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HYPERTENSION

Component 1 Information Booklet of Long-term Condition Management

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Module: Community Care and Management of Longer-term Conditions

Module code: LCHS7003

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HYPERTENSION

Hypertension is defined as persistently elevated systolic blood pressure 140mmhg or diastolic blood pressure 90mmhg, as per the International Society of Hypertension and European society of Hypertension guidelines (Charchar et al., 2023). The data bases on how hypertension evolved until now is needed to be observed for a better management of the condition. The table below shows the timeline on how the condition was evolved (Saklayen & Deshpande, 2016).

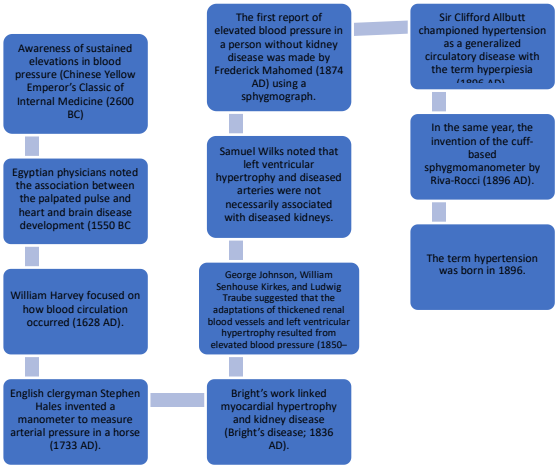

Chart 1: Depicts the overview of how hypertension was evolved since the ancient times [2].

Hypertension is classified as essential accountability for more 90% of scenarios with no identifiable causes or secondary, resulting conditions such as endocrine disorders, medication effects, renal diseases (Deepshikha et al., 2025). The pathogenesis includes a complex interplay of endothelial nervous system activation, and dysregulation of the renin angiotensin-aldosterone system (Deepshikha et al., 2025).

GLOBAL BURDEN BY GENDER, AGE AND GEOGRAPHY

The number of adults aged 30- 79 with hypertension doubled from 648 million in 1990 to 1.28 billion in 2019, with age-standardized prevalence remaining relatively stable globally (Zhou et al., 2021). In 2019, 652 million men and 626 million women had hypertension, with men generally exhibiting higher prevalence in younger age groups and women overtaking men after the sixth decade of life due to post-menopausal hormonal changes (Skeete et al., 2021 ; Wang et al., 2022). Globally 59% of women and 49% of men with hypertension has been diagnosed; only 47% of women and 38% of men were receiving treatment; and a mere 23% of women and 18% of men achieved blood pressure control (Zhou et al., 2021). These disparities are even more pronounced in low and middle income countries, where detection, treatment, and control rates remain critically low (Zhou et al., 2021).

The pie chart below depicts the sex distribution Hypertension burden among adolescents and young adults, 2021.

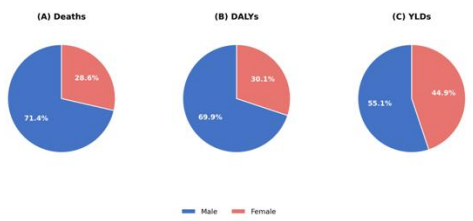

Fig 2 Sex-specific distribution of hypertension-related deaths, DALYs, and YLDs among adolescents and young adults (2021). Males bear a disproportionately higher burden across all metrics, with the gender gap most pronounced for deaths (71.4% male) and narrowest for YLDs (55.1% male).

Age is the strongest non modifiable predictor of hypertension. Prevalence increases dramatically with advancing age, reaching over 48% in individuals aged ≥60 in India (Mohammad & Bansod, 2024). Among adolescents and young adults (15-39 years), the burden is also rising: from 1990 to 2019, hypertension-attributable cardiovascular deaths in young adults increased by 43%, with men substantially outpacing women in mortality (Liu et al., 2021).

Geographically, the burden has shifted from high-income regions. Sub-Saharan Africa, Oceania, and South Asia report the lowest detection, treatment, and control rates (Wang et al., 2022 ; Zhou et al., 2021). Eastern Sub-Saharan Africa recorded the highest hypertensive heart disease prevalence at 291.8 per 100,000. While Bulgaria has the highest mortality rate at 103.4per 100,000 (Wu et al., 2025). By contrast, Canada, Peru, South Korea, and several western European nations, including the UK, reported the lowest age-standardized prevalence (Zhou et al., 2021).

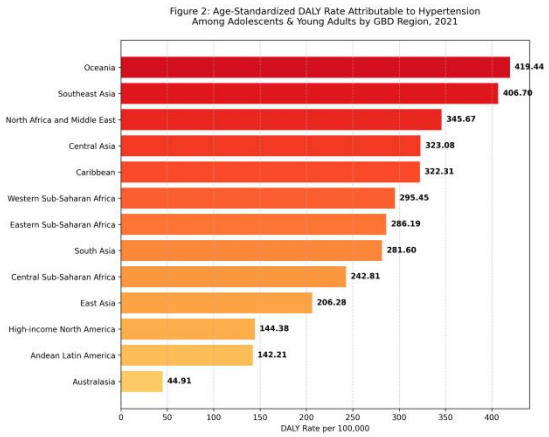

Fig 3: Age – standardized DALY rate per 100,000 attributable to hypertension among adolescents and young adults across 21 GBD regions (2021). Oceania bears the highest burden (419.44), Australasia reports the lowest (44.19). Source: Data from GBD 2021, PMC12593013.

UK – SPECIFIC STATISTICS

In England, approximately 30% adults have hypertension, including 15% with untreated disease (Adults' Health: Hypertension - NHS England ..., 2023). Gender differences show 31% of men and 26% of women affected (Blood Pressure Facts and Figures, n.d.). Alarmingly, an estimated 5 million adults in the UK have undiagnosed hypertension (High Blood Pressure (Hypertension) - Causes and Symptoms, n.d.). Ethnic disparities are evident: Individuals of African/ Caribbean ethnicity demonstrate lower blood pressure control rates than their European counterparts, partially attributable to lower medication persistence and adherence (Eastwood et al., 2022). The NHS Health Check programme screened over 1.4 million individuals in 2025 (People Searching NHS Advice on High Blood

Pressure ..., 2026), yet gaps in follow-up and ongoing management persist.

RISK FACTORS AND AETIOLOGY

Hypertension aetiology is multi factorial. Modifiable risk factors include high dietary sodium intake. Obesity, physical inactivity, excessive alcohol consumption, smoking, and chronic stress (Charchar et al., 2023 ; Meher et al., 2023). Non-modifiable factors include advancing age, family history, and ethnicity (Deepshikha et al., 2025). High systolic blood pressure, metabolic risks, and high body-mass index are the three leading risk factors for hypertensive heart disease, followed by unhealthy diet ad low fruit and vegetable intake(Wu et al., 2025). Among young adults, smoking, tobacco chewing, alcohol use, obesity, sedentary behaviour, and excessive salt consumption are the primary drivers (Meher et al., 2023).

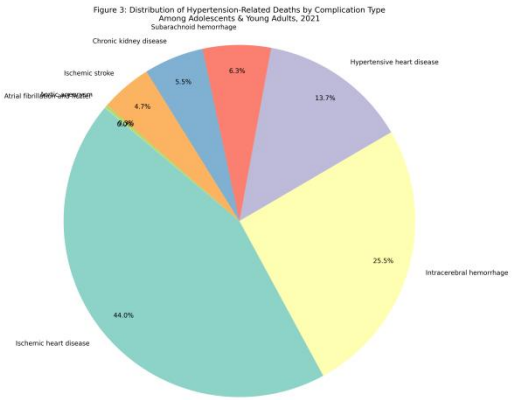

Figure 4: Proportional distribution of hypertension-related deaths by complication type among adolescents and young adults (2021). Ischaemic heart disease accounts for the largest share (46.5%), followed by intracerebral haemorrhage (26.9%). Source: Data from GBD 2021, PMC12593013.

CRITICAL EVALUATION OF THE IMPACT OF HYPERTENSION

PHYSICAL IMPLICATION

Hypertension is the leading modifiable risk factor for cardiovascular morbidity and mortality, contributing to Ischaemic heart disease, stroke, heart failure, chronic kidney disease, aortic aneurysm, atrial fibrillation, peripheral artery disease, and dementia (Zhou et al., 2021 ; Chen et al., 2021). In 2021, there were 12.5 million hypertensive heart disease cases globally, resulting in 1.33 million deaths and 25.5 million DALYs (Wu et al., 2025)Among young adults specifically, ischaemic heart disease and intracerebral haemorrhage account for the majority of hypertension-attributable deaths (Liu et al., 2021 ; Chen et al., 2021). End-organ damage accumulated silently, with sustained elevation in blood pressure causing left ventricular hypertrophy, arterial remodelling, and progressive renal deterioration (Deepshikha et al., 2025). Chronic kidney disease-related deaths attributable to hypertension have increased globally, with an estimated annual percentage change of 2.67 (Chen et al., 2021).

PSYCHOLOGICAL IMPLICATION

Longitudinal research demonstrates that within-person increases in depressive symptoms are significant positive predictors of elevated blood pressure, while improvements in well-being and

quality of life are negatively associated with blood pressure levels over time (Brugnera et al., 2022). A qualitative study of hypertensive patients revealed that illness experience encompasses anxiety about blood pressure fluctuations and complications, dislike of anti hypertensive medication and associated labelling effects, and psychological distress linked to stigmatisation (Sung & Paik, 2022). Relatively younger, actively working patients reported workplace discrimination and identity damage related to their diagnosis (Sung & Paik, 2022). The mediation between family function and quality of life is partially driven by anxiety: poor family functioning increases anxiety, which in turn deteriorated both mental and physical quality of life (Zhang et al., 2021). These findings underscore the need for health services to integrate evidence- based psychological interventions that foster better disease management (Brugnera et al., 2022).

SOCIAL AND FAMILY IMPLICATIONS

Hypertension imposes a substantial social burden on individuals and families. Older adults with hypertension in low-income communities report that family function directly influences mental quality of life, with anxiety mediating this pathway (Zhang et al., 2021). For unpaid caregiver strain is significantly associated with worse self-care across multiple domains, including diet, physical activity, and medication adherence (Gobourne et al., 2024). Caregivers with high strain were less adherent to the DASH diet (38.9% vs 50.8%), more likely to be physically inactive (44.4% vs 36.2%) compared with those experiencing none or some strain (Gobourne et al., 2024). Financial strain arising from ongoing medication costs, lost productivity, and insurance discrimination- where hypertensive patients report being refused enrolment in life insurance- further compounds the social burden (Sung & Paik, 2022). A pilot randomized controlled trial of a family dyadic partnership programme demonstrated that involving family carers in hypertension management significantly improved patient's blood pressure control, self-efficacy, self-care, anxiety, and health-related quality of life, while also reducing carers depression (Zeng et al., 2021). This evidence affirms that family-centred interventions can mitigate the broader psychological consequences of living with hypertension.

EVIDENCE BASED TREATMENT THROUGH NHS

The National Collaborating Centre for Chronic Conditions (NCC-CC), a multi professional collaborative centre for designing a guidelines for chronic conditions for NHS in England and Wale. They have provided a new information in regards to the pharmacological treatment of hypertension. The guidelines was developed by NCC-CC at Royal College of

Royal Physicians of London, with two major objectives: to incorporate new evidence based treatment guidelines into National Institute of Health and Excellence (NICE) and British Hypertension Society (BHS) to develop new collaborative suggestion for initial care prescribes in the NHS (National Collaborating Centre for Chronic Conditions 2006). Management of hypertension within NHS comes with evidence based recommendations from the NICE, and focuses on decreasing cardiovascular morbidity and mortality through lifestyle modifications, pharmacological treatment, and on going monitoring. Treatment is tailored according to age, ethinicity, cardiovascular risk, and the presence of comorbidities (NICE, 2023).

Life style interventions are recommended to all the patients and include reducing dietary salt intake, maintaining a healthy weight, increasing physical activity, limiting alcohol consumption, stopping smoking, and adopting a balanced diet rich in fruits and vegetables. Evidence suggest that these interventions can significantly lower blood pressure and reduce the risk of cardiovascular diseases (Charchar et al., 2023).

When lifestyle measures are alone insufficient, anti-hypertensive medication is initiated. NICE recommends an Angiotensin converting enzyme (ACE) inhibitor or Angiotensin receptor blocker (ARB) for adults under 55 years, while calcium channel blockers are generally preferred for adults aged 55 years and older and those of African and Caribbean family origin. Combination therapy involving ACE inhibitors/ ARB's, Calcium channel blockers, and thiazide like diuretics may be required if blood pressure remains uncontrolled (Mancia et al., 2023).

The NHS almost promotes home blood pressure monitoring and digital health technologies to improve diagnosis, treatment adherence, and self management. Studies indicate that self monitoring combined with professional support achieves better blood pressure control than routine care alone (Schutte et al., 2022).

Despite strong evidence supporting NHS treatment pathways, challenges remain, including health inequities, medication non-adherence, and unequal access to digital services.Therefore, multidisciplinary care involving general practitioners, nurses, pharmacists, and specialist hypertension services is essential to achieve equitable and sustainable improvements in patient outcomes(Lewis et al., 2024).

THEORETICAL PERSPECTIVES AND FRAMEWORK FOR IMPROVED OUTCOMES

THE CHRONIC CARE MODEL

The Chronic Care model, originally developed by Wagner(1998) and widely adopted internationally, provides a systematic framework for improving chronic disease outcomes by restricting healthcare delivery around six components: health system organization, clinical decision support, delivery system design, self-management support, clinical information systems, and community resources (Carrier, 2022). Evidence supports that structured chronic disease management programmes based on the CCM improve blood pressure control, patient satisfaction, and quality of life. However, implementation in LMICs faces significant barriers related to health system infrastructure and resource allocation (Schutte et al., 2022).

THE WHO HEARTS FRAMEWORKS

The WHO hearts frameworks- healthy lifestyle counselling, evidence-based treatment protocols, access to essential medicines, risk based charts, team-based care and systems for monitoring- represents a practical, scalable approach for hypertension management in diver settings (Jeemon et al., 2021). The WHF Road map for hypertension (2021 update) emphasizes that population- wide prevention, opportunistic screening, out of office blood pressure monitoring, task-sharing, and single-pill combinations are critical for reducing the global treatment gap (Jeemon et al., 2021). The international society of hypertension care task force to address disparities and implement a quality of care improvement framework tailored to regional contexts (Schutte et al., 2022).

THE 2023 ESH/ ESC GUIDELINES

The European society of hypertension 2023 guidelines represent the most comprehensive international framework, recommending a target blood pressure of 120/80mmHg. However, a critical review of 11 international guidelines found that sex- specific aspects remain sparsely considered: all guidelines agree on a higher prevalence in men but one recommends sex-specific thresholds or targets (Meinert et al., 2023). This unmet need for sex tailored management may partially explain the persistent gender gap in outcomes.

UK MODELS: NHS LONG TERM PLAN AND QUALITY OUTCOMES FRAMEWORK

In the UK, the NHS Long term plan(2019) identifies cardiovascular disease prevention as a clinical priority, with specific commitments to improving hypertension detection and management through detection and management

through the NHS health check programme, the hypertension optimization scheme, and expansion of digital and remote blood pressure monitoring (Aujla et al., 2023 ; People Searching NHS Advice on High Blood Pressure ..., 2026). The quality and outcomes framework (QOF) within the general medical services contract provides financial incentive structures for achieving blood pressure targets in primary care (Carrier, 2022). The British and Irish hypertension society (BIHS) has established a referral pathway framework to ensure equitable access to specialist hypertension services across the UK and Ireland (Lewis et al., 2024). However, a recent national Delphi study identified that the UK's top research priorities now include digital and remote monitoring, reducing health inequalities, supporting treatment adherence, and determining the role of blood pressure management in preventing dementia and frailty-related outcome (Swift et al., 2026).

Figure 4: Comparison of Theoretical Frameworks and Models for Hypertension Management

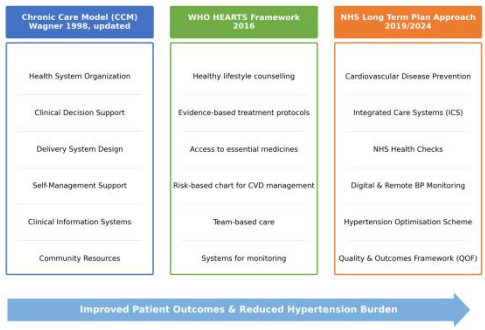

Figure 5: Comparison of three key theoretical frameworks for hypertension management—the Chronic Care Model, the WHO HEARTS Framework, and the NHS Long Term Plan—demonstrating shared goals of improved patient outcomes and reduced hypertension burden despite differences in scope and implementation context.

POLITICAL HEALTH AND SOCIAL CARE ANGENDAS INFORMING HYPERTENSION INITIATIVES

NATIONAL POLITICAL CONTEXT

The UK government has identified prevention as a central pillar of health reform, with the secretary of state for health and social care declaring prevention, personalisation, and performance as three priorities for NHS transformation (Oliver, 2022). However, critics have argued that political ideology may take precedence over evidence-based prevention, with insufficient investment in upstream determinants of health (Oliver, 2022). The NHS long term plan allocated substantial funding to cardiovascular disease prevention, including hypertension case-finding, yet the broader political environment of constrained public spending has limited the scope of preventive interventions (Alderwick, 2022).

INTEGRATED CARE SYSTEM AND DEVELVED POLICY

Responsibility for health and social care has been devolved since 1999, with Scotland, Wales, and Northern Ireland pursuing divergent policy trajectories. A

comparative analysis of 55 policies across England and Scotland identified four shared themes: integration of care, adult social care reform, prevention and supported self-management, and improving mental health care (Aujla et al., 2023). Cross- cutting priorities include person-centred care, addressing health inequalities, promoting technology use, and improving outcomes. However, England has adopted a more competition based, financially incentivized model compared with Scotland's collaborative approach (Aujla et al., 2023). The establishment of integrated care systems (ICS) in England form 2022 represents a structural shift towards place based, population health management that could enhance hypertension detection and management, but evaluation remains limited by the absence of UK- wide health and social care datasets (Aujla et al., 2023).

NHS HEALTH CHECK AND THE HYPERTENSION OPTIMISATION SCHEME

The NHS health check programme offers cardiovascular risk assessment every five years for adults aged 40-74, serving as the primary population -level screening mechanism for hypertension in England over 1.4 million blood pressure checks were delivered through this programme in 2025 (People Searching NHS Advice on High Blood Pressure ..., 2026).

HEALTH INEQUALITIES AND ETHNIC DISPARITIES

Persistent ethnic disparities in hypertension management represent a critical failure of current policy. A UK retrospective cohort study of 782,141 individuals found that while anti-hypertensive initiation rates did not vary by ethnicity, people of African/ African Caribbean ethnicity had significantly lower blood pressure control, partially attributable to lower medication persistence and adherence (Eastwood et al., 2022). The NHS race and health observatory has highlighted the need for culturally competent care models, yet systemic action remains limited. The BIHS referral pathway position statement aims to standardize specialist access across the UK and Ireland, but implementation depends on local commissioning decisions and resource allocation (Lewis et al., 2024).

CRITICAL ASSESSMENT AND FUTURE DIRECTIONS

A critical examination of UK and international policy reveals both progress and persistent shortcomings. While the NHS Long term plan, QOF incentive structures, and the BIHS referral framework represent meaningful policy infrastructure, implementation is hampered by fragmented commissioning, workforce shortages, digital exclusion, and

inadequate attention to the social determinants of health (Swift et al., 2026 ; Mancia et al., 2023). The shift towards integrated care models offers opportunity, but realizing improved hypertension outcomes requires: 1) sustained investment in primary care capacity: 2) systematic attention to health inequalities through culturally adapted interventions: 3) expansion of digital health technologies with attention to accessibility and 4) alignment of national targets with international best practice, including considerations of sex specific management approaches (Meinert et al., 2023 ; Schutte et al., 2022). As the UK sets its national hypertension research priorities through consensus- driven methodology, the emphasis on implementation science, digital innovation, and equity signals a promising departure from purely pharmacological and mechanistic research traditions (Swift et al., 2026).

IMPROVING PERSON CENTERED CARE APPROCHES INCLUDING SELF MANAGEMENT AND END OF LIFE CARE

Person centered care should prioritise decision-making, enabling patients to participate actively in treatment planning and goal setting according to their preferences, values and cultural needs (NICE, 2023). Self management can be strengthened through patient education, home blood pressure monitoring, digital health tools, personalised lifestyle support, which improve adherence and blood pressure control (McManus et al., 2021). For patients with advanced frality, or multiple comorbidities, care should incorporate advance care planning and discussion about treatment burden, quality of life, and end of life preferences. Integrated multi disciplinary care involving family carers can enhance continuity, patient autonomy, and holistic well being (Lewis et al., 2024; NHS England, 2024).

CONCLUSION

Hypertension remains one of the most significant long-term conditions confronting global public health, with a burden that is distributed unequally across gender, age, geography, and ethnicity. Its physical consequences are devastating, its psychological and social ramifications are profound and under- recognized, and the frameworks for improvement- though well- articulated at the theoretical level- face persistent implementation challenges within real world political and economic constraints. Addressing the hypertension burden requires an integrative, patient-focused, multi modal approach that aligns clinical guidelines with health system capacity, social determinants, and the lived experiences of patients and their families. Only through such comprehensive action can the gap

between what is known and what is practiced be meaningfully closed.

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