Small Voices, Lasting Changes

Leveraging Children's Agency in Family-Centered Hypertension Care

By

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Chapter 1

Rethinking hypertension management: A family centered approach

A 55-year-old father of two, diagnosed with hypertension, struggles to follow his medication schedule. His doctor warns him about potential stroke risks, yet he often forgets to check his blood pressure. His 12-year-old daughter, learning about hypertension at school, takes it upon herself to remind him about his medicine and encourage him to eat healthier. At first, her father dismisses her reminders, but over time with frequent nudging, he remembers it as routine, sometimes even without her prompts. Her gentle encouragement turns into daily habit formation—ensuring her father stays on track with his health. Could children be the missing link in self-management of chronic diseases?

Hypertension, or high blood pressure, is not just a medical condition—it is a global health crisis. Despite decades of advancements, it remains a leading cause of cardiovascular disease, stroke, and kidney failure. The challenge extends beyond its high prevalence to the persistent struggle of ensuring long-term adherence to treatment.

Traditional hypertension management focuses primarily on diagnosed adults, often overlooking the powerful influence of family dynamics on health behaviours. This book critically examines hypertension management through a biopsychosocial lens, introducing a novel perspective: the role of children in shaping family health practices. Emerging research in health psychology suggests that family members—especially those with close emotional

bonds—play a crucial role in influencing health behaviours. While spouses and adult caregivers have traditionally been recognized in this role, children present an untapped potential in chronic disease management. Naturally engaged in learning and habit formation, they can serve as health advocates reinforcing healthy lifestyle practices, encouraging medication adherence, and promoting long-term behavioural change when equipped with the right knowledge and tools.

This book provides a comprehensive exploration of hypertension, its impact, and current management strategies. It builds a strong case for integrating children into hypertension care, culminating in an intervention framework backed by empirical evidence. Special attention is given to culturally relevant insights from India, emphasizing the critical role of Health Psychology and health psychologists in chronic disease management.

This introductory chapter sets the foundation by examining the landscape of hypertension management, the psychological and behavioural challenges associated with adherence, and the potential for child involvement in improving health outcomes.

Hypertension: A global epidemic

It would be natural to believe that this highly significant body mechanism is nurtured by individuals. However, prevalence statistics suggest otherwise. Hypertension, in fact, has the lead amongst chronic illnesses and is given the status of a global epidemic (Burnier & Egan, 2018). Despite being preventable and reversible it has been observed that hypertension is a precursor to cardiovascular mortality having an estimate of 17.8 million deaths in 2017 around the world, with higher prevalence in low-income and

middle-income countries (31.5%, 1.04 billion people) compared to high income countries (28.5%, 349 billion people) (Roth et al, 2018). This chronic condition accounts for approximately 55% of the global disease burden and 7% of all disability-adjusted life years (Lim et al., 2010). Paediatric hypertension is also emerging as a growing concern with a shift towards a neoliberal lifestyle. A systematic review and meta-analysis of 47 studies by Song et al. (2019) revealed that among children aged 19 years and younger, the pooled prevalence was 4% for hypertension, 9.67% for pre-hypertension, 4% for Stage 1 hypertension, and 0.95% for Stage 2 hypertension—indicating a persistent upward trend in hypertension occurrence among children and adolescents. Research has also established that children of hypertensive parents are at a significantly higher risk of developing high blood pressure (HBP) and other cardiovascular risk factors compared to those with normotensive parents (Kelishadi, Hashemipour, & Bashardoost, 2004).

Historically, healthcare in developing countries prioritized communicable diseases, but the rise of non-communicable diseases like hypertension and diabetes has prompted a necessary shift in focus (Jaini & Lee, 2015). Hypertension particularly can be managed at a relatively low cost, even in resource-limited settings. However, access to awareness and treatment remains highly uneven. In developed countries, over 80% of the hypertensive population benefits from available screening and treatment (Wilkins et al., 2010; Guessous et al., 2012; Guo et al.,2012). Conversely, in many developing nations, inadequate screening leads to widespread underdiagnosis and ineffective management of the condition (Ibrahim & Damasceno, 2012; Basu & Millett, 2013).

In India itself hypertension is a slow rising epidemic affecting 25–30% of urban adults and 10–20% of rural adults due to lifestyle

shifts and limited awareness (Gupta, 2004; Anchala et al., 2014; Gupta, 2016). Opportunistic screening, where healthcare providers check for hypertension during unrelated medical visits, has identified a prevalence of 5.5% among 5.5 million survey participants (NPCDCS, MoHFW, 2018). Alarmingly, the Global Burden of Disease recorded 1.63 million deaths in India in 2016 due to hypertension alone. Furthermore, 54.2% of deaths from ischemic heart disease, 56.2% from stroke, and 54.5% from chronic kidney disease were attributable to high systolic blood pressure alone (Schutte, 2017). However, these initiatives struggle with challenges like a skewed doctor-patient ratio and dependence on overburdened formal healthcare systems (Jose & Prabhakaran, 2019), often resulting in underdiagnosis and poor management, and fall short of actual figures as reported in government-sponsored studies and other recent national surveys (Shah & Mathur, 2010; Geldsetzer et al., 2018; National Family Health Survey, 2018). Despite its high prevalence, hypertension management in India remains inadequate. Only 14% of hypertensive individuals over the age of 50 and just 8% of those younger than 50 have their blood pressure under control, primarily due to low awareness of their condition and poor medication adherence (Lloyd-Sherlock et al., 2014; Kontis et al., 2019). In response to this crisis, national and state health bodies in India have launched several initiatives to mitigate hypertension risks. Over 2017 and 2018 the '*International Society of Hypertension*' in conjunction with the '*World Hypertension League*', conducted a global hypertension campaign in India called the '*May Measurement Month*' (2019) that aimed to improve the screening of blood pressure which screened 190,955 individuals over 500 sites in India. The data reported by Jose et al (2019) stated that 31.8 % of the screened population had hypertension and only 44 % of the individuals with hypertension were aware of their status

prior to the screening, with over 80 % of the participants having uncontrolled blood pressure despite being prescribed antihypertensive medication. This report assumed great significance as this programme improved overall awareness regarding non-communicable diseases and risk factors through dissipation of information, education, and communication activities, along with generating increased understanding and importance of screening through risk assessment provided by accredited social health activists (ASHA) workers. ASHA workers play a crucial role in organizing village-level screenings and promoting health education to encourage lifestyle modifications and disease prevention. They are regulated by guidelines to refer cases qualifying the hypertension benchmark to the medical officers of the nearest health centers so that rapid initiation of treatment takes place. Furthermore, similar initiatives like the *Universal Screening Programme for Hypertension, Diabetes Mellitus,* and *Three Common Cancers* were introduced in 2017 under the National Health Mission. Additionally, *Annual Hypertension Screening* is conducted by auxiliary nurse midwives (ANMs) and ASHAs. However, the feasibility of carrying out such studies annually is questionable. The programme for the activities carried out by *Health and Wellness Centers* (HWC) in 2019 (2.3 crore screened for BP, cancers in 1 year under Modicare, 2019) consumed enormous resources in terms of money, workforce, and infrastructure. Thus, it was a herculean burden on the resource-poor settings of India, and it was already amiss of the target set for 2018-2019 where 10,000 unevenly distributed HWCs were operationalized against the target of 15,000. Another resource-intensive component of such programmes is to provide proper training to ensure accurate screening by grass-root level workers. This includes the arduous nature of active population census of all individuals above age 30 and their risk assessment by ASHA workers requiring a

large workforce and efficient labour adding to their pre-existing duties. While the government's efforts to promote health equity are commendable, achieving widespread blood pressure control remains a significant challenge.

This gap highlights the need for innovative, community-driven solutions in hypertension management. As rising prevalence and poor adherence rates reveal, strengthening healthcare infrastructure requires integrating proactive, emotionally invested support systems to drive lasting change. Over-reliance on the formal healthcare system must evolve into a symbiotic model of health sustenance, where individuals and families actively contribute to disease management. The present study, therefore, explores an untapped avenue—leveraging trained children as active agents in the continuous monitoring and management of hypertension. Through their agency, children can facilitate efficient and sustained self-management of chronic illness within their families, fostering long-term adherence and better health outcomes.

The biology of blood pressure

Blood pressure is a vital sign, essential for life but when it spirals out of control, it becomes a silent killer. Blood pressure refers to the force exerted by circulating blood against arterial walls. This pressure is essential for transporting oxygen and nutrients to organs, but when it rises beyond a healthy range, it places excessive strain on the cardiovascular system (Hariharan, 2020). Blood pressure is measured in millimetres of mercury (mmHg), a standard unit reflecting the force needed to push blood through the arteries. A normal blood pressure reading is 120/80 mmHg, with systolic pressure (120 mmHg) representing the force when the heart contracts,

and diastolic pressure (80 mmHg) representing the force when the heart relaxes. Hypertension occurs when blood pressure consistently exceeds 130/85 mmHg increasing cardiovascular risks—harmful consequences to the heart, blood vessels, major organs, even cognitive impairment. It also causes weak spots in the blood vessels which may eventually develop into bulges (causing aneurysms and haemorrhagic strokes) among other fatalities.

Unlike conditions with clear warning signs, hypertension can remain undetected for years unless routine monitoring is conducted. One of the greatest dangers of hypertension is its asymptomatic nature, leading to its nickname: "the silent killer". Neglecting treatment of hypertension entails costly interventions such as cardiac bypass surgery (to restore blood flow to the heart), carotid artery surgery (to prevent stroke) and dialysis (to prevent kidney failure), draining individual and government budgets. The risk of hypertension also increases with age, genetic vulnerability, stiffening and ageing of blood vessels (Cuevas, Williams, & Albert, 2017).

For a diagnosis, as suggested by the *National Institute of Clinical Excellence*, typically requires multiple blood pressure readings over time, as a single high reading isn't enough to confirm the condition (Aronow et al., 2011). Home-based monitoring is also recommended to avoid white coat hypertension (often due to anxiety about the doctor or clinical settings) and for better long-term control (Poulter et al., 2015).

The *American Cardiology Association* categorizes blood pressure levels as follows:

- Normal: <120/80 mmHg
- Elevated: 120-129/<80 mmHg

- Stage 1 Hypertension: 130-139/80-89 mmHg
- Stage 2 Hypertension: ≥140/90 mmHg
- Hypertensive Crisis: >180/120 mmHg, requiring immediate medical intervention.
- The latest guidelines provided by the *American Heart Association* suggested lowered bookmark to diagnose HBP, i.e., 130/85 mm/Hg compared to the European benchmark of 140/90 mm/Hg (Williams et al., 2018) to account for the possible complications at lower BP recordings and make space for earlier interventions. It is highly recommended that India and other developing countries adopt the lower criteria for diagnosis to counterfeit the alarming low level of BP control found to be less than 15% (Anchala et al., 2014; Wander & Ram, 2018).

Hypertension is also classified as primary (essential) hypertension which has no identifiable cause, or secondary hypertension, mainly arising as a co-morbidity (Carretero & Oparil, 2000). To treat primary hypertension, long-term management strategies are crucial to prevent complications and ensure overall cardiovascular health. If secondary hypertension is detected, for instance, caused by kidney disease or hormonal disorders, treating the underlying condition often resolves the condition and may even be possible to reverse it.

Pharmacotherapy or dependence on allopathic medicine has been established as the lifelong treatment of hypertension. Blood pressure medicines are targeted around the bodily malfunction arising from the condition. There are four major types of antihypertensive drugs, each targeting a specific physiological function effective only with sustained use. First, diuretics—helping in elimination

of salt and water and thereby decreasing blood volume, but can cause cramps, weakness or reduced libido. Second, calcium channel blockers—help to dilate blood vessel walls, but their consistent use can cause constipation or swollen legs. Third, beta blockers—reduce the workload of the heart by slowing its rate and minimising the effect of a pressure-raising enzyme, but its long-term use can cause fatigue and impotence. Fourth, ACE-inhibitors—prevent the conversion of angiotensin, a substance in the blood that constricts arteries, but it can cause coughing and palpitations (Herman et al 2021). Most patients require a combination of two or more drugs to achieve optimal BP control with its known side-effects. The pre-hypertension phase serves as an early warning sign, where lifestyle modifications alone may help prevent disease progression. As hypertension progresses to Stage 1 and Stage 2, a combination of pharmacotherapy and lifestyle modifications is essential. Unlike conditions with immediate symptoms, hypertension is silent and gradual, making it difficult for patients to perceive its urgency.

There has been a great emphasis on pharmacological treatment often considered as the sole approach to managing hypertension, largely rooted in a biomedical understanding of disease. While medications are crucial, they are not the only tool in managing hypertension. Non-pharmacological approaches play a significant role, especially in prevention and early stages.

Within a constructivist paradigm, there is a growing need to explore non-invasive and psychosocial strategies for hypertension self-management, moving beyond the limitations of the traditional biomedical model toward a more comprehensive biopsychosocial perspective (Engel & Hansen, 1966; Schwartz & Shapiro, 1973). While medical interventions supress the disorderliness of the physiological mechanisms of hypertension, long-term manage-

ment and adherence are profoundly shaped by behavioural and psychological factors. A dive into the role of psychosocial influences in hypertension care, creates a holistic perspective on its self-management strategies.

Why pills aren't enough

Medications effectively lower blood pressure but fail to address the root causes of hypertension. Long-term adherence is often difficult due to side effects and the condition's asymptomatic nature. Research underscores the significant role of psychosocial factors—stress, environmental influences, and social inequalities—in hypertension risk, making behaviour modification and social support vital components of care. Early self-monitoring and lifestyle changes can delay or prevent the need for medical intervention, particularly before hypertension reaches Stage 2, where pharmacotherapy becomes essential. While medications have reduced hypertension-related mortality, their side effects often complicate long-term management (Gradman et al., 2010).

Non-pharmacological treatments, or alternative therapies, provide a practical option for preventing and managing pre-hypertension and Stage 1 hypertension. Unlike medications, these therapies have no side effects, making them more acceptable to patients and effective as adjuvants to lower blood pressure. They are particularly valuable for patients seeking to delay drug therapy, those experiencing severe medication side effects, or individuals with resistant hypertension—where drugs fail to control the condition despite prolonged or combined use (Lin et al., 2010; Pimenta & Oparil, 2010). A meta-synthesis by Walsh et al. (2006) confirmed the effectiveness of mixed interventions, showing median reduc-

tions in systolic blood pressure (SBP) of 4.5 mm Hg (IQR: 1.5 to 11.0) and diastolic blood pressure (DBP) of 2.1 mm Hg (IQR: -0.2 to 5.0) in intervention groups, surpassing results in control groups.

Various non-pharmacological therapies (Wexler et al., 2006) have shown promising outcomes in managing hypertension, encompassing lifestyle modifications and psychological interventions. The following lifestyle changes have been effective in lowering blood pressure:

- Reducing dietary sodium to less than 2.4 g per day (Aburto et al., 2013)
- Exercising for at least 30 minutes, four times per week (Brook et al., 2013)
- Limiting alcohol consumption to ≤2 drinks per day for men and ≤1 for women (Roerecke et al., 2017)
- Following the DASH diet, which emphasizes fruits, vegetables, potassium, calcium, and magnesium while minimizing fat and salt (Eckel et al., 2013)
- Achieving weight loss of at least 10 lb (4.5 kg) (Blumenthal et al., 2000; Semlitsch & Horvath, 2019)

Psychological interventions have also shown promise in improving adherence and reducing blood pressure. Mindfulness-Based Stress Reduction (MBSR) techniques, such as meditation and relaxation exercises, help lower blood pressure by mitigating stress-related hormonal responses (Geiger et al, 2023). Recently, the benefits of cognitive behavioural therapy (CBT) have shown to improve adherence and lower blood pressure in hypertensive patients (Li et al, 2021).

Despite the well-documented efficacy of these interventions, the adoption for blood pressure control remains significantly low among patients (Liu et al., 2018). This underscores the need for a holistic approach to hypertension management, integrating psychological support alongside traditional medical interventions. The next section explores why hypertension remains difficult to manage despite known consequences.

Everyday struggles: Barriers to adherence

Hypertension management is complex, influenced by difficulties in initiating pharmacotherapy and sustaining long-term lifestyle changes amid psychosocial challenges (Burnier & Egan, 2019). Despite the availability of effective treatments, many individuals struggle with the consistent implementation of prescribed medical and behavioural interventions. The World Health Organization (WHO, 2003) defines adherence as "the extent to which a person's behaviour—taking medication, following a diet, and executing lifestyle changes—corresponds with agreed recommendations from a healthcare provider." When applied specifically to hypertension management, this is referred to as hypertension adherence. Resistance to medical advice is a common issue in hypertension care. The causal factors of poor adherence may be understood through various taxonomies such as patient-related factors, social/economic-related factors, condition-related factors, and healthcare team-related factors (Pan et al., 2017; van der Laan et al, 2017). Whilst many of these domains require macro level investigations and policy revolutions, a more pragmatic approach to improving adherence focuses on patient-related factors, which are directly modifiable and offer a greater potential for self-man-

agement. Acknowledging these challenges can improve management outcomes by formulating targeted interventions.

A key challenge in hypertension adherence arises from attributions in coping mechanisms of hypertensives. Attribution theory (Kelley, 1967) can be employed to explain why individuals often rationalize poor health behaviours due to external factors. For instance, a patient might attribute their high blood pressure to genetics rather than lifestyle choices, leading them to believe medication alone is sufficient. Further—*high consensus* arising from the widespread nature of hypertension makes it seem "normal" and less urgent; *norm development*, i.e. the unhealthy habits (e.g., smoking, poor diet, stress) become socially reinforced; *lowered distinction* over time, chronic conditions like hypertension may no longer be perceived as a serious threat, leading to complacency.

Adherence related sciences broadly bifurcate three components essential to maintenance of a lifestyle change or medical compliance: initiation, implementation, and discontinuation. In the WHO 2003 Report "Adherence to long-term therapies: Evidence for action", patient-centred barriers to adherence initiation and implementation included denial of diagnosis, misconceptions about illness severity or treatment efficacy, fear of dependence, lack of knowledge, forgetfulness, and low self-efficacy (Vrijens et al., 2012). A 2008 survey of 8,692 non-adherent hypertensive patients (mean age 63.4 years) identified forgetfulness as the primary reason for missed doses (58.2% of Medicare and 60.4% of commercial respondents), followed by 'busyness' , travel, hospitalizations, and routine disruptions (Nair et al., 2011). In India, a study of 608 low-socioeconomic patients (mean age 58.4 years) found 50% non-adherence, linked to belief-related doubts about medication effectiveness (37.82%) and recall difficulties (62.17%), particularly

among those with limited education (Dennis et al., 2010). Additional barriers include cognitive dysfunction, low health literacy, comorbidities, poor motivation, inadequate coping mechanisms, and limited social support (Ogedegbe, 2008).

Dietary adherence is notoriously difficult, influenced by cultural and regional food preferences (Gopichandran et al., 2012). Barriers include lack of family support, reluctance to prepare separate meals, and social pressures during gatherings, alongside low awareness or motivation for changes like reduced salt intake or weight loss (Gehlawat et al., 2018; Gee et al., 2012). Similarly, sedentary lifestyles exacerbate hypertension, yet exercise—a proven intervention—faces obstacles such as co-existing physical conditions and time constraints (Gee et al., 2012). A study of 65 hypertensive patients showed that both continuous and interval exercise training (two 40-minute sessions weekly for 16 weeks) improved blood pressure, though only interval training reduced arterial stiffness (Guimarães et al., 2010).

Accompanying psychological stress significantly undermines adherence to hypertension treatment. Chronic stressors such as work pressure, financial instability, and social isolation trigger hormonal changes that elevate blood pressure (DeJean et al., 2013). Hypertension can, in turn, exacerbate anxiety and depression, fostering a cycle of non-adherence and increased complication risks. Individuals under distress often discontinue medication or adopt maladaptive coping behaviours, such as excessive alcohol consumption, emotional eating, or smoking, further worsening their condition (De Jong et al., 2008). Moreover, social and economic deprivation, rooted in disparities in education, employment, housing, racial inequality, social trauma, and limited healthcare access, is strongly associated with higher hypertension prevalence and

poor management (Williams et al., 2016). Rapid, unplanned urbanization compounds these issues by promoting environments that encourage fast-food consumption, sedentary behaviour, tobacco use, and excessive alcohol intake, all of which hinder effective disease management.

Approximately 75% of hypertensive patients require combination therapy to achieve target blood pressure (Gradman et al., 2010). However, adherence remains challenging due to resistance to altering long-established habits. The absence of immediate, visible benefits further complicates adherence. Despite comprehensive adherence frameworks, their practical integration into healthcare systems is limited, leaving hypertension largely uncontrolled and imposing significant burdens on individuals and society (Alonso, 2004; Weir, 2000).

Improving adherence in hypertension management requires addressing modifiable patient-centered factors—such as health literacy, motivation, and social support—through tailored interventions. By tackling psychological stress, social determinants, patient barriers, lifestyle challenges, and resistance to combination therapy, healthcare strategies can enhance outcomes and reduce the morbidity associated with this pervasive condition.

From orders to partnership

Hypertension management demands daily attention and personal commitment, yet its success hinges not on new techniques but on diligently applying existing knowledge. A sustainable hypertension management plan is one that integrates active patient participation, physician guidance, and social support to ensure adherence to holistic practices. One of the crucial factors in suste-

nance is strengthening positive reinforcement through patient and caregiver support. Social support, in particular, is strongly linked to improved hypertension outcomes, emphasizing the need for supportive environments (Brook et al., 2013; Osamor, 2015). This aligns with the biopsychosocial model (Engel, 1977), which addresses psychological factors (e.g., knowledge, beliefs, self-efficacy, stress), sociological contributions (e.g., social support, caregiver roles), and biological pathology. This holistic framework complements the traditional biomedical focus on medication and monitoring, offering a comprehensive approach to chronic illness (Astin et al., 2003).

Shifting from a doctor-dependent to a self-managed system requires two pillars: personal responsibility and social support, as mentioned earlier. Patients who take ownership of their health are more likely to self-monitor blood pressure, follow regimens, and adopt lifestyle changes. Social support provides emotional, psychological, and practical reinforcement critical for long-term adherence. While healthcare providers offer guidance, daily reinforcement from family, friends, and social networks often determines success.

The *American Psychological Association* (APA) defines social support as "the provision of assistance or comfort to others, typically to help them cope with biological, psychological, and social stressors". Social support can come from family, friends, neighbours, religious institutions, colleagues, caregivers, or support groups and serves multiple functions. It manifests in several key forms such as: *informational support* – providing guidance, advice, or useful information to facilitate informed decision-making; *instrumental support* – offering tangible assistance, such as helping with medical appointments or providing financial aid for medication; *emotional support*

– offering reassurance, empathy, comfort, and encouragement to reduce stress and anxiety; *esteem support* – boosting self-confidence through positive reinforcement, helping the patient feel competent in managing their condition; *belonging support* – providing a sense of inclusion, acceptance, and stability within a social group. These types of support flow through formal and informal networks. *Formal* social support networks, such as healthcare professionals and public services, are particularly favorable for providing informational and instrumental support. However, *informal* social support, provided by family, friends, and close networks, plays a critical role in daily reinforcement, emotional reassurance, and practical adherence support (Leach & Braithwaite, 1996). Moreover, social support is not just crucial during crises, it is embedded in everyday relationships, particularly within families (Barnes & Duck, 1994). Research has consistently shown that family structures impact hypertension management. A cross-sectional study on social support and hypertension found that living with a spouse and having more children was linked to lower blood pressure (Lei et al., 2019). Family members provide stability, encouragement, and a sense of security, which can improve adherence and disease management (Costa & Nogueira, 2008).

If self-management and social support are critical to achieving lasting improvements in hypertension care, how can these factors be integrated into treatment plans?

Strategies to support self-management include patient education, clinical decision support, appointment reminders, and involving nurses or pharmacists as first-line caregivers (Walsh et al., 2006). Direct doctor-patient interaction remains highly effective for improving adherence (Swain et al., 2015), but it faces challenges, especially in India.

Firstly, the doctor's extensive use of medical jargons (Thomas et al., 2014) creates a language barrier especially for patients with low literacy level as they have trouble comprehending health information, ask fewer questions, and thus, are unable to connect with the physician immobilizing compliance and propounding passive coping, consequently leading to lowered rates of hypertension control (Kim et al, 2011; Jolles et al., 2012). McCray (2005) also testified this occurrence, i.e. patients with low levels of education are more probable to be treated in intensive care units rather than to engage in primary prevention. Secondly, the doctor patient relationship in India is dominantly characterized by a hierarchical relationship where the patient is a passive recipient as compared to the more egalitarian context prevalent in the West with a shifting dynamic where the patient now plays an active consumer (Akerkar & Bichile, 2004). There is an observed high 'power distance' between the patient and physician in India, characterized by paternalism and high degree of trust placed by patients on their physicians, yielding a one-way path of communication where doctor's decision is deemed best and unquestioned, and the treatment process remains unmodified to fit the patient's needs (Fochsen, 2007; Deo, 2013; Andrew et al., 2014). Imagine a patient leaving the doctor's office with a prescription but no clear plan for lifestyle changes. Without ongoing support, adherence becomes a struggle. These aspects push the need for information access elsewhere, sometimes to unreliable disintermediate forms of information. Third, In India, there is an extensive burden created by the low doctor-patient ratio where there is one government doctor for a population of 11,528 and one nurse for every 483 persons (Bagcchi, 2015), compared to the western ratio of doctor-patient 1:1000 (WHO, 2017). This factor disables the physician to spend any more than two to three minutes per patient (Das & Hammer, 2007) ulti-

mately resulting in inadequate doctor-patient communication (Prakash, 2010). A grounded theory approach study involving focus group discussions to understand health information seeking in Indian patients found that one-third of the patients failed to obtain sufficient information from their physicians (Chandwani, & Kulkarni, 2016).

Alternative healthcare models have been explored to bridge the gap in hypertension self-management. In Canada, for instance, nurses and pharmacists were authorized to monitor and adjust anti-hypertensive treatment, providing more frequent support for patients (Fahey et al., 2005). Such models improve access but are costly and keep patients passive. Technology offers another avenue for supporting self-management. Electronic health interventions that have been designed to overcome these limitations are more patient centric in nature, but often falter as they sometimes require wired connections, internet access, and the complexity of navigating online platforms and computer screens, often inconvenient for older or low-literacy patients (Halifax et al, 2007; Logan, 2013).

Health education, particularly group-based learning and tailored communication offer sustainability and impact. Initiatives like lectures, discussions, and activities on lifestyle changes have improved knowledge and blood pressure control (Nilsson et al., 2001). Cognition, in simple terms, refers to how knowledge is acquired and processed. A solid knowledge base is essential in health promotion (Neisser, 2014). Health cognition, as explained by health psychologists, refers to beliefs and knowledge related to health and illness. Hypertension knowledge interventions facilitate cognition and comprehension, therefore, focus on clarifying misconceptions, changing maladaptive beliefs and attitudes, and providing factual knowledge about the disease in a clear, compre-

hensible manner. Research shows that patients who receive clear explanations from healthcare providers are twice as likely to adhere to their treatment plans (Andrew et al., 2022). However, misconceptions—such as believing that medication is only needed when symptoms arise—lead to irregular adherence and poor blood pressure control. Additionally, low literacy levels create communication gaps between doctors and patients, especially in resource-limited settings (McCray, 2005). To improve health cognition, educational interventions must be simple, engaging, and continuous.

Overburdened healthcare systems often lack the time and resources to provide individualized patient education. Many patients struggle with hypertension simply because they do not fully grasp the severity of the condition. Tailored interventions matching literacy levels and communication styles enhance understanding, adherence, and self-efficacy (Giuse et al., 2012; Jolles et al., 2012). Health psychologists can facilitate group education and personalized communication, fostering participatory learning and better outcomes (Kandula et al., 2009). Such sustainable treatment plans require skilled involvement of health professionals who can use the understanding of affective, conative, and cognitive aspects to their benefit. It is highly recommended that health psychologists would be the seamless intervention point where group activities for patients would enhance adherence through participatory learning and reliable information need satisfaction. Evidence of health education is strongly linked with improved health literacy, adherence, and BP control among hypertensives (Jolles et al., 2012) often having better outcomes than conventional approaches (Kandula et al., 2009). Personalized health education, delivered in a way

that resonates with the patient's cultural and literacy context, can bridge the gap between knowledge and action.

The missing piece: Family and children

It has been established so far that chronic disease management does not occur in isolation and it is deeply embedded within family dynamics and daily interactions. Given the importance of a cognitive foundation and behavioural motivation, who within the family could provide consistent, long-term support? Conventional caregivers such as spouses or elderly family members are present or actively engaged in reinforcing health behaviours but often face burnout in the process. This raises an important question: Could children be trained to take an active role in family health interventions? Picture a child reminding their grandparent to take their medication or insisting on healthier family meals. This simple involvement can turn hypertension management into a shared responsibility.

Children are already immersed in health education at school, where they learn about nutrition, physical activity, and disease prevention. Their curiosity and ability to absorb new information make them uniquely positioned to influence family health behaviours. If properly guided, they could remind family members to take medications on time; encourage healthier eating habits and physical activity; serve as daily motivators for maintaining a hypertension-friendly lifestyle. By tapping into children's natural inclination for learning and their close family involvement, they could become active participants in chronic disease management.

Structured interventions can harness children's potential in hypertension care, transforming them into health advocates within the

household as they naturally participate in family health routines, influencing food choices, activity levels, and daily habits. Schools provide structured health education, equipping children with foundational knowledge about disease prevention and healthy living. Some might worry that involving children could be burdensome. However, when structured appropriately, it can empower them and strengthen family bonds. A fresh perspective on hypertension care is the need of the hour—one that moves beyond hospital settings and integrates family-driven solutions. By integrating children into the care process, we can build a sustainable, family-centerd model that tackles hypertension's root causes and fosters lasting health behaviours. The following chapters will explore how this approach was tested and provide its supporting evidence.

Chapter 2

Children's agency in hypertension care

Children are often underestimated in family dynamics, yet their ability to shape adult attitudes and behaviours is profound (Bell & Chapman, 1986; Russell & Russell, 1992). From a constructivist viewpoint, children are active agents who shape their environments, and are not just passive learners (Lerner & Busch-Rossnagel, 1981). This bidirectional dynamic redefines children as catalysts for change (Bugental et al., 1980; Brunk & Henggeler, 1984; Osofsky & O'Connell, 1972; Stevens-Long, 1973). Central to this, is reverse socialization, where children actively influence their parents and other adults. In this framework, children's agency refers to their ability to leverage their own qualities such as curiosity, persuasion, and emotional connection to guide and influence adult behaviour toward a desired outcome. Understanding these child-adult interactions requires a focus on dyadic relationships and the mutual perceptions of influence within them. As children grow, they assert preferences more strongly, shaping their environments rather than just adapting. This is an evolving process and not simply a transactional exchange but a *transactive* process— where children and parents continuously shape each other's behaviours (Maccoby & Martin, 1983). As Lytton (1990), too, observed, *"Parental and child characteristics converge in the genesis of behaviour,"* reinforcing the idea that family interactions are co-constructed rather than imposed.

Hypertension management thrives on self-care, fuelled by both internal motivation and external encouragement from family. In