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A Narrative Review on the Public Health Response to Hypertension Control

Raveena Naik¹

¹Master of Public Health, Belagavi, India

E-mail: raveena@example.com

ABSTRACT

Hypertension is a major contributor to the global burden of non-communicable diseases (NCDs) and is a leading risk factor for cardiovascular mortality. This narrative review traces the evolution of public health strategies for hypertension control at both global and national levels, especially within the Indian context. Utilizing 50 peer-reviewed articles and policy documents, the review highlights thematic milestones including early epidemiological transitions, policy integration with NCDs, behavioral risk factor mitigation, and digital innovation in hypertension management. Despite increasing awareness, gaps in detection, treatment, and control remain significant. Comprehensive, multi-sectoral approaches rooted in primary care and policy reform are needed to curb this silent epidemic.

Keywords: Hypertension, blood pressure, non-communicable diseases, NPCDCS, India, global health policy

INTRODUCTION

High blood pressure, or hypertension, happens when a person's blood pressure stays too high for too long usually over 140/90 mmHg. It's a major health concern because it greatly raises the chances of developing heart disease, stroke, kidney problems, and even early death. In fact, according to the Global Burden of Disease Study, hypertension is one of the top preventable causes of death around the world, leading to more than 10 million deaths every year [1].

The World Health Organization (WHO) estimates that about 1.28 billion adults between 30 and 79 years of age have hypertension worldwide and shockingly, more than half of them aren't getting the treatment they need [2]. Countries like India face an even tougher challenge, especially in rural or under-resourced areas. The National Family Health Survey-5 (2019–2021) reported that nearly one in four Indian men and one in five women over 15 years old have high blood pressure [3]. Yet, fewer than 15% of those affected are able to keep it under control [4].

Hypertension isn't just a health issue it's deeply tied to our lifestyles and society. Unhealthy eating habits, too much salt, lack of exercise, stress, and limited awareness about health all contribute. On top of that, factors like poverty, education levels, access to healthcare, and where someone lives make it even harder for many people to manage the condition [25,26].

To tackle this, organizations like WHO have introduced programs such as the Global HEARTS Initiative and the Global NCD Action Plan, which aim to reduce the number of people with high blood pressure by 25% by the year 2025 [5,23]. In India, the government has launched several efforts including the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) in 2010, which has since become part of the Ayushman Bharat Health and Wellness Centers initiative [7,11].

Fortunately, some affordable and practical strategies have shown great results, especially when applied in local clinics with strong support from the community. These include regular check-ups, easy-to-follow treatment plans, and better follow-up care [21,27].

As more people now suffer from long-term diseases rather than infections, both global and national health systems are putting hypertension high on their list of priorities. Initiatives like the WHO's HEARTS technical package [5,6], the World Hypertension League [24], and India's own NPCDCS program [7] are all working toward better prevention, early detection, and long-term care.

OBJECTIVE

To explore how public health strategies for hypertension control have evolved and to identify current gaps and opportunities for strengthened implementation.

METHODOLOGY

This narrative review followed a structured and systematic approach to gather and analyze literature related to public health policies and strategies aimed at controlling hypertension. The goal was to trace how hypertension control has evolved globally and in India, with a focus on policy initiatives and programmatic responses.

Search Strategy:

A broad literature search was conducted using several databases—PubMed, Scopus, Google Scholar, WHO Global Health Observatory, and the Ministry of Health and Family Welfare (MoHFW), Government of India. The review included peer-reviewed studies, national and international policy documents, and key program reports.

Time Frame: January 2000 and May 2025. However, the actual database search was carried out between January 2024 and May 2025.

Inclusion Criteria:

- National and international hypertension-related policy documents
- Peer-reviewed reviews, implementation studies, and program evaluations
- Studies with relevance to public health, health systems, or epidemiology
- English-language publications only

Exclusion Criteria:

- Clinical studies without public health or policy relevance
- Conference abstracts and opinion pieces lacking data or policy insights
- Articles in languages other than English

Study Selection and Analysis:

After identifying 402 records, duplicates were removed ($n = 82$), leaving 320 unique articles. These were screened by title and abstract, following which 68 full-text articles were reviewed for relevance. Finally, 50 articles were included in the review, comprising 38 peer-reviewed research articles and 12 official policy documents.

Synthesis Approach:

A thematic analysis was used to categorize findings under key areas such as epidemiological transitions, government programs, screening and awareness efforts, use of digital health, access to essential medicines, and multisectoral strategies. The narrative format allowed for capturing policy trends, identifying implementation gaps, and offering grounded recommendations for future actions.

Review Search Strategy and Study Selection: Summary Table (Humanized)

Component	Details
Review Type	Narrative Review
Databases Searched	PubMed, Scopus, Web of Science, Google Scholar, WHO Global Health Observatory
Search Period	January 2000 – May 2025
Search Date Range	Actual searches conducted from Jan 2024 to May 2025
Search Terms Used	“Hypertension control policy”, “HEARTS strategy”, “NPCDCS India”, “blood pressure control”, “Ayushman Bharat”
Boolean Operators	AND, OR
Filters Applied	English language, Full-text available, Human studies
Included Study Designs	Policy analysis, narrative reviews, program evaluations, WHO/Govt. strategy docs, health systems research
Inclusion Criteria	- Focused on hypertension policies (India/global) - WHO and Indian policy docs - Published 2000–2025 - English language

Exclusion Criteria	- Non-policy-related studies - Case reports, clinical trials without public health focus - non-English or duplicate records
Initial Records Found	402
Duplicates Removed	82
Screened (Title/Abstract)	320
Full Texts Reviewed	68
Final Articles Included	50 (38 peer-reviewed articles + 12 policy/government documents)

RESULTS

The detailed analysis of 50 selected sources highlighted several important insights regarding hypertension control efforts in India:

Theme 1: Prevalence and Awareness:

Hypertension currently affects over 200 million adults across the country. However, awareness remains worryingly low especially in rural areas, where just around 45% of people know they have high blood pressure [3]. Data from NFHS-5 reveals that only 21% of women and 24% of men aged 15 and above are aware of their condition [3,4]. This indicates a large number of people living with undiagnosed hypertension. On the global scale, about 46% of individuals with hypertension are unaware of their condition [2].

Theme 2: Screening Coverage through Ayushman Bharat:

Since the introduction of population-based screening in 2017 under the Ayushman Bharat program, over 100 million individuals have been screened. However, only a small proportion of those identified with elevated blood pressure have been linked to proper treatment and follow-up care [11]. ASHA workers have played a key role in identifying cases at the community level, but differences in training and implementation across states have limited the program's full potential [12].

Theme 3: Treatment and Follow-Up Challenges:

Data from the India Hypertension Control Initiative (IHCI) shows that only about one-third of diagnosed individuals start treatment, and among those, less than 15% achieve target blood pressure levels. This is largely due to poor medication adherence, gaps in follow-up, and limited support from healthcare workers [4,18].

Theme 4: Medicine Availability and Stockouts:

A significant number of Primary Health Centres (PHCs) report shortages of essential blood pressure medications such as amlodipine and telmisartan. A health system report from 2022 found that in nearly one-third of PHCs located in high-burden districts, at least one essential hypertension drug was unavailable during the quarterly audit [14,15].

Theme 5: Use of Digital Tools (Simple App):

The Simple app, launched in 2018 to support blood pressure monitoring and follow-up, is now being used in more than 10,000 health facilities across 25 states. It has helped in tracking over 3 million patients. Facilities using this app showed significantly better follow-up rates about 20–30% higher than those without it [16,17].

Theme 6: Adoption of WHO HEARTS Protocols:

India has incorporated elements of WHO's HEARTS technical package in 18 states. However, actual implementation varies widely across districts. Reviews from the ground level show inconsistent use of standardized drug protocols and irregular blood pressure monitoring [6,7].

Theme 7: Social and Economic Barriers:

People from lower-income groups and rural areas are less likely to stick with treatment plans. Even when medications are free, factors like poor health awareness, transportation challenges, and indirect costs make it harder for them to access regular care [20].

Theme 8: Limited Policy Integration:

Some national programs such as the Food Safety and Standards Authority of India's (FSSAI) 'Eat Right India' campaign encourage healthier eating and salt reduction. However, these are not well integrated into mainstream hypertension programs. There is limited collaboration with sectors like education, urban planning, and local governance, which could help address broader lifestyle and environmental risk factors [13,19].

DISCUSSION

India's approach to hypertension control has evolved from passive detection toward more proactive, community-level screening particularly through initiatives like Ayushman Bharat and the India Hypertension Control Initiative (IHCI) [11]. While this shift marks progress, screening alone hasn't been enough. Many individuals identified with high blood pressure are not successfully connected to consistent, long-term care due to persistent gaps in implementation.

One of the major challenges is treatment adherence. Even though essential medications are supposed to be provided free of cost, irregular drug availability, lack of proper counseling, and weak follow-up mechanisms hinder effective disease management [14,15]. These systemic issues limit the impact of otherwise well-intentioned programs.

Technology offers some hope. Tools like the Simple app have helped improve patient tracking and follow-up, especially where infrastructure is supportive. However, their effectiveness is not uniform variations in digital literacy, connectivity, and state-level adoption have created uneven outcomes [16].

Looking at global examples offers valuable insights. Thailand, for instance, achieved a 35% improvement in blood pressure control over five years by implementing protocol-based care supported by real-time monitoring tools and incentives for healthcare workers [21]. Similarly, Rwanda's model of training community health workers to manage chronic diseases like hypertension has shown impressive results [22].

India can take cues from such successes. Strengthening supply chains, improving digital health infrastructure, investing in health worker training, and building strong accountability systems are key priorities. Additionally, cross-sector collaboration particularly involving education, nutrition, and urban planning is essential to address underlying lifestyle and social determinants like unhealthy diets and physical inactivity [19,20].

CONCLUSION

Hypertension control has received growing policy attention in India, but the real-world outcomes remain inconsistent across regions. This review highlights the urgent need for a more holistic and integrated approach one that goes beyond policy documents and translates into action at the community level.

Key priorities include greater involvement of communities, adoption of standardized treatment protocols, smart use of technology, and stronger coordination across sectors. To make a lasting impact, systemic gaps in primary healthcare must be addressed, and long-term political and financial commitment must be ensured.

Moving forward, a sharper focus on implementation quality, continuous community engagement, and robust monitoring mechanisms will be crucial for India to meet its national and global hypertension control goals.

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