Original Research Article

Self-Care Behavior Regarding Hypertension in Elderly Patients in Lahore

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Abstract*: Hypertension is a major contributor to global morbidity and mortality, particularly among the elderly in low- and middle-income countries. While self-care behaviors are essential in blood pressure control, limited evidence exists regarding self-care practices among elderly hypertensive patients in Pakistan.* **Objective:** *To assess self-care behavior and its associated determinants among elderly hypertensive patients attending tertiary hospitals in Lahore, Pakistan.* **Methods:** *A descriptive cross-sectional study was conducted among 200 elderly hypertensive patients recruited from outpatient departments of three tertiary hospitals in Lahore from January to December 2024 using non-probability purposive sampling. A culturally adapted self-care behavior questionnaire assessing six domains was administered. Anthropometric and clinical data were recorded following standardized protocols. Descriptive and inferential statistics were applied, including Chi-square tests and independent t-tests, with significance set at $p \leq 0.05$.* **Results:** *Participants had a mean age of 65.3 years, and 58.5% were male. Most respondents lived with family (89.5%), and 78.5% perceived their health as fair or poor. Overall, only 22.5% of participants demonstrated adequate self-care behavior. Physical activity (78.5%) and smoking avoidance (77%) showed acceptable adherence, whereas medication adherence (22%), weight management (26%), salt restriction (38%), and stress control (32%) remained suboptimal. Self-care behavior was significantly associated with living status, marital status, education, income, and self-rated health ($p<0.05$), but not with gender or treatment duration. Patients with inadequate self-care had significantly higher systolic blood pressure, diastolic blood pressure, and BMI than those with adequate self-care ($p<0.001$).* **Conclusion:** *Elderly hypertensive patients in Lahore exhibit poor overall self-care behavior, particularly in dietary control, stress management, and treatment adherence. Social and economic determinants strongly influenced self-care performance, and inadequate self-care was associated with worse clinical indicators. Tailored educational initiatives, family support mobilization, and community-based self-management programs are urgently needed to improve hypertension outcomes in this high-risk population.*

Keywords: Hypertension, elderly, self-care, lifestyle behavior, Pakistan, blood pressure control.

Introduction

Hypertension is a global health challenge that disproportionately affects the elderly population, particularly in low to middle-income countries, including Pakistan. Characterized by sustained elevated blood pressure levels, hypertension significantly contributes to morbidity and mortality through complications like cardiovascular diseases, stroke, and renal failure (1). The increasing prevalence of hypertension in elderly individuals is attributed to a complex interplay of factors, including lifestyle choices, dietary habits, and limited health education (2). The World Health Organization emphasizes that self-care behaviors, which encompass lifestyle modifications and adherence to treatment regimens, are crucial for effectively managing hypertension (3).

Self-care behaviors in hypertensive patients include activities individuals undertake to maintain or improve their health. Studies indicate that knowledge and awareness regarding hypertension significantly influence one's ability to engage in self-care practices (4). For instance, individuals with a better understanding of hypertension are more likely to adhere to dietary recommendations and medication guidelines (5). Furthermore, factors such as health literacy, social support, and access to healthcare services are pivotal in encouraging self-care behaviors among elderly patients with hypertension (6, 7). In the Pakistani context, this is accentuated by socioeconomic barriers that may inhibit access to necessary healthcare resources, thereby affecting health outcomes (8).

Despite a growing body of evidence, the specific self-care behaviors of elderly hypertensive patients in Pakistan remain less explored. Recent studies suggest that cultural and geographic factors influence the effectiveness with which these patients manage hypertension through self-care practices (9). For example, a study indicated that a high percentage of respondents refrained from harmful behaviors such as alcohol consumption, which reflects positive self-care adherence in community settings (5). Additionally, family support is critical, as patients with family encouragement tend to engage in healthier behaviors and regularly monitor their blood pressure (10).

The rationale for examining self-care behavior regarding hypertension among the elderly in Lahore aligns with broader public health objectives aimed at combating non-communicable diseases in Pakistan. Understanding the demographics and factors that affect self-care in this population is invaluable for developing targeted interventions. Addressing knowledge gaps through community health education programs, improving accessibility to healthcare, and fostering supportive environments can significantly enhance self-care behaviors in the Pakistani elderly population suffering from hypertension (11, 12). A focused study on this demographic would provide vital insights to inform policy and health interventions aimed at reducing hypertension prevalence and related complications.

Methodology

The present study employed a descriptive cross-sectional research design to evaluate self-care behavior among elderly hypertensive patients. This design was considered appropriate because it allows the determination of prevalence patterns and associations within a defined population at a single time point. The study was carried out in the outpatient departments

of three large public-sector tertiary care hospitals in Lahore, namely Jinnah Hospital, Mayo Hospital, and Lahore General Hospital, under the academic supervision of the Institute of Nursing, University of Health Sciences, Lahore. Following approval from the Synopsis Review Committee and the Institutional Review Board, data were collected from January to December 2024

A sample of 200 elderly hypertensive patients was recruited using non-probability purposive sampling. The sample size was calculated using a standard prevalence-based formula at a 95% confidence interval and 7% margin of error, yielding a minimum of 198 participants, which was rounded to 200 to enhance representation. Participants were eligible if they were between 60 and 75 years of age, of either gender, had a confirmed diagnosis of hypertension, and had been taking at least one antihypertensive medication for a minimum of one month. Individuals with chronic kidney or liver disease, psychiatric illness, or cognitive impairment were excluded to avoid confounders affecting self-care ability.

After obtaining chronological lists from outpatient clinics, eligible participants were approached during their clinic visits. The purpose of the study was explained in the local language, written informed consent was obtained, and confidentiality was assured. Data collection was undertaken using a structured demographic and clinical information sheet along with an adapted and culturally validated hypertension self-care behavior questionnaire consisting of 23 items. The tool was originally developed from two validated instruments and modified for relevance to the Pakistani population by omitting items related to alcohol consumption. The instrument assessed practices in six domains: medication adherence, low-salt diet consumption, physical activity, smoking cessation, weight management, and stress control. Each item was rated on a four-point Likert scale with total scores ranging from 23 to 92. Higher scores reflected better self-care behaviors, and a cut-off score of 46 points (50% of the total score) was used to classify participants as adequate or inadequate in self-care practice.

Anthropometric and clinical measurements were taken following standard protocols. Blood pressure was measured twice, 15 minutes apart, using calibrated sphygmomanometers while participants were seated and resting. The average of the two readings was recorded. Height was measured to the nearest 0.5 cm using a stadiometer and weight to the nearest 0.1 kg with a standardized weighing scale. Body mass index was subsequently calculated using kg/m² and categorized according to international classification standards. All data collectors were trained and monitored for procedural consistency.

Before full-scale data collection, the instrument was piloted on 20 elderly hypertensive patients representing 10% of the total sample. These participants were not included in the final analysis. The pilot study refined the questionnaire's clarity, feasibility, and reliability, with a Cronbach's alpha of 0.728 indicating acceptable internal consistency. Data entry and analysis were performed using SPSS version 23. Mean and standard deviation were computed for continuous variables such as age, blood pressure, body mass index, and treatment duration, whereas categorical variables were presented as frequencies and percentages. Chi-square statistics were applied to determine the association between self-care behavior and demographic characteristics. At the same time, t independent-samples t-test was used to compare mean blood pressure and BMI values between adequate and inadequate self-care practice groups, after verifying normality with Shapiro-Wilk testing. A p-value equal to or less than 0.05 was taken as statistically significant.

Ethical considerations were rigorously observed. Participants were informed of their right to withdraw at any time without penalty, anonymity was maintained, and all information was preserved securely and used solely for research purposes.

Results

A total of 200 elderly hypertensive patients were included in the study. The mean age was 65.3 ± 4.3 years, reflecting an older adult population. Slightly more than half of the sample were male (58.5%), whereas females accounted for 41.5%. Most respondents lived with family (89.5%), and only 10.5% lived alone. About marital status, 55% were married, while 40.5% were widowed, divorced or separated, and 4.5% had never married. Educational attainment was low: 39% had no formal schooling, 34% had primary-level education, and 27% had secondary-level education. Furthermore, 78.5% perceived their health as fair or poor, and only 21.5% rated it as good to excellent. Socioeconomically, 61% belonged to the middle-income group, 31% reported low-income status, and 8% earned above PKR 100,000 per month, indicating financial variability among respondents (Table 1).

Table 1. Demographic profile of study participants (N=200)

Variable	Category	Frequency (%)
Age (years)	Mean ± SD	65.3 ± 4.3
Gender	Male	117 (58.5)
	Female	83 (41.5)
Living Status	Lives alone	21 (10.5)
	Lives with family	179 (89.5)
Marital Status	Married	110 (55.0)
	Never married	9 (4.5)
	Divorced / Widowed / Separated	81 (40.5)
Education Status	No formal schooling	78 (39.0)
	Primary	68 (34.0)
	Secondary	54 (27.0)
Self-rated Health	Good–Excellent	43 (21.5)
	Fair–Poor	157 (78.5)
Monthly Income (PKR)	< 20,000	62 (31.0)
	20,000–100,000	122 (61.0)
	> 100,000	16 (8.0)

Clinical evaluation of participants revealed suboptimal hypertension control. The mean systolic blood pressure was 146.9 ± 14.1 mmHg, while the mean diastolic blood pressure was 92.6 ± 8.3 mmHg, suggesting inadequate regulation of blood pressure. The mean BMI was 27.1 ± 4.1 kg/m², indicating an overweight trend among elderly hypertensives. In addition, the mean treatment duration was 1.3 ± 0.81

years, suggesting relatively recent engagement with antihypertensive care services (Table 2).

Table 2. Clinical profile of study participants (N=200)

Variable	Mean ± SD	Minimum	Maximum
Systolic BP (mmHg)	146.9 ± 14.1	118	180
Diastolic BP (mmHg)	92.6 ± 8.3	70	110
BMI (kg/m²)	27.1 ± 4.1	18.0	38.9
Duration of treatment (years)	1.3 ± 0.81	0.0	5.0

Assessment of self-care practices revealed that only 22.5% demonstrated adequate self-care, while 77.5% exhibited inadequate self-care, indicating significant lifestyle and treatment adherence deficiencies among elderly patients (Table 3).

Table 3. Overall self-care practice level (N=200)

Self-Care Category	Frequency (%)
Adequate	45 (22.5)
Inadequate	155 (77.5)

Domain-wise assessment indicated favorable performance in physical activity (78.5%) and avoidance of smoking (77.0%). In contrast, much lower adherence was observed in the low-salt diet (38.0%), stress management (32.0%), weight control (26.0%), and medication adherence (22.0%), highlighting major gaps in hypertension management behaviors (Table 4).

Table 4. Domain-specific distribution of adequate self-care practices

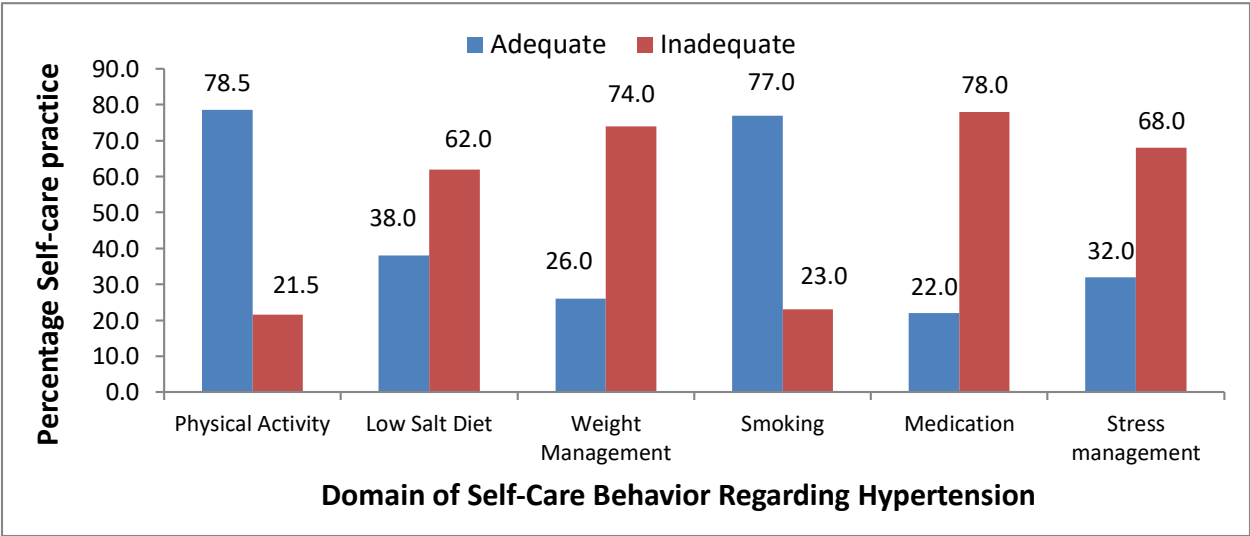| Self-Care Domain	Adequate (%)	Inadequate (%)
Physical Activity	78.5	21.5
Smoking Avoidance	77.0	23.0
Low-Salt Diet	38.0	62.0
Stress Management	32.0	68.0
Weight Management	26.0	74.0
Medication Adherence	22.0	78.0

Figure 1: Descriptive statistics of domains of the self-care behavior questionnaire

Inferential analysis showed that self care practice was significantly associated with living status (p=0.040), marital status (p<0.001), education level (p<0.001), income (p<0.001), and self rated health (p<0.001), demonstrating that social support, literacy, financial stability and perceived wellbeing play a crucial role in self care implementation. However, gender (p=0.911) and treatment duration (p=0.696) did not significantly influence self-care performance (Table 5).

Table 5. Association of self-care practice with key demographic variables

Variable	Significant Association?	p-value
Gender	No	0.911
Living Status	Yes	0.040
Marital Status	Yes	<0.001

Education Level	Yes	<0.001
Income Level	Yes	<0.001
Self-Rated Health	Yes	<0.001
Duration of Treatment	No	0.696

Comparative analysis of clinical indicators showed that participants with inadequate self-care had significantly higher mean systolic and diastolic blood pressures than those with adequate self-care (152.8 ± 9.8 vs 126.6 ± 3.9 mmHg; 96.2 ± 5.1 vs 80.1 ± 3.9 mmHg; $p < 0.001$). Their mean BMI was also significantly higher (28.0 ± 3.2 vs 21.4 ± 1.9 kg/m²; $p < 0.001$), indicating poorer vascular and metabolic control among individuals with inadequate lifestyle practices. Duration of treatment did not differ significantly between the two groups (p=0.696), suggesting that length of therapy alone was not predictive of better self-care behavior (Table 6).

Table 6. Comparison of mean BP and BMI between adequate vs inadequate self-care groups

Variable	Adequate SCP (Mean ± SD)	Inadequate SCP (Mean ± SD)	p-value
Systolic BP (mmHg)	126.6 ± 3.9	152.8 ± 9.8	<0.001
Diastolic BP (mmHg)	80.1 ± 3.9	96.2 ± 5.1	<0.001
BMI (kg/m²)	21.4 ± 1.9	28.0 ± 3.2	<0.001
Duration of treatment (years)	1.33 ± 0.62	1.28 ± 0.86	0.696

Discussion

The population of elderly hypertensive patients represents a critical demographic requiring comprehensive health management and self-care strategies. The present study has elucidated vital aspects of this group's health status and self-care behaviors, providing a basis for understanding and improving hypertension management in Lahore, Pakistan.

In our study, we analyzed data from a sample of 200 elderly patients, with a mean age of 65.3 ± 4.3 years. The gender distribution, where 58.5 percent were male and 41.5 percent female, aligns with previous findings highlighting a predominance of male patients in hypertension studies, possibly reflective of gender differences in lifestyle and access to health care (13). Living with family (89.5 percent) among respondents is consistent with cultural trends in Pakistan, where family support systems play a crucial role in elderly care.

The mean systolic blood pressure of 146.9 ± 14.1 mmHg and diastolic blood pressure of 92.6 ± 8.3 mmHg underscore inadequate blood pressure control among participants. Furthermore, the high prevalence of perceived fair or poor health status in 78.5 percent of participants could be alarming, suggesting a comprehensive need for intervention strategies targeted at health education and lifestyle modification.

Our analysis reveals a stark contrast in self-care behaviors, with only 22.5 percent of respondents engaging in adequate self-care practices. This low percentage aligns with findings from earlier studies indicating that a significant portion of elderly patients struggle with effective self-management behaviors related to hypertension (14, 15).

Domain-wise assessment revealed high adherence to physical activity (78.5 percent) and smoking avoidance (77.0 percent), which is promising, since these behaviors are core components of effective hypertension management. However, substantial gaps were identified in dietary habits, stress management, weight control, and medication adherence, reflecting inadequate self-care, as reported in similar studies in which educational interventions improved self-care adherence (16, 17). The notably low adherence to low-salt diets (38 percent) and insufficient emphasis on weight management (26 percent) highlight critical areas that require immediate public health interventions and increased awareness.

The association of self-care practices with living status, marital status, education level, income level, and self-rated health aligns with existing literature emphasizing the impact of social determinants on health behaviors among elderly populations (18). In our findings, education level and income emerged as significant predictors of self-care behavior, consistent with reports where education positively influenced health management practices (19). Conversely, gender and treatment duration did not significantly affect self-care performance in our study.

Comparative analysis of clinical indicators showed that participants with inadequate self-care exhibited significantly higher systolic and diastolic blood pressures than those with adequate self-care ($p < 0.001$). This supports the hypothesis that better self-care correlates with improved health outcomes, as evidenced by research linking positive self-management behaviors to favorable cardiovascular health metrics (20). The mean BMI of participants with inadequate self-care was also significantly higher, suggesting a direct relationship between lifestyle management and both obesity and hypertension.

Thus, our findings provide a critical overview of the health status, self-care practices, and social determinants impacting elderly hypertension management in Lahore, Pakistan. These observations highlight pressing needs for targeted interventions and educational programs tailored for elderly populations. Moving forward, improving self-care behaviors through customized healthcare strategies could significantly enhance health outcomes and overall quality of life for this vulnerable demographic.

Conclusion

This study demonstrates that elderly hypertensive patients in Lahore exhibit inadequate self-care behaviors, especially concerning salt restriction, medication adherence, and weight management. Education level, income, and family support were significant determinants of self-care performance, and poor self-care was strongly linked to higher blood pressure and BMI. These findings call for urgent, culturally tailored educational and behavioral interventions that strengthen patient knowledge, enhance social support, and improve accessibility to hypertension care services to reduce complications and improve quality of life among Pakistan's ageing population.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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NN (Master's in Nursing)
Conception of Study, Development of Research Methodology Design
SK (Professor of Nursing/ HOD)
Study Design, manuscript review, and critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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