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Original Research

Self-Management Behaviors among Adults with Hypertension in Coastal Communities: A Descriptive Observational Study

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ABSTRACT

Hypertension, often undetected until complications arise, is a leading cause of premature death, highlighting the importance of effective disease management. Adults living in coastal areas who actively manage their hypertension can reduce the risk of complications and improve their health and well-being. This study aimed to describe the self-management behaviors of adults with hypertension living in coastal areas. A descriptive observational approach was used in this study. A total of 287 adults with hypertension were included in this study based on the established inclusion criteria. Self-management behavior was assessed using the Indonesian version of the Hypertension Self-Management Behavior Questionnaire (HSMBQ), a 40-item instrument consisting of five components: self-integration, self-regulation, interaction with healthcare professionals and others, self-monitoring, and adherence to recommended regimens. The data were analyzed using descriptive statistical techniques and processed in JAMOVI, with overall scores classified as low, moderate, or high based on predetermined HSMBQ score ranges. The majority of adults with hypertension demonstrated moderate self-management behaviors (67.6%), followed by low (18.5%) and high (13.9%) levels. These findings highlight opportunities for nurses and primary healthcare providers to develop and implement culturally appropriate and family-centered interventions targeting specific self-management domains to support improved blood pressure control and overall health outcomes among coastal populations, particularly those in the low and moderate categories.

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INTRODUCTION

WHO estimates that 1.28 billion adults aged 30–79 years worldwide have hypertension, with the majority (two-thirds) living in low- and middle-income countries (WHO, 2023). Hypertension also poses a significant public health burden in Indonesia, ranking as the second leading cause of

disability among individuals aged 15 years and older. According to the Indonesian Health Survey (SKI), the prevalence of hypertension in Indonesia has reached 30.8% among adults aged 18 years and older, with North Kalimantan ranking 12th nationally (Kemenkes RI, 2023). Data from the Tarakan City Health Office showed that the number of productive-age individuals with hypertension increased from 9,237 in 2022 to 12,238 in 2023, with an average of 1,020 cases reported per month in 2023.

The population of Tarakan Island is distributed across both rural and urban coastal areas (Iqbal et al., 2024; Pratiwi, 2023; Sidik, 2022). Coastal areas have unique environmental characteristics, including dependence on seafood and exposure to salt water, which influence community dietary patterns and lifestyles. Coastal communities face distinct challenges and opportunities in managing hypertension, particularly across urban and rural settings. Although urban areas may provide better access to healthcare services, stress and unhealthy dietary habits may affect blood pressure self-management behaviors (Ibrahim, 2018). In contrast, rural communities may have limited access to healthcare services; however, they often maintain simpler lifestyles and rely on natural resources to meet their daily needs. The habitual consumption of salty seafood is one of the risk factors that may contribute to poor self-management among individuals with hypertension (Appiah et al., 2021; Sari & Susilawati, 2022). These environmental and social characteristics of coastal areas can directly influence how individuals manage chronic conditions such as hypertension.

Self-management behavior plays an important role in health management, including diet, physical activity, and medication adherence, particularly among individuals with chronic diseases such as hypertension (Li et al., 2020; Zhao et al., 2020). According to WHO (2022), improving self-management behaviors can reduce complications and improve patients' quality of life. Hypertension remains a major cause of morbidity and premature mortality worldwide (Islam et al., 2023; WHO, 2023), making effective self-management increasingly important. Despite the unique environmental and lifestyle characteristics of coastal areas, evidence regarding how individuals with hypertension in these settings manage their condition remains limited.

Understanding the self-management behaviors of individuals with hypertension in coastal areas may help healthcare providers and policymakers develop more effective interventions. This study is expected to contribute to public health efforts, particularly in the management of hypertension in coastal areas that face unique challenges. The findings may also serve as a basis for developing health programs that are better tailored to the needs of coastal communities. Therefore, this study aimed to describe the self-management behaviors of adults with hypertension living in coastal areas.

METHOD

This quantitative study employed a descriptive observational approach. The study aimed to describe the self-management behaviors of adults with hypertension living in the coastal areas of Tarakan Island. Respondents were recruited from all six primary health centers (Puskesmas/Pusat Kesehatan Masyarakat) on Tarakan Island. Using the Slovin formula with a margin of error of 0.05 and a 95% confidence level, a sample of 287 respondents was obtained from a population of 1,020. Sample size can be determined using Slovin's formula when the population is known and finite, the confidence level ranges from approximately 87% to 99%, and the researcher has insufficient knowledge of the population characteristics or behavioral distribution to determine the optimal sample size (Adhikari, 2021; Majdina et al., 2024). Proportional calculations were then performed to determine the number of respondents from each primary health center, and a quota sampling technique was applied.

Respondents were recruited using a quota sampling technique. The inclusion criteria were adults with hypertension aged 19–59 years, regardless of blood pressure control status or medication use. Additional criteria included having lived in Tarakan for at least six months and having no history of speech or mental disorders. Quota sampling is a non-probability sampling method in which participants are selected according to predetermined criteria based on a specified quota (Hossan et al., 2023; Mukti, 2025). It can be conducted proportionally or non-proportionally (Hossan et al., 2023). Although quotas ensure that specific population characteristics are represented in the sample, participant selection within subgroups remains non-random and is generally based on availability (Ahmed, 2024). In this study, respondents were recruited from patients who visited the community health centers and met the inclusion criteria until the quota for each primary health center had been fulfilled. The quota for each center had been determined proportionally in advance. This technique was selected due to limitations in time and cost.

Data were collected using the Hypertension Self-Management Behavior Questionnaire (HSMBQ), a Likert-scale instrument modified by Akhter (2010) from the Diabetes Self-Management Instrument developed by Lin et al. (2008). The validity and reliability of the HSMBQ were

initially tested in Bangladesh by Akhter (2010). The questionnaire consists of 40 favorable statements grouped into five self-management components: self-regulation (13 items), self-integration (9 items), interaction with healthcare professionals (9 items), blood pressure monitoring (4 items), and adherence to recommended regimens (5 items). The total self-management score was calculated using cut-off points derived from the mean and standard deviation: "high" if the score > mean+SD, "moderate" if mean-SD ≤ score ≤ mean+SD, and "low" if the score < mean-SD (Hidayat & Hastuti, 2016). Accordingly, self-management was classified as high if the score exceeded 149.5, moderate if the score ranged from 114.5 to 149.5, and low if the score was below 114.5. The same method was used to determine the cut-off points for each self-management component based on the mean and standard deviation of the respective component scores.

The questionnaire was translated into Indonesian by an expert using the back-translation method. Validity and reliability testing were subsequently conducted by Hidayat and Hastuti (2016). Pearson's r values ranging from 0.375 to 0.781 indicated that the Indonesian version of the HSMBQ was valid. The Cronbach's alpha coefficient was 0.949, indicating excellent reliability (Hidayat & Hastuti, 2016; Riyanto, 2022).

Data were collected from all primary health centers on Tarakan Island over a three-month period from June to August 2024 using the HSMBQ questionnaire. The questionnaire was integrated into a Google Form by the researcher. Before participation, eligible adults with hypertension were provided with information about the study and asked to sign an informed consent form if they agreed to participate. Ethical approval for this study was obtained under No. 084/KEPK-FIKES UBT/VIII/2024. Research assistants conducted interviews using the questionnaire provided through Google Forms and recorded respondents' answers accordingly. After all sections had been completed, the research assistants submitted the questionnaire. The researcher then reviewed all responses to ensure completeness.

The data were processed using JAMOVI software (Navarro & Foxcroft, 2025; The jamovi project, 2024). Responses were categorized according to the HSMBQ classification criteria. Data analysis consisted of univariate analysis using descriptive statistical techniques in JAMOVI to generate the frequency distribution of demographic characteristics and self-management behaviors.

RESULT

The mean age of the respondents was 51.52 years, with an age range of 24–59 years. The majority of respondents had a high school education (32.1%) and were housewives (49.8%). Furthermore, nearly half of the respondents lived in urban areas (47.4%), followed by suburban (38.7%) and rural areas (13.9%). More than half of the respondents had never smoked (83.3%) and had never consumed alcohol (95.5%). Table 1 presents the demographic characteristics of the respondents.

Table 1. Respondent characteristics (n=287)

Characteristic	Frequency (n)	Percentage (%)
Age		
24-59 (mean = 51.5) (SD = 6.77)	287	100.0
Gender		
Female	193	67.2
Male	94	32.8
Educational Background		
Bachelor's Degree	25	8.7
Diploma (3-year program)	1	0.3
Senior High School	92	32.1
Junior High School	55	19.2
Elementary school	84	29.3
No Formal Education	30	10.5
Occupation		
Domestic worker (housewives)	143	49.8
Entrepreneur	44	15.3
Fisherman	14	4.9
Farmer	8	2.8
Teacher	12	4.2
Retired	4	1.4
Laborer	12	4.2
Driver	2	0.7
Employee	11	3.8
No work	19	6.6

Others	18	6.3
Domicile		
Urban	136	47.4
Sub urban	111	38.7
Rural	40	13.9
History of smoking		
Never	239	83.3
Former Smoker (Quit ≤ 1 Year Ago)	5	1.7
Former Smoker (Quit > 1 to 5 Years Ago)	5	1.7
Former Smoker (Quit ≥ 5 Years Ago)	14	4.9
Current Smoker	24	8.4
History of Alcohol Consumption		
Never	274	95.5
Former Drinker (Quit ≤ 1 Year Ago)	1	0.3
Former Drinker (Quit > 1 to 5 Years Ago)	5	1.7
Former Drinker (Quit ≥ 5 Years Ago)	5	1.7
Current Drinker	2	0.7
Heading level	Example	Font size and style
Title (centered)	**Core**	12 point, bold
Table Content		10 point

Descriptive analysis conducted using JAMOVI indicated that self-management behavior among adults with hypertension was predominantly categorized as moderate (67.6%), followed by low (18.5%) and high (13.9%). Figure 1 presents the complete results.

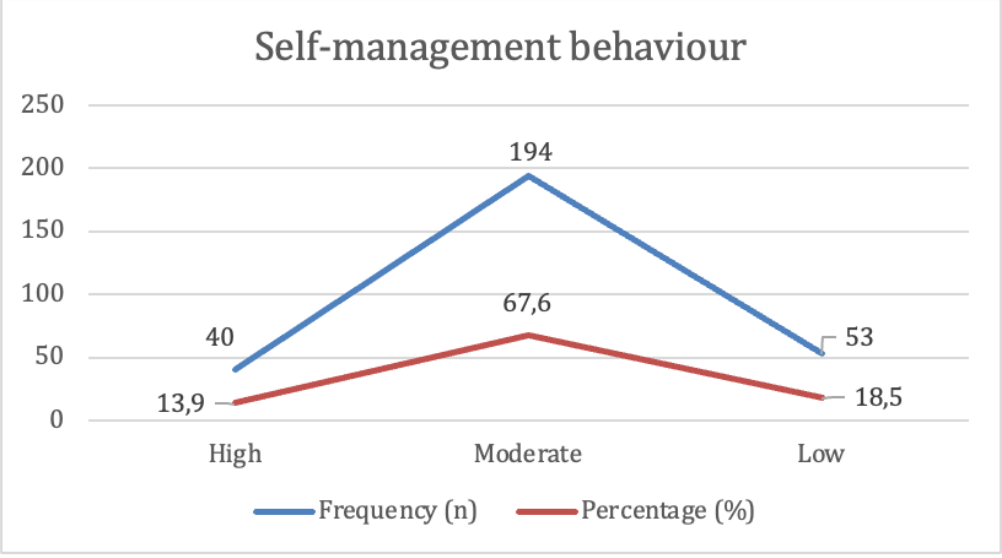

Fig. 1. Self-management behavior of adults with hypertension (n=287)

The HSMBQ consists of five components. For each component, the majority of respondents were categorized as having a moderate level of self-management behavior, including 210 respondents (73.2%) for self-integration, 190 respondents (66.2%) for self-regulation, 175 respondents (61.0%) for interaction with healthcare professionals and significant others, 198 respondents (69.0%) for self-monitoring, and 247 respondents (86.1%) for adherence to the recommended regimen. Table 2 presents the results for each component.

Table 2. An overview of the five components of self-management behavior (n=287)

Component	Level	Frequency (n)	Percentage (%)
Self-integration	High	25	8.7
(Aligning personal beliefs and lifestyle with hypertension management to support overall health and treatment adherence)	Moderate	210	73.2
	Low	52	18.1
Self-regulation	High	58	20.2
(The ability to control and adapt behaviors and emotions to maintain effective hypertension management)	Moderate	190	66.2
	Low	39	13.6
Interaction with health professionals & significant others	High	57	19.9
	Moderate	175	61.0
(Engaging with healthcare providers and support networks to enhance motivation and adherence to treatment)	Low	55	19.2
Self-monitoring	High	42	14.6
(Regularly tracking blood pressure and related health indicators to inform management decisions)	Moderate	198	69.0
	Low	47	16.4
Adherence to recommended regimen	High	2	0.7
(Consistently following prescribed medications and lifestyle changes to control blood pressure effectively)	Moderate	247	86.1
	Low	38	13.2

DISCUSSION

The results of this study indicate that most adults with hypertension in coastal communities have moderate levels of self-management behavior (67.6%), while the proportions with low and high levels are relatively smaller. Analysis of the five core components of self-management showed that all components were also categorized as moderate. This pattern suggests that patients have begun to integrate hypertension management into their daily lives but have not yet done so consistently across all domains. As a fundamental component of self-management, self-integration reflects the extent to which patients incorporate hypertension management into their daily routines.

Self-integration describes patients' behaviors in incorporating hypertension management into their daily routines, such as regulating food and beverage portions, managing stress, exercising, and maintaining adequate rest. Lifestyle modification is increasingly recognized as a first-line intervention in hypertension management, as it can significantly lower blood pressure and improve overall cardiovascular health (Hiremath et al., 2025). However, in this study, the proportion of high-level behaviors in the self-integration component was the lowest, indicating that only a small proportion of respondents consistently implemented all aspects of a healthy lifestyle. Most respondents fell into the moderate category, primarily characterized by low levels of physical activity to maintain weight and health. The predominance of female respondents, particularly housewives, may partly explain this pattern. Previous studies have shown that domestic responsibilities often limit self-control over diet, exercise, and rest, thereby reducing the intention and ability to adopt healthy behaviors (Konlan & Shin, 2023). In the low-level behavior group, almost all aspects of self-integration were rarely or never practiced. However, an interesting finding was the consistency of non-smoking behavior and minimal alcohol consumption across all behavioral categories. This finding is consistent with the characteristics of the respondents, who were predominantly female, as well as the demographic data showing low rates of smoking and alcohol consumption. Studies in Indonesia have also reported that women tend to avoid smoking and alcohol consumption, despite facing challenges related to physical activity and weight management (Kurnia et al., 2023; Santosa et al., 2020). In addition to integrating hypertension management into daily routines, self-management is also largely influenced by self-regulation, which refers to patients' ability to direct and adjust their own behavior.

Self-regulation is an internal process of setting goals, planning, self-monitoring, and adjusting behavior so that actions remain consistent with blood pressure targets, and it is one of the key components of self-management (Asseggaf et al., 2025; Peng et al., 2024). In this study, respondents in the moderate and high categories showed similar patterns in this component, as they tended to perform most aspects of self-regulation. However, gaps remained in understanding and managing symptoms associated with low blood pressure. One important aspect of self-regulation is patients' knowledge of high and low blood pressure, which serves as a basis for assessing their physical condition. Understanding hypertension, treatment targets, and related behaviors strongly predicts self-care, particularly home-based self-care (Asseggaf et al., 2025; Konlan & Shin, 2023). In the low-behavior group, almost all aspects of self-regulation were rarely or never performed. This finding is consistent with research in Malang, which showed that 85% of patients had low self-regulation (Safitri et al., 2024). Beyond patients' internal capacity, interactions with healthcare professionals and the social environment also play a crucial role in supporting self-management.

This component describes interactions between patients, healthcare professionals, and the surrounding environment in managing hypertension, such as discussions with healthcare professionals or people around them and visits to healthcare facilities. The distribution of high-level behaviors was generally consistent with active involvement of healthcare professionals and support from people around the patients in implementing hypertension self-management. Support from healthcare professionals, social support, and family support have been shown to be strongly associated with better blood pressure control and higher levels of self-management (De Sales et al., 2025; Li et al., 2025; Świątoniowska-Lonc et al., 2020). In contrast, respondents in the moderate category tended not to involve non-medical individuals in managing their hypertension, such as seeking help from friends, neighbours, or other patients to better understand or control their condition. Meanwhile, respondents in the low category showed even less involvement with healthcare professionals and the surrounding community. Individuals with moderate social support are 2.23 times more likely to have poor hypertension self-care practices than those with high social support (Jariyasakulwong et al., 2024). Interestingly, not all components showed marked differences across behavioral levels.

In this study, two components showed similar patterns among respondents in the high and moderate categories. In terms of adherence to the recommended regimen (following healthcare providers' advice and taking medications) and blood pressure monitoring, most aspects of these behaviors were consistently performed in both groups. This may be related to the predominance of respondents living in suburban and urban areas, where access to healthcare services tends to be better. Previous studies have shown that rural residents tend to have lower medication adherence than urban residents (Konlan & Shin, 2023). In the low category, adherence and blood pressure monitoring remained inconsistent, particularly regarding the timely use of medication and the frequency of blood pressure monitoring.

Overall, the predominance of moderate levels of self-management behavior suggests that adults with hypertension in coastal communities have established basic self-care practices but have not yet fully integrated and sustained them across all domains. This finding highlights that hypertension management is not solely a matter of medication adherence but rather a multidimensional process involving lifestyle modification, self-regulation, social support, and ongoing monitoring. Therefore, multifaceted interventions, including education provided by healthcare professionals, healthy lifestyle support, regular monitoring, and strengthening social networks, are important for encouraging the transition from moderate to optimal and sustainable self-management (Abdalla et al., 2023). These findings also highlight the need to develop integrated and context-specific hypertension management programs so that improvements in self-management behaviors can contribute to long-term blood pressure control.

Several limitations should be considered when interpreting these findings. The descriptive observational design limits the ability to capture changes in self-management behaviors over time, and the use of self-reported data may introduce social desirability bias. In addition, focusing on a specific coastal population may limit the generalizability of the findings, although similarities with findings from other coastal settings suggest shared patterns. This study also used a quota sampling technique, which has limitations in generalizing findings to the broader population and may introduce selection bias. Patients who were willing to participate may differ from those who were not, and patients who visited the Puskesmas during the data collection period may differ from those who did not. Therefore, the findings are applicable only to the population from which the sample was drawn and to individuals with characteristics similar to those of the study participants, rather than to all patients with hypertension. Future studies should consider using longitudinal designs and probability sampling techniques to observe changes in self-management behaviors over time. Future researchers may also develop culturally tailored interventions that integrate all components of the HSMBQ, including digital health tools, community involvement, and family support, to strengthen the evidence for effective hypertension management and reduce morbidity and mortality in coastal populations.

CONCLUSION

Most adults with hypertension in coastal communities demonstrate moderate self-management behaviors across all HSMBQ domains. As a descriptive study, these findings do not establish causal relationships but provide an important overview of current self-management practices in this population. The consistently moderate levels observed indicate considerable room for improvement and highlight the need for comprehensive and culturally sensitive support strategies. Nurses and primary healthcare (PHC) providers are well positioned to play a central role in strengthening hypertension self-management through patient education, routine assessment of self-care behaviors, and counseling tailored to coastal lifestyles and cultural practices. Integrating family involvement and community-based education into routine care may further support sustained behavior change and contribute to improved blood pressure control and overall well-being among adults with hypertension in coastal communities.

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