

Review Article

Why are we still not there? Understanding the hypertension control gap in South Africa

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Abstract

Hypertension remains one of the leading preventable causes of cardiovascular disease, especially heart failure, stroke and chronic kidney disease, which contribute to premature morbidity and mortality in South Africa. Yet despite the availability of effective antihypertensive therapy, blood pressure control remains poor across large segments of the population. South Africa's control gap is sustained by measurement problems, under-detection, poor continuity of care, inadequate treatment escalation, and insufficiently supported self-management, all within highly unequal care environments. These challenges are amplified by obesity, high salt intake, alcohol use, multimorbidity, socioeconomic disadvantage, transport and cost barriers, staff shortages, inconsistent medicine supply, and weak health information systems. Global evidence further shows that uncontrolled primary hypertension in practice is often driven by poor measurement, pseudo-resistance, and therapeutic inertia rather than true biological refractoriness. In South Africa, the public-health burden and economic costs are substantial, making improved control a clinical and fiscal imperative. This review synthesises South African and selected international evidence to argue that hypertension should be understood as an enduring control failure across the continuum of care. It proposes a practical agenda centred on accurate blood pressure measurement, earlier and broader case-finding, simplified treatment protocols, greater use of combination therapy where appropriate, task-sharing/shifting, home- or community-linked models of care, improved retention and adherence support, and stronger routine data systems. Better hypertension control in South Africa is achievable, but only if health-system delivery is treated with the same seriousness as pharmacological efficacy.

INTRODUCTION

Blood pressure (BP) is strongly and continuously associated with cardiovascular risk, even within the normal range, with each 20/10 mmHg increase above 115/75 mmHg doubling the risk of fatal events.(1) Undiagnosed and poorly controlled hypertension remains a leading preventable cause of heart attack, heart failure, stroke, chronic kidney disease, and dementia.(2) The primary aim of managing elevated

BP and hypertension is to reduce cardiovascular disease, improve quality of life, and prevent premature death.(2)

Hypertension is a significant public health issue in South Africa (SA), affecting approximately 40–50% of adults, yet less than half achieve adequate BP control despite the availability of effective therapies.(3) It remains a major contributor to cardiovascular disease and death, especially among populations facing challenges such as limited access to healthcare, poor adherence to treatment, and a high

burden of comorbid conditions like diabetes and obesity. (3) Hypertension in SA is more prevalent, poorly controlled, and has an earlier onset of complications compared to high-income countries. (4) Recent studies have shown that its prevalence is shifting toward younger age groups, a significant number of whom are unaware and not treated. (4)

In this perspective, we summarise pertinent available data on BP control in SA over the last 30 years and discuss obstacles to achieving BP targets and future strategies to overcome these barriers to hypertension control in SA.

DEFINITION AND EPIDEMIOLOGY

Sustained hypertension generally refers to BP that remains consistently elevated over time when assessed under appropriate conditions, reflecting a stable chronic phenotype rather than a transient or context-dependent rise in BP. (1) In clinical practice, however, the apparent “persistence” of hypertension is strongly shaped by how hypertension is defined, how BP is measured, and whether clinic findings are confirmed with out-of-office monitoring. The 2014 SA guidelines and the 2024 European Society of Cardiology (ESC) guidelines define hypertension as persistent office blood pressure $\geq 140/90$ mmHg, confirmed by repeated measurements and, ideally, home or ambulatory BP monitoring. (2,5) This definitional issue is not merely semantic. Divergence between major guidelines directly influences prevalence estimates, treatment eligibility, and the proportion of patients considered uncontrolled. For example, the 2017 American College of Cardiology and American Heart Association (ACC/AHA) guideline (6) lowered the diagnostic threshold to $\geq 130/80$ mmHg, thereby increasing the number of adults classified as having hypertension and uncontrolled BP, whereas the 2024 ESC guideline retained the traditional office threshold of $\geq 140/90$ mmHg while separately introducing an “elevated blood pressure” category. These differences mean that the same population may appear to have substantially different levels of hypertension burden depending on the diagnostic framework applied. Similarly, treatment decisions and assessments of control should not be based on a single casual clinic reading. Guideline-based diagnosis requires averaged readings obtained using a standardised technique across repeated encounters, and recent ACC/AHA guidance reiterates that clinical decisions should be based on the average of at least two readings at two or more visits. (7)

In 2024, about 1.4 billion people aged 30–79 worldwide were living with hypertension, yet fewer than 20% had it adequately controlled. (8) The economic burden is substantial and growing, with cardiovascular diseases projected to cost low- and middle-income countries around US\$3.7 trillion (ZAR 59.94 trillion) between 2011 and 2025—approximately 2% of their total gross domestic product. (8) National surveys in SA have reported an increase in hypertension prevalence, rising from 38.4% in 2012 to 48.2% in

2016. Although national guidelines outline recommended therapies and emphasise treatment adherence for optimal management, 50% or higher of hypertensive patients are uncontrolled nationally, as overall control rates are reported to be below 50%. (3,9)

The consequences for South Africa’s public healthcare system are substantial. Kohli-Lynch *et al.* estimated that approximately 8.2 million adults, or 30.8% of the public-sector adult population, have hypertension, contributing annually to excess cardiovascular and renal complications, including ischaemic heart disease, stroke, and chronic kidney disease. (10) The associated direct healthcare costs were estimated at approximately ZAR 10.1 billion, while total societal costs, including productivity losses, reached around ZAR 29.4 billion. (10) These figures highlight hypertension not only as a clinical problem, but also as a health-system sustainability challenge, particularly in the context of constrained public-sector resources.

Yet a critical question remains: how much of what is described as “persistent” hypertension reflects truly sustained pathophysiology, and how much reflects persistent uncertainty caused by imperfect measurement? Clinic-only assessment is particularly vulnerable to misclassification. In the International Database on Home BP in relation to Cardiovascular Outcome study, 25.2% of individuals with high office BP had white-coat hypertension, indicating that office-based assessment alone would have labelled a substantial proportion of individuals as hypertensive despite the absence of sustained elevation on ambulatory monitoring. (11) Conversely, apparently controlled clinic BP may conceal masked uncontrolled hypertension, particularly when nocturnal BP remains elevated. This phenotype is common enough in treated populations to make clinic BP alone inadequate for confirming true control status. (11) Home and ambulatory BP monitoring are therefore not peripheral additions to care; they are central to distinguishing sustained hypertension from white-coat and masked phenotypes, and to avoiding both over-treatment and under-treatment.

Measurement method further alters the apparent burden of persistent hypertension. Automated office BP techniques tend to yield lower readings than routine office measurements and align more closely with home or ambulatory values, illustrating how poor technique, observer effects, and non-standardised clinic workflows may inflate estimates of uncontrolled or persistent hypertension. (11) At the same time, reliance on routine clinic readings may underestimate persistence when masked or nocturnal hypertension is missed. Thus, “persistent hypertension” should not be interpreted only as a failure of patients to respond to lifestyle advice or pharmacological therapy. In many settings, particularly where health systems are overstretched, it may also reflect diagnostic imprecision, inconsistent measurement practices, limited access to out-of-office monitoring, therapeutic inertia, and structural barriers to long-term

care. Out-of-office BP measurement is rarely performed in the public sector due to a lack of equipment and expertise, and it represents a real failure of the public health system.

The practical implication is that hypertension should be understood as both a biological and a health-system phenomenon. True sustained hypertension represents chronic vascular risk requiring long-term management, but the persistence observed in routine care may be amplified or obscured by how blood pressure is measured, classified, and followed over time. Improving hypertension control, therefore, requires more than intensifying treatment. It also requires standardised measurement, repeated assessment, wider use of home and ambulatory monitoring, and context-appropriate models of care that can distinguish true uncontrolled hypertension from white-coat effects, masked hypertension, and measurement artefact. Only then can the burden of hypertension in SA and other low- and middle-income settings be measured accurately, managed efficiently, and reduced meaningfully.

WHAT HAVE WE LEARNT IN THE LAST 30 YEARS?

From earliest research studies (Table 1), (12–20) hypertension in sub-Saharan Africa and South Africa (SA) was

thought to be driven by urbanisation, lifestyle changes, and socioeconomic factors, with consistently low awareness, treatment, and control rates. Later, it was noted that uncontrolled hypertension became a major health concern in both rural and urban SA. Key gaps identified included poor patient education, inadequate treatment intensification, and weak health systems. Emphasis was put on effective strategies that centre on early screening, lifestyle modification, combination therapy, and health system strengthening.

The 2014 SA hypertension guidelines and newer SA studies (4,5,9,21–25) (Table 2) consistently show that hypertension in SA is still marked by high prevalence and poor control, driven by low awareness, poor adherence, unhealthy lifestyles, and weak health system implementation of guidelines. Effective solutions require integrated approaches, including improved screening, patient education, adherence support, task shifting to community health workers, and strengthening primary healthcare systems. Siedner *et al.* demonstrated that, in a controlled research setting, even in rural SA, home-based hypertension care resulted in a significantly lower mean systolic blood pressure at 6 months than standard clinic-based care.(23) Support

Table 1: Older reviews and studies on hypertension control in South Africa

Study / Context	Key findings	Determinants / Barriers	Implications
Opie & Seedat (2005)	Rising hypertension linked to urbanisation and lifestyle changes; higher stroke rates in Black South Africans	Migration, poverty, poor education, late presentation, renal disease, obesity, high salt intake	Reduce salt intake and obesity; improve education and access to care
Addo <i>et al.</i> (2007)	Higher prevalence in urban areas; low diagnosis (<40%), treatment (<30%), control (<20%)	Urbanisation, poor detection, weak health systems	Strengthen screening, prevention, and treatment strategies
Steyn <i>et al.</i> (2001)	~21% prevalence; poor control; women had better awareness and control than men	Inadequate treatment, gender disparities	Improve treatment coverage and male engagement
Rayner (2007)	Poor BP control despite treatment; monotherapy often insufficient	Doctor inertia, failure to intensify therapy	Promote early combination therapy and guideline adherence
Ataklte <i>et al.</i> (2015)	~30% prevalence; very low awareness (27%), treatment (18%), control (7%)	Undiagnosed cases, poor access to care	Improve early detection, treatment, and prevention
Adebolu <i>et al.</i> (2014)	58% uncontrolled BP; poor patient awareness despite reported adherence	Poor patient knowledge, medication side-effects	Enhance patient education and counselling
Monakali <i>et al.</i> (2018)	52% prevalence among nurses; low awareness and poor control	Occupational stress, age, long working hours	Implement workplace health and screening programmes
Masilela <i>et al.</i> (2020)	56.8% uncontrolled hypertension in rural PHC patients	Obesity, low physical activity, dyslipidaemia	Focus on lifestyle interventions and integrated care
Mondlane <i>et al.</i> (2014–2022) published 2025.	Decline in prevalence (58% → 30%) over time in rural SA	BMI, alcohol, low education; protective: employment, diet	Support targeted prevention and lifestyle modification

BMI: body mass index; BP: blood pressure; PHC: primary health care; SA: South Africa

Table 2: Recent South African guidelines and studies on hypertension control

Study / Context	Key findings	Determinants / Barriers	Implications
SA Hypertension Guideline (2014)	Provides evidence-based approach to diagnosis and management; aims to reduce CVD risk	Poor adherence, inadequate risk-factor control	Emphasises lifestyle modification, adherence, and comprehensive risk management
Ditlhabolo K <i>et al.</i> 2024	Poor documentation of guideline use; suboptimal BP control; poor screening for target organ damage	Weak implementation of guidelines, inadequate monitoring	Improve guideline implementation and clinical documentation
Woodiwiss <i>et al.</i> 2025	Hypertension increases with age; younger individuals have low awareness and treatment; men worse than women	Poor awareness, low screening, gender disparities	Need for systematic screening, education, and improved management, especially in youth and men
Makukule <i>et al.</i> 2023	High uncontrolled hypertension despite multi-drug therapy	Poor adherence, high salt intake, alcohol, smoking, low physical activity, pill burden	Focus on adherence, lifestyle changes, and optimisation of therapy
Sikhau MF <i>et al.</i> 2025	High uncontrolled hypertension; only 42% adherence	Low socioeconomic status, poor education, unemployment, long disease duration	Strengthen patient support, education, and adherence strategies
Dawood Z <i>et al.</i> 2025	Uncontrolled hypertension driven by multifactorial barriers	Financial, cultural, system-level issues, poor access, limited CHW training	Improve CHW training, community engagement, and health system support
Mtintsilana <i>et al.</i> 2025	24% prevalence; low knowledge despite high burden	Poor awareness, lifestyle risks; SES and lifestyle protective	Early prevention, education, and risk-factor modification
Siedner <i>et al.</i> 2025	Home-based care significantly improved BP control vs clinic care	Access barriers, clinic-based care limitations	Support community-based models, CHWs, and digital monitoring

BP: blood pressure; CHWs: Community health care workers; CVD: cardiovascular disease; SES: Socioeconomic status

from the Department of Health and relevant stakeholders, through strengthening primary healthcare systems and empowering community health workers, can help translate these findings into meaningful improvements in real-world hypertension management.

HOW DO WE COMPARE TO INTERNATIONAL CONTROL OF HYPERTENSION?

It is interesting to note that barriers to hypertension control are not unique to SA. Across international studies (Table 3) and observations, hypertension emerges as a major global health challenge driven primarily by health system failures rather than lack of effective treatments.(26) Even in high-income settings like the United States, BP control remains suboptimal due to gaps across the care continuum, including poor awareness, delayed treatment, and weak long-term adherence.(26)

Globally, the WHO highlights low control rates in most countries, largely due to weak primary healthcare systems, limited access to affordable medicines, workforce shortages, and low public awareness.(8) A randomised clinical trial conducted in sub-Saharan Africa evaluated three dual-drug regimens for managing hypertension in black

patients.(27) Among 728 participants, combinations that included amlodipine with either hydrochlorothiazide or perindopril were more effective in reducing 24-hour systolic blood pressure over six months than the combination of perindopril and hydrochlorothiazide. There was no meaningful difference in effectiveness between the two amlodipine-based treatments. Overall, these results indicate that amlodipine-based combinations offer better blood pressure control in this population and, importantly, that all these medications are readily available and affordable in the South African context.(27) However, in sub-Saharan Africa, the burden of hypertension remains severe, with high and increasing prevalence alongside very low treatment and control rates, influenced by factors such as age, obesity, lifestyle risks, and socioeconomic inequalities.(28)

Evidence from the Global HEARTS Initiative demonstrates that large-scale improvement is achievable through standardised protocols, team-based care, task-shifting, strong primary healthcare, and reliable medicine supply.(29) Additionally, emerging data-driven approaches emphasise the importance of robust health information systems to improve detection, monitoring, and decision-making. Overall, these studies consistently show that

Table 3: Recent International studies and perspectives on hypertension control

Study / Context	Key findings	Determinants / Barriers	Implications
S Kishore <i>et al.</i> 2026. Hypertension control in USA	BP control remains suboptimal (~50%) despite effective, low-cost treatments; decline over time	System-level failures: low awareness, delayed treatment, poor adherence; weak preventive care; socioeconomic and lifestyle factors	Focus on health system redesign, not new drugs; improve care delivery across continuum
Farrar <i>et al.</i> WHO Global Report (2025)	Many countries have <20% BP control; some (e.g. Korea, Bangladesh, Philippines) achieved >50% with reforms	Weak primary care, poor access to medicines/devices, workforce shortages, low awareness	Scale up primary care, affordable treatment, awareness, and monitoring systems
Banigbe <i>et al.</i> Global HEARTS Initiative (2025)	34 million treated across 38 countries; large-scale BP control feasible	Limited drug availability, weak systems, provider inertia	Use standardised protocols, team-based care, task-shifting, and strong monitoring systems
Nambiema A <i>et al.</i> Hypertension in 37 African countries study	~25–30% prevalence; awareness improving but treatment and control remain very low	Age, obesity, alcohol, smoking, socioeconomic and country-level factors	Strengthen screening, treatment access, and health systems
Getachew ED <i>et al.</i> Sub-Saharan Africa data-driven care	Hypertension crisis driven by high prevalence and poor diagnosis, treatment, and control	Weak data systems, inability to track patients and outcomes, fragmented care	Implement data-driven systems and digital tools to improve care and decision-making

BP: blood pressure; USA: United States of America; WHO: World Health Organisation

effective hypertension control requires system-level reforms, improved access to care, better use of data, and integrated, scalable interventions, rather than new treatments alone. Successful examples from low- and middle-income countries (Korea, Bangladesh, Philippines) demonstrate that integrating hypertension care into primary health systems, ensuring affordable medicines, and adopting structured treatment programmes can significantly improve control rates. These countries face similar challenges in hypertension control; thus, it stands to reason that these strategies can be implemented in the SA setting.

FUTURE DIRECTIONS

Over the past three decades, studies on hypertension control in SA have generated substantial evidence identifying the causes of poor blood pressure control, clearly demonstrating that it is a widespread and urgent public health concern requiring decisive action to reduce associated morbidity and mortality. However, effective solutions to this complex and multifactorial problem remain limited. Drawing on successful examples from other low- and middle-income countries that have improved hypertension control despite resource constraints could provide valuable guidance.(29) These experiences offer reassurance that, with the right strategies, meaningful control of hypertension is both achievable and sustainable (Table 4 and Figure 1). Indeed, according to the Global Hearts initiative study, BP control is within reach for 50% of the community if global organisations and national health programmes prioritise implementing the World Health Organisation HEARTS programme.

The main issues that make hypertension control challenging in sub-Saharan Africa are a lack of strong data systems, which limit the ability to track patients, monitor outcomes, and guide effective decision making.(30)

In 2016, the World Health Organisation (WHO), together with its partners, introduced the HEARTS technical package as a primary public health strategy to improve hypertension control in primary healthcare settings.(30) It comprises six key components:

1. Healthy lifestyle counselling,
2. Evidencebased treatment protocols,
3. Access to essential medicines and technologies,
4. Riskbased cardiovascular disease management,
5. Team-based care, and
6. Systems for monitoring and evaluation

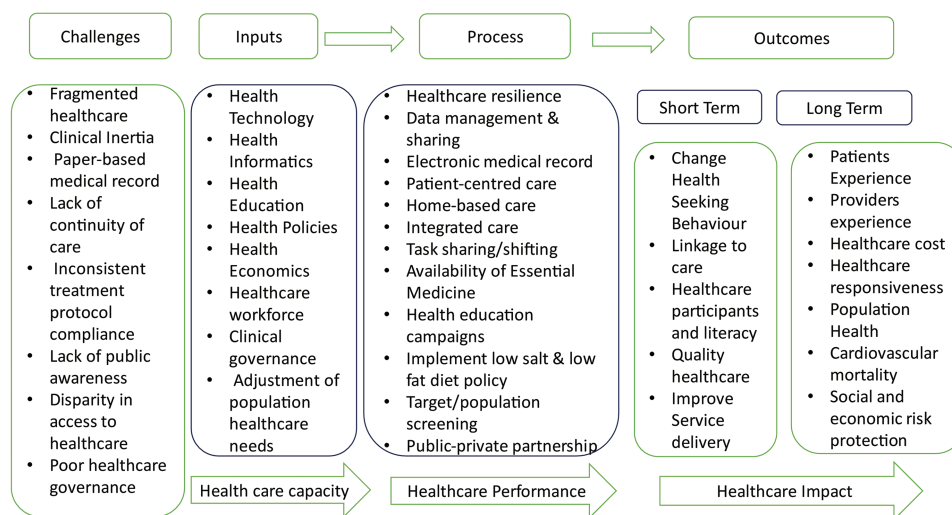
PATIENT-CENTRED APPROACH TO HYPERTENSION

Health system structures act as the “scaffolding” that supports or undermines BP control, emphasising that persistent hypertension often reflects system failure rather than patient failure. When these structures are weak, they create barriers that make it nearly impossible for patients to achieve control. The ESC hypertension guidelines (2) emphasise a patient centred approach that involves shared decision making, tailoring treatment to individual risk profiles, comorbidities, and patient preferences. Care should focus on improving adherence through education, simplified treatment regimens, for example, single pill combinations that are still not available in the SA public sector, and

Table 4: Challenges encountered during the Global Hearts initiative study and proposed solutions that are applicable to the South African setting

Challenge/Area	Key Issue	Details / Explanation	Potential Solutions
Therapeutic inertia	Failure to intensify treatment	Blood pressure remains above target despite protocols	Clinician training; quality improvement approaches; multifaceted interventions
Single-pill combinations (SPCs)	Low uptake despite recommendations	Perceived higher cost vs single agents; included in WHO Essential Medicines List; strong clinical evidence supports use	Promote cost-effectiveness evidence; increase awareness; expand LMIC data
Medicine access	Unreliable and unaffordable supply	Issues with funding, procurement inefficiencies, fragmented selection processes	Increase domestic investment; implement innovative financing (e.g. health taxes); strengthen global coordination
Blood pressure measurement	Missed diagnosis opportunities	Not routinely measured in all adults; limited resources, poor workflows, lack of equipment	Universal BP screening; dedicated measurement stations; validated automated devices
Team-based care	Limited utilisation	Reliance on physician-led care increases burden and costs	Task-sharing with non-physician workers; training, mentorship, supervision; telemedicine support
Patient adherence	Poor long-term retention	<50% retention after 1 year due to cost, travel, long waits	Free/subsidised care; decentralised services; longer medication refills
Health information systems	Weak data systems	Paper-based systems limit tracking, monitoring, and follow-up	Transition to digital platforms; automated reminders; tracking missed visits; data-driven quality improvement

BP: blood pressure; LMIC: low-middle-income countries; SPC: single-pill combination; WHO: World Health Organisation

**Figure 1:** Key challenges and Strategic framework for hypertension management in South Africa

regular followup. The guidelines also highlight the importance of lifestyle modification, psychosocial factors, and empowering patients through home BP monitoring, which still remains a challenge in the SA setting. A multidisciplinary, team based approach is encouraged to optimise long-term BP control and cardiovascular outcomes.

PREVENTION IS BETTER THAN CURE: TACKLING OBESITY IN SOUTH AFRICA

Overweight and obesity have increased significantly worldwide.(31,32) Overall, the data show a growing global burden of overweight and obesity across all age groups. Both obesity and hypertension are preventable risk factors

for cardiovascular disease and place a significant economic strain, especially in developing nations.(32) Hypertension is highly prevalent across Africa and is strongly linked to obesity. Analysis of over 30,000 individuals from 13 countries in Africa showed that obese individuals are more than twice as likely to have hypertension, with the risk increasing significantly with age. These findings highlight obesity as a key driver of hypertension across the continent.(33)

The Human Sciences Research Council study found that nearly half of adult South Africans are either overweight or obese, highlighting a significant and growing public health concern.(34) This high prevalence increases the risk of non-communicable diseases such as hypertension, diabetes, and cardiovascular conditions, emphasising the need for urgent national interventions focused on healthier lifestyles and prevention strategies. Addressing obesity demands coordinated, multisectoral action, including policy changes, improved food systems, stronger health services, and industry efforts to reduce unhealthy ingredients, promote nutritious foods, and encourage healthier behaviours.

CONCLUSION

Three decades of data confirm that South Africa has mastered an understanding of the hypertension epidemic; the next decade must be defined by an implementation strategy. Health care system failures must be addressed through a Patient-Centred Approach that utilises shared decision-making and a simplified single-pill combination rather than complex multidrug regimens. The transition from clinic-bound, doctor-centric care to an integrated, data-driven, and community-based model is the only viable path. By fostering multisectoral synergy among clinical care, community outreach, and policy reform, South Africa can achieve sustainable control of hypertension and secure the health of its future generations.

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