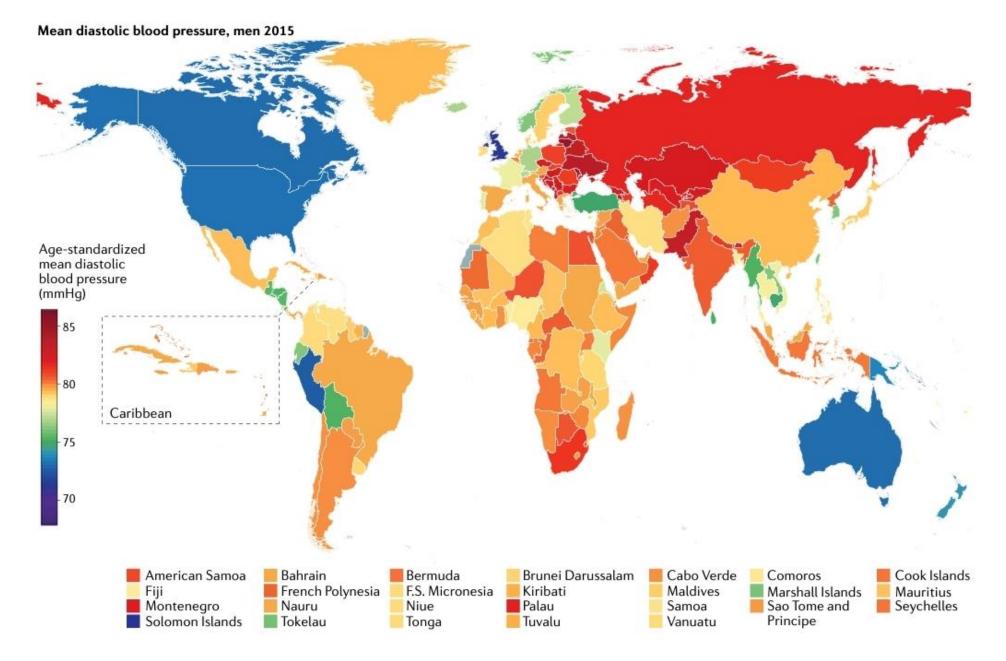
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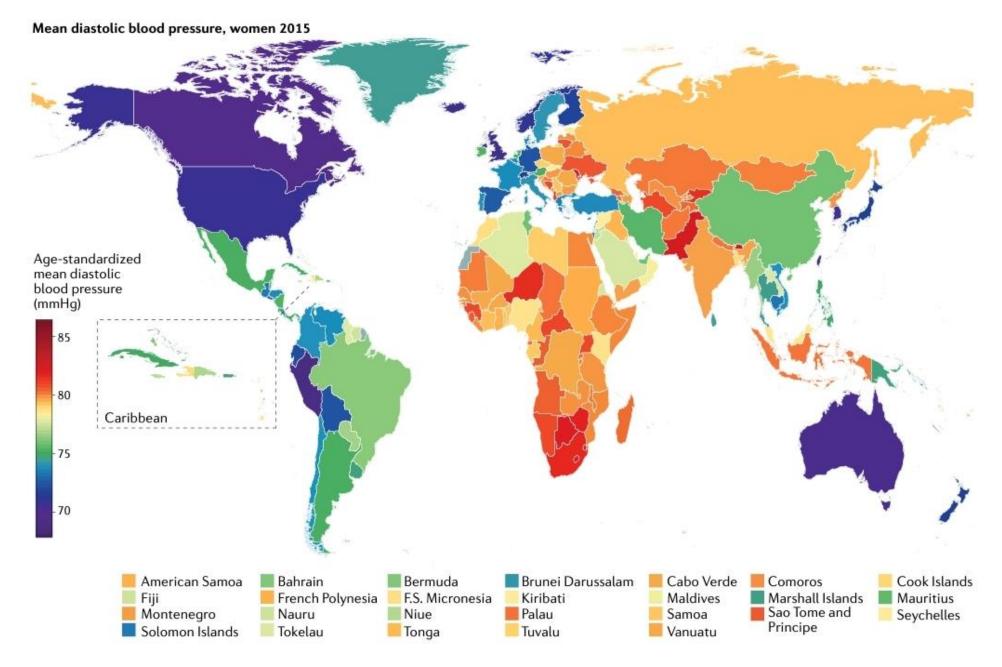
Worldwide systolic blood pressure. Age- standardized mean systolic blood pressure by country in 2015. Adapted from (ref.102), CC BY 4.0 (https://creativecommons.org/licenses/by/4.0/).



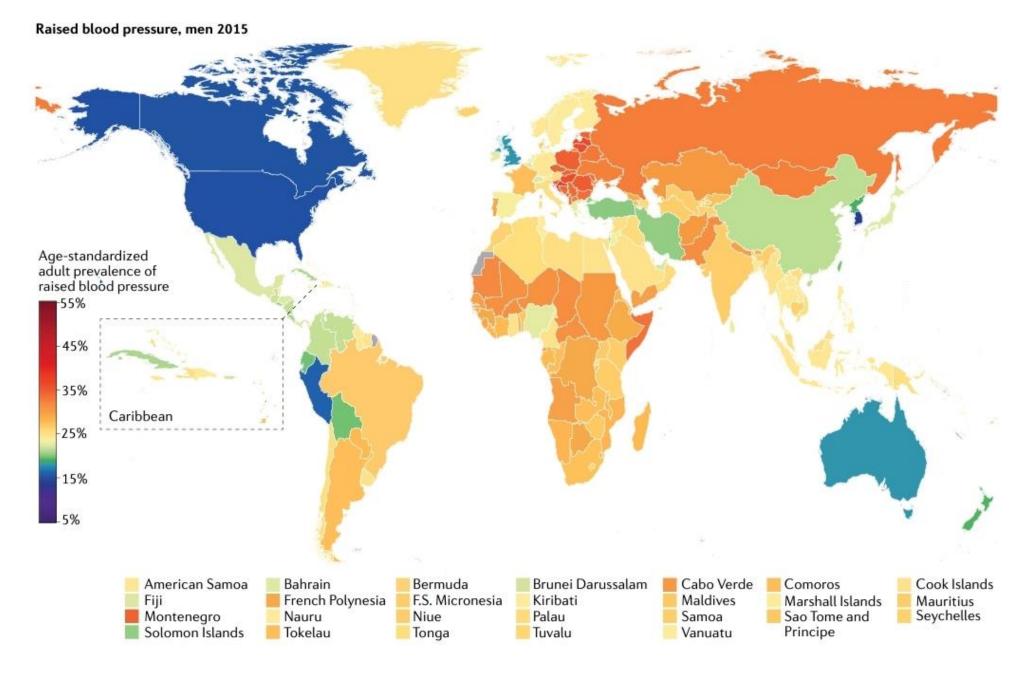
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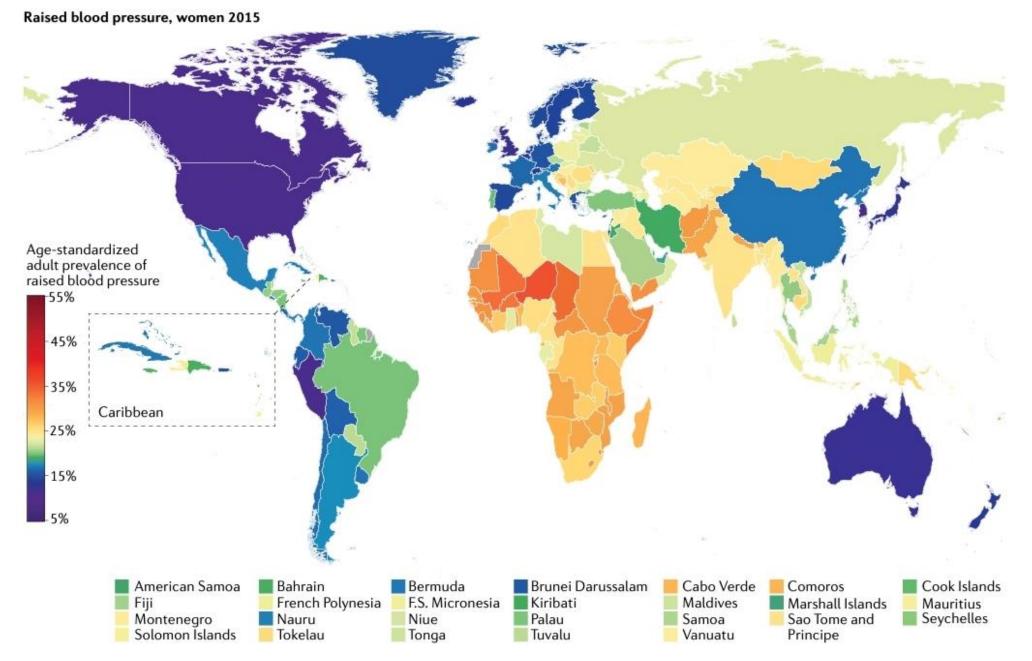
Worldwide diastolic blood pressure. Age- standardized mean diastolic blood pressure by country in 2015 (ref.102).



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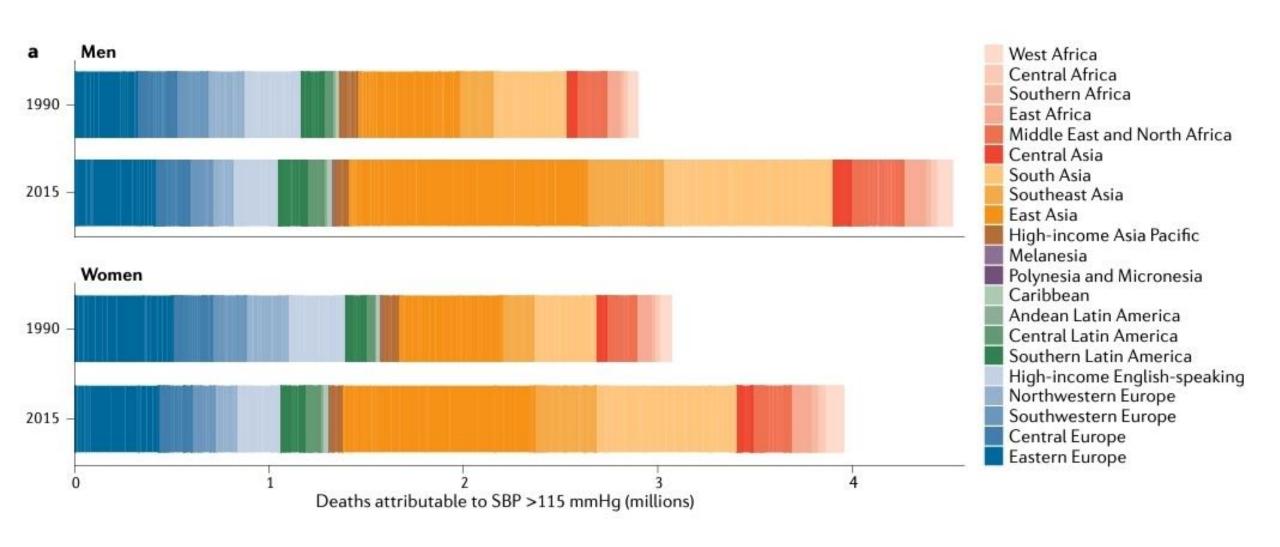


Worldwide prevalence of raised blood pressure. Age- standardized prevalence of raised blood pressure by country in 2015 (ref.102).

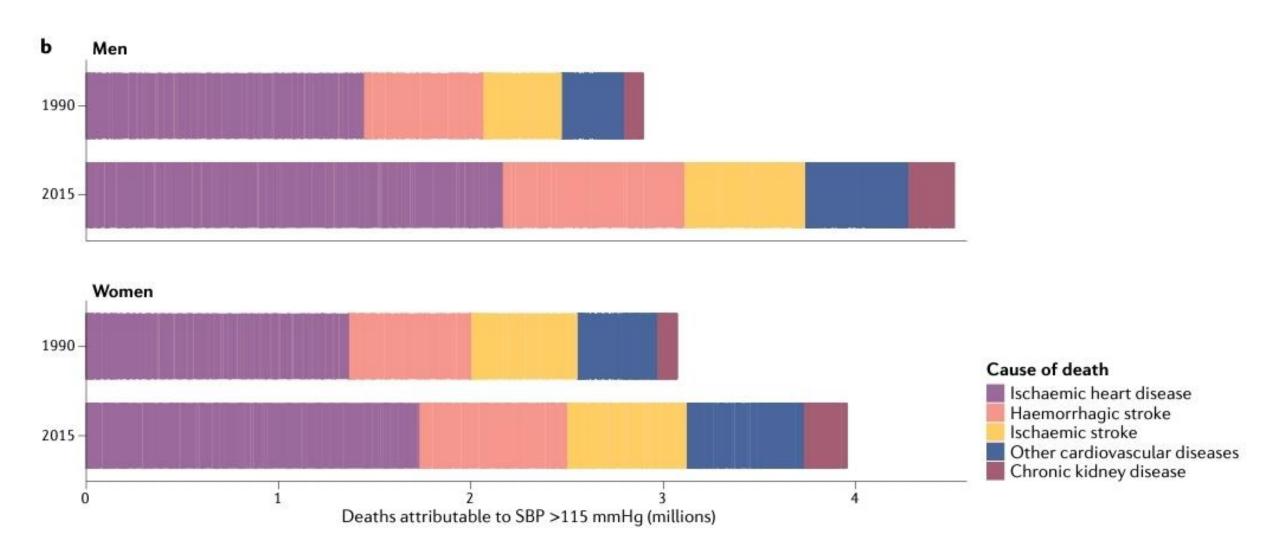


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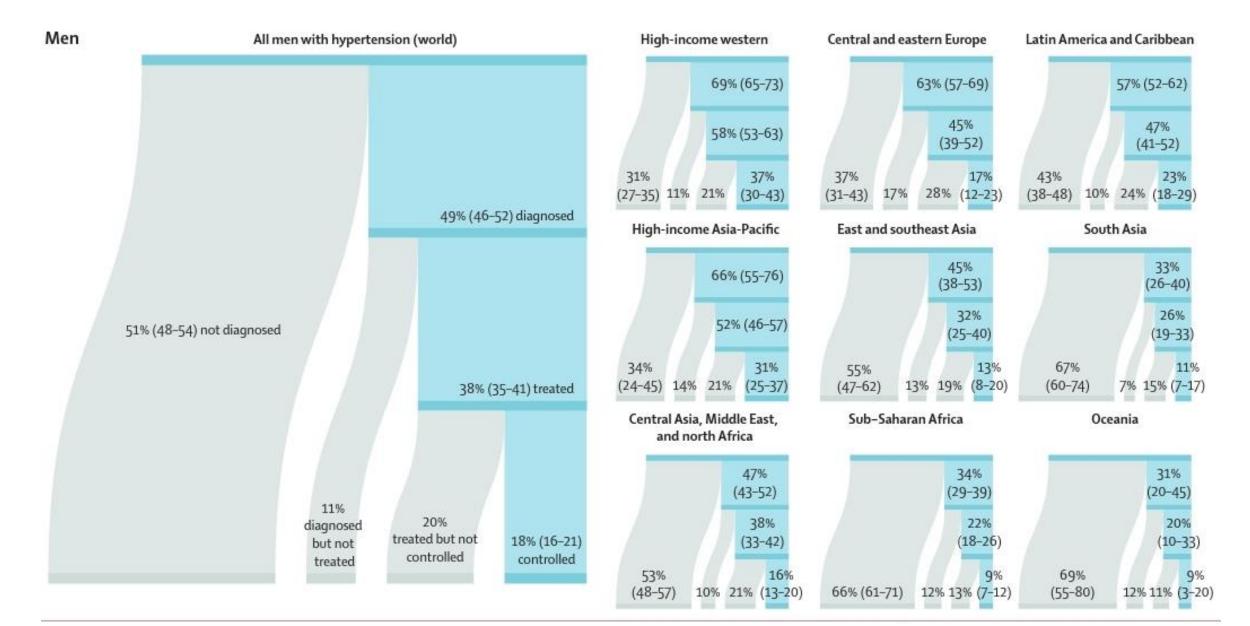
deaths attributable to high blood pressure. Deaths attributable to high systolic blood pressure (SBP) in 1990 and 2015, coloured by region



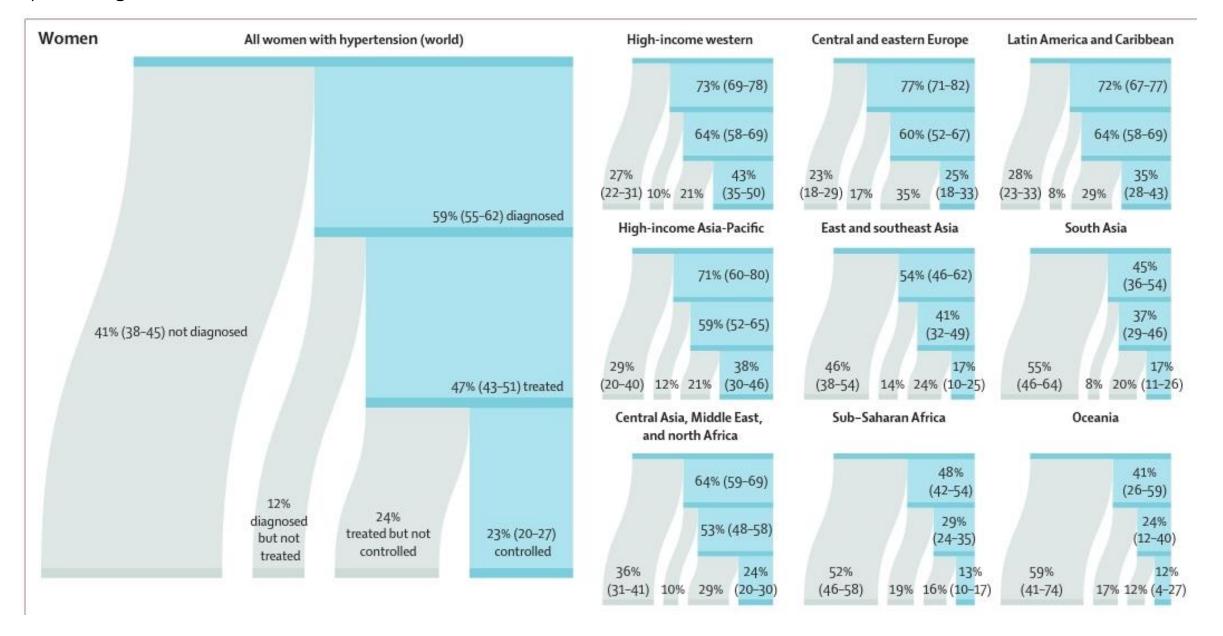
deaths attributable to high blood pressure. Deaths attributable to high systolic blood pressure (SBP) in 1990 and 2015, coloured by cause of death



Hypertension treatment cascade in 2019, for women and men globally and by regionData are estimate (95% credible interval). Each stream shows the loss of people with hypertension throughout the treatment cascade and its associated percentage for women and men.



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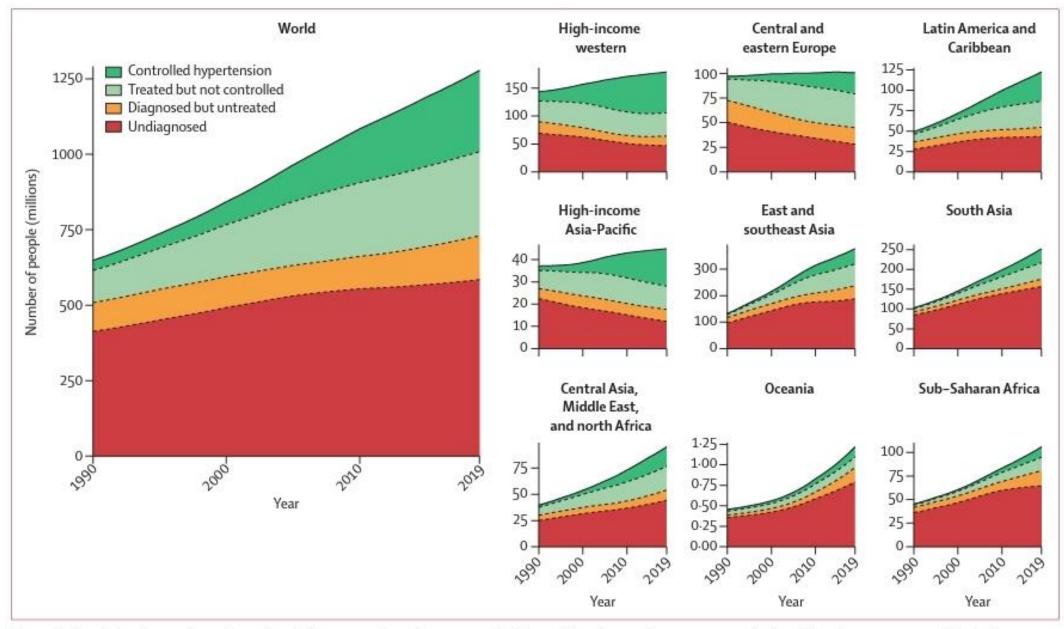
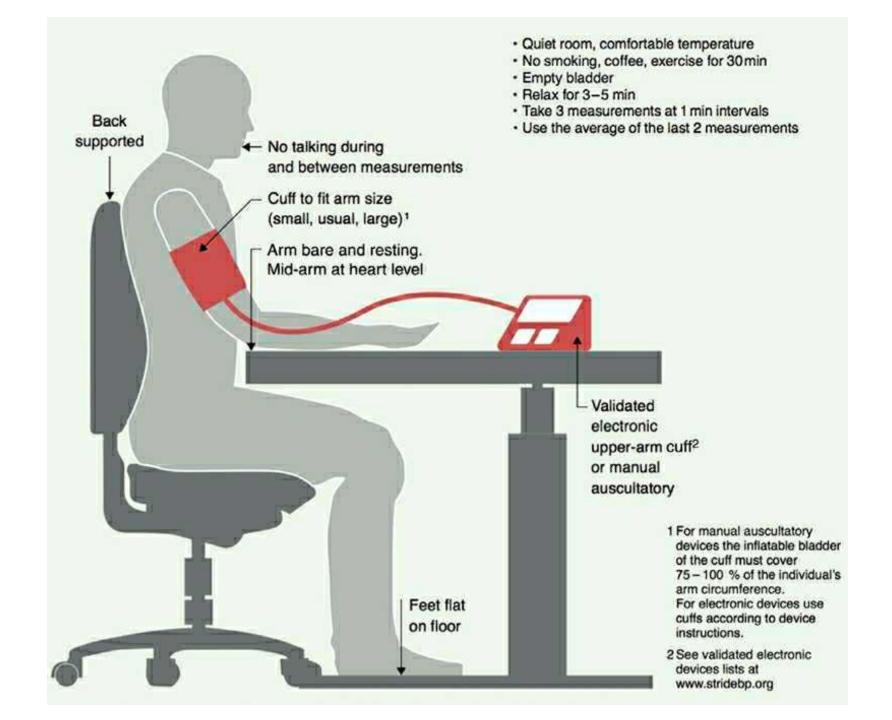


Figure 6: Trends in the number of people with hypertension who reported a diagnosis, who used treatment, and whose blood pressure was effectively controlled, globally and by region, 1990-2019

See the appendix (pp 58–60) for trends in the percentage of people with hypertension who reported a diagnosis, who had treatment, and whose blood pressure was effectively controlled, globally and by region.



Classification of hypertension based on office blood pressure measurement

Category	Systolic (mmHg)		Diastolic (mmHg)
Normal BP	<130	and	<85
High-normal BP	130-139	and/or	85-89
Grade 1 Hypertension	140-159	and/or	90–99
Grade 2 Hypertension	≥160	and/or	≥100

Criteria for hypertension based on office blood pressure, ambulatory blood pressure, and home blood pressure measurement

		SBP/DBP (mmHg)
Office BP		≥140 and/or ≥90
ABPM	24h average Day time (or awake) average Night time (or asleep) average	≥130 and/or ≥80 ≥135 and/or ≥85 ≥120 and/or ≥70
HBPM		≥135 and/or ≥85

Key points

- Hypertension is more prevalent in low-income and middle-income countries than in high-income countries.
- In 2015, 8.5 million deaths were associated with high blood pressure, 88% of which were in low-income and middle-income countries.
- Population-level measures, such as increasing the availability and affordability of fresh fruits and vegetables and lowering the sodium content of packaged and prepared foods, can lower blood pressure in the entire population.
- Effective use of pharmacological treatment for people with hypertension varies substantially globally and is particularly low in low-income and middle-income countries.
- Scaling up treatment coverage and improving its effectiveness can substantially reduce the health burden of hypertension.