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# Existing Tools to Measure Self-Care in Hypertension: Strengths and Limitations - A Narrative Review

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**Abstract:** ***Background & Need of Research: Hypertension remains a major global public health challenge and is a leading cause of cardiovascular morbidity and mortality. Control of Hypertension largely depends on effective self-care practices, including Blood pressure Monitoring, maintenance, and management. Evaluation of these behaviours is essential for both clinical management and research. However, currently available self-care assessment tools differ considerably in their conceptual frameworks, domains assessed, and psychometric strength, necessitating a critical review. Method: A narrative literature review was undertaken using electronic databases, including PubMed, Scopus, Google Scholar, and Web of Science. Studies reporting the development, validation, or cultural adaptation of self-care assessment tools for adults with hypertension were included. Relevant psychometric properties, such as reliability and validity, were examined and compared. Result: The review identified several self-care assessment tools for hypertension, including H-SCALE, SC-HI, Hypertension Self-Care Profile, and Hill-Bone Compliance Scale. The instruments demonstrated strengths such as assessment of multiple self-care domains and acceptable internal consistency. However, considerable variability was observed in conceptual frameworks, domains assessed, and psychometric reporting. Limitations included inconsistent evaluation of test–retest reliability and responsiveness, and the absence of a universally accepted gold-standard instrument. Conclusion: Available instruments for assessing self-care in hypertension demonstrate considerable variation in scope and psychometric strength, emphasising the importance of informed tool selection in the absence of a universally accepted gold-standard measure.***

**Keywords:** Hypertension, Self-care, Assessment tools, Psychometric properties, Narrative review

## 1. Introduction

It is widely acknowledged that hypertension plays a significant role in the burden of disease worldwide.[1] In 2024, a projected 14 billion adults between the ages of 30 and 79 worldwide- or 33% of the population in this age group—had hypertension. Of the adult population with hypertension, about 320 million (23%) have their condition under control. One of the leading causes of premature death globally is hypertension. Reducing the prevalence of uncontrolled hypertension by 25% between 2010 and 2025 is one of the worldwide goals for noncommunicable diseases.[2]

A diagnosis of hypertension is made if the systolic and diastolic blood pressure readings on two separate days are at least 140 mmHg and 90 mmHg, respectively.[2]

Self-care encompasses the actions that individuals take to lead a healthy lifestyle, manage their chronic illness, and prevent further illness.[3]

Uncontrolled hypertension can cause various complications.[4]

Myocardial infarction, left ventricular hypertrophy, congestive heart failure, aneurysms, and stroke are among the problems of cardiovascular disease that can result from a persistent, unchecked rise in blood pressure. Furthermore, nephropathy, retinopathy, and chronic kidney disease may result from long-term hypertension.[5,6]

Hypertension patients with complications and poor self-care behaviours (SCBs) might experience several impacts, including decreased quality of life, reduced sleep quality, and stress.[7]

Self-care is described as individual actions directed toward self or the environment to regulate individual functioning to improve health, reduce risk, and avoid related complications, as well as ensure general well-being.[8]

Patient self-care and home-based management of hypertension positively affect clinical outcomes and reduce the occurrence of stroke and related cardiovascular disease.[9]

People with hypertension must continue to practise self-care, and researchers and doctors must have a legitimate and trustworthy tool. There are few tools available to measure hypertension patients' self-care, and those that are have only been used to evaluate some parts of it.[10]

Recent years have seen notable progress in the development of multifaceted instruments to assess self-care in Hypertension. Tools such as the Hypertension Self-Care Activity Level Effects Scale (H-SCALE) and Self-Care of Hypertension Inventory (SC-HI) capture broader dimensions, including behavioural and psychosocial aspects, alongside traditional domains like medication adherence and lifestyle practices.

The development of these instruments has been accompanied by greater emphasis on psychometric evaluation and cross-

cultural adaptability. It is now widely recognised that tools developed in one linguistic or cultural context cannot be directly applied to another. Consequently, research increasingly focuses on translation, cultural adaptation, and validation to ensure feasibility, validity, and reliability across diverse populations, supporting globally applicable and scientifically robust self-care assessments.

The purpose of this narrative review is to provide a comprehensive overview of the **existing tools and instruments** used within this area of research and practice. A second objective is to **critically examine the strengths and limitations** of these instruments. Finally, this review intends to **guide the selection of appropriate instruments** for clinicians and researchers. This review is particularly relevant because clinicians and researchers often face uncertainty when choosing suitable self-care assessment tools for patients with hypertension. The availability of multiple instruments, each varying in domains, cultural sensitivity, and psychometric quality, creates the need for clearer direction. This review, therefore, addresses a practical gap and supports future development and validation of tools tailored to local populations.

## 2. Methods

The search for relevant literature was carried out using four major databases: PubMed, Scopus, Google Scholar, and Web of Science. These platforms were chosen to capture a wide range of clinical, behavioural, and psychometric studies related to self-care in hypertension. A structured search strategy was applied using keywords such as *hypertension self-care*, *self-care behaviours*, *H-SCALE*, *Self-Care of Hypertension Inventory (SC-HI)*, *blood pressure self-management*, and *medication adherence scales*. Boolean combinations were used to expand or narrow the search as needed.

Studies were eligible for inclusion if they described the development of hypertension self-care assessment tools, provided psychometric validation, or reported cross-cultural adaptation and translation of such instruments. Articles were excluded if they focused on non-hypertension-specific tools, except for widely used scales like the MMAS-8. Papers without full text, conference abstracts, and studies not related to measurement instruments were also omitted.

The screening process involved reviewing titles and abstracts, followed by full-text assessment of potentially relevant articles. Although this work is a narrative review and does not follow a formal systematic protocol, a transparent and organised approach was used to ensure that the evidence selected was relevant, credible, and aligned with the objectives of the review.

| Instrument | Year/ Developer | Domains | Items & Scale | Reliability | Strengths | Limitations |
|---|---|---|---|---|---|---|
| **H-SCALE** (Hypertension Self-Care Activity Level Effects)[11] | 2008, Warren Findlow et al. | Medication adherence, low-salt diet, physical activity, weight management, smoking, alcohol use | 31 items; frequency-based (days/ week) | Cronbach's α = 0.80 overall (0.76–0.84 subscales); Test–retest r = 0.82 | Simple, brief, easy to use in community & clinical settings | Lacks a theoretical foundation; omits psychological aspects of self-care |
| **SC-HI** (Self-Care of Hypertension Inventory version 3.0)[12] | 2019, Dickson & Riegel | Self-care maintenance, monitoring, management | 24 items; 5-point Likert | α = 0.81–0.89; ICC = 0.84 | Theoretically robust; cross-cultural validations; good construct validity | Requires higher literacy; limited evidence on responsiveness to interventions |
| **HBP-SCP** (Hypertension Self-Care Profile)[13] | 2014, Han et al. | Behaviour, motivation, self-efficacy | 60 items | α = 0.83–0.93; Predictive validity reported | Comprehensive assessment; integrates theory & motivational interviewing | Lengthy; limited translation & cross-cultural applicability |
| **HHSC** (Hippocratic Hypertension Self-Care Scale)[14] | Not specified | Medication adherence, diet, lifestyle behaviours | 18 items | r = 0.99; α = 0.81 | High stability; reliable | Narrow scope; single-country validation limits generalizability |
| **HTN-SCP** (Hypertension Self-Care Questionnaire/ Profile)[15] | Not specified | Behavioural, motivational, psychosocial | 40 items; 7-point Likert | α = 0.88 | Integrates multiple domains; good preliminary construct validity | Newly developed; requires further validation |
| **TAQPH** (Treatment Adherence Questionnaire for Patients with Hypertension)[16] | 2011, Ma et al. | Pharmacological & non-pharmacological adherence: diet, exercise, weight control, stress, medication | 28 items; 4-point Likert | α~0.86; Test–retest 0.82 | Cross-cultural adaptations exist; covers multiple self-care aspects | Lengthy; adaptation required for other cultures |
| **Hill-Bone Compliance Scale** [17] | Not specified | Medication, diet, physician visit adherence | 14–21 items | α = 0.74–0.84; Test–retest 0.79–0.82 | Concise; suitable for large epidemiological studies | Focused on compliance; limited assessment of broader self-care behaviours |
| COM-B Self-Management Scale [18] | 2023, Wu et al. | Capability, Opportunity, Motivation, Behaviour | 33 items | α = 0.867; Test–retest 0.894 | Theoretically grounded; suitable for elderly | Limited generalizability to younger populations |

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| Iranian 16-item Hypertension Self-Care Questionnaire [19] | 2019, Eghbali-Babadi et al. | Follow-up, healthy lifestyle, knowledge, medication adherence, recommendations | 16 items | $\alpha = 0.833$; ICC = 0.952 | Strong internal consistency; culturally relevant | Cultural specificity; requires further cross-cultural validation |

## 3. Result

Hypertension self-care is a multidimensional construct, encompassing behaviours such as medication adherence, dietary management, physical activity, and lifestyle modification. Various instruments have been developed to quantify self-care in hypertensive populations, each differing in theoretical grounding, domains assessed, and psychometric properties. This section reviews widely used and emerging tools, highlighting their structure, reliability, validity, strengths, and limitations.

## 4. Conclusion

This narrative review examined instruments used to assess self-care behaviours in individuals with Hypertension, revealing substantial heterogeneity in their design, scope, and psychometric strength. Hypertension self-care is multidimensional, including medication adherence, dietary modification, physical activity, weight management, symptom monitoring, and lifestyle behaviours such as alcohol, tobacco use, and stress management. However, instruments vary considerably in domain coverage. Comprehensive tools such as the **Self-Care of Hypertension Inventory (SC-HI)** and **Hypertension Self-Care Activity Level Effects Scale (H-SCALE)** assess multiple components and have relatively strong validation. In contrast, targeted tools like the **Hill-Bone Compliance Scale** and **Morisky Medication Adherence Scale-8 (MMAS-8)** focus on specific domains, limiting comparability across studies.

A key limitation is the absence of universally accepted criteria for defining optimal self-care measurement. Variability in conceptual frameworks, item development, and scoring methods contributes to inconsistencies. While internal consistency is frequently reported, other psychometric properties- such as construct validity, test–retest reliability, and responsiveness- remain underexplored, limiting prediction of clinical outcomes like long-term blood pressure control.

Cultural and linguistic adaptation is another major concern. Most tools originate from Western populations, with limited validation in low- and middle-income settings. In India, particularly among Gujarati-speaking populations, validated instruments are scarce, restricting accurate assessment and generalisability.

Overall, there is a clear need for standardised, culturally sensitive, and psychometrically robust tools. Future research should prioritise comprehensive validation, cross-cultural adaptation, and integration with objective measures such as home blood pressure monitoring and digital health technologies to enhance personalised hypertension management.

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