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Self-Management of Hypertension in a Patient with Ischemic Heart Disease: A Case Report

Tessa Ayu Koropit¹, Thandar Soe @ Sumaiyah Jamaludin^{2*}, Masmunaa Hassan², Mohd. Said Nurumal³, Ema Waliyanti¹ & Henri Setiawan⁴

¹Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

²Department of Medical Surgical Nursing, Kulliyah of Nursing, International Islamic University Malaysia, Pahang, Malaysia

³Department of Critical Care Nursing, Kulliyah of Nursing, International Islamic University Malaysia, Pahang, Malaysia

⁴Department of Nursing, STIKes Muhammadiyah Ciamis, Indonesia

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Corresponding author:

Thandar Soe @ Sumaiyah Jamaludin

Department of Medical Surgical Nursing,

Kulliyah of Nursing,

International Islamic University Malaysia,

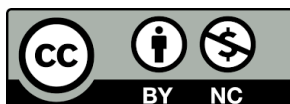
Pahang, Malaysia

E-mail: sumaiyah@iium.edu.my

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ABSTRACT

Background: Ischemic heart disease (IHD) remains the leading cause of mortality worldwide, accounting for approximately 16% of global deaths, with hypertension as a major modifiable risk factor. While self-management strategies are widely recommended for blood pressure control, evidence from individual clinical contexts remains limited, particularly in illustrating how patient education supports day-to-day management alongside medical treatment. This case report aims to describe self-management practices and short-term blood pressure outcomes in a patient with uncontrolled hypertension and ischemic heart disease following structured self-management education.

Case Presentation: A 65-year-old patient was diagnosed with ischemic heart disease and uncontrolled hypertension. Data was collected through patient interviews, clinical records, and blood pressure monitoring. The self-management intervention included education on lifestyle modification, dietary practices, physical activity, home blood pressure monitoring, and medication adherence. Following the self-management education, the patient demonstrated improved engagement in self-management behaviors, including regular blood pressure monitoring, dietary modification, increased physical activity, and improved medication adherence. A reduction in blood pressure readings was observed over the short follow-up period. However, the patient continued concurrent pharmacological treatment, which may have influenced the observed outcomes.

Conclusion: This case report highlights the potential role of self-management education in supporting blood pressure control among patients with ischemic heart disease. While improvements were observed, the findings should be interpreted cautiously due to confounding effects of medication and the short follow-up period.

Keywords: Self-management; Hypertension; Blood pressure; Myocardial ischemia; Case report

INTRODUCTION

Ischemic heart disease (IHD), characterized by reduced myocardial blood flow due to coronary artery obstruction, remains the leading cause of death globally and in Malaysia. According to the World Health Organization, IHD accounted for approximately 16% of global deaths in 2019, resulting in more than 8.9 million fatalities worldwide (1,2). In Malaysia, the Department of Statistics Malaysia reported that cardiovascular diseases predominantly IHD were the leading cause of death, contributing to 15.6% of total mortality in 2022 (3). The increasing burden of IHD highlights the urgent need for effective prevention and long-term disease management strategies.

Hypertension is one of the most significant modifiable risk factors for the development and progression of ischemic heart disease. Persistent elevation of blood pressure contributes to endothelial dysfunction and accelerates atherosclerosis, thereby increasing morbidity and mortality among patients with IHD (4,5). Poorly controlled hypertension is associated with multi-organ damage and worsened cardiovascular outcomes, making optimal blood pressure control a cornerstone of IHD management.

Globally, an estimated 1.28 billion adults aged 30–79 years live with hypertension, representing a major public health challenge (1,2). Hypertension is linked to increased all-cause mortality and contributes to at least 17 of the 67 leading causes of death, primarily circulatory diseases (6). The prevalence of hypertension is strongly influenced by lifestyle-related factors such as unhealthy diet, physical inactivity, and obesity (7). Despite the availability of effective antihypertensive therapies, blood pressure control remains suboptimal. High-income countries report higher rates of diagnosis, treatment, and control compared to low- and middle-income countries, where only approximately 8% of patients achieve adequate blood pressure control (8). The global economic burden of hypertension is substantial, with annual costs estimated at approximately USD 370 billion (9).

Effective management of chronic conditions like hypertension and IHD requires sustained self-management behaviors, including adherence to antihypertensive medication, dietary modification, regular physical activity,

and home blood pressure monitoring (10-13). However, achieving and maintaining optimal blood pressure control remains challenging, even with advances in pharmacological treatment (11-13). Evidence suggests that self-management interventions can significantly reduce blood pressure and improve medication adherence and self-efficacy among patients with hypertension (14).

International clinical guidelines consistently emphasize lifestyle modification as a fundamental component of hypertension management throughout the treatment continuum (13,15). Recommended lifestyle interventions include adherence to a healthy diet, weight management, reduced sodium intake, increased physical activity, and adequate rest, all of which have been shown to lower blood pressure (13,16). The Dietary Approaches to Stop Hypertension (DASH) diet, particularly when combined with regular physical activity, has demonstrated effectiveness in reducing blood pressure, including in patients with resistant hypertension (17,18). Additionally, regular physical activity, especially walking, has emerged as an accessible, low-cost, and effective intervention for blood pressure reduction (19,20).

Self-management is a core component of the Chronic Care Model, which emphasizes patient engagement and system-level support to improve outcomes in chronic disease management. Healthcare providers, particularly nurses, play a vital role in supporting patients' self-management behaviors, including blood pressure monitoring, lifestyle modification, and medication adherence. Evidence indicates that structured self-management support can improve blood pressure control, health outcomes, and patient satisfaction (21).

Home blood pressure monitoring (HBPM) has been shown to enhance treatment adherence and facilitate better blood pressure control. Long-term adjustment of antihypertensive therapy based on self-measured blood pressure is feasible, and studies have demonstrated that HBPM combined with individualized self-titration protocols results in superior blood pressure control compared to usual care (22,23).

Despite extensive evidence supporting self-management strategies, there remains limited published evidence illustrating their

application and short-term outcomes in individual patients with both ischemic heart disease and uncontrolled hypertension. Therefore, this case report aims to describe self-management practices and blood pressure outcomes in a patient with ischemic heart disease and uncontrolled hypertension following structured self-management education.

METHODS

Study Design

This study employed a descriptive case report design to explore self-management practices and short-term blood pressure outcomes in a patient with ischemic heart disease (IHD) and uncontrolled hypertension. The case report approach was selected to provide a detailed clinical description of patient presentation, self-management education, and outcomes within a real-world healthcare setting.

Case Description and Data Collection

The case involved a 65-year-old woman diagnosed with ischemic heart disease with underlying hypertension. Data were collected using multiple sources to enhance clinical accuracy, including:

- Semi-structured patient interviews.
- Clinical observations.
- Review of medical records, including vital signs, laboratory findings, electrocardiogram (ECG), and pharmacological treatment.

A face-to-face interview lasting approximately 50 minutes was conducted during hospitalization to assess baseline self-management practices, including dietary habits, physical activity, blood pressure monitoring, and medication adherence.

Self-Management Intervention

The self-management intervention was initiated during hospitalization and reinforced throughout the follow-up period. Education was delivered by the researcher and the team with collaboration with the multidisciplinary healthcare team and focused on:

- Dietary modification, particularly salt reduction.
- Encouragement of regular physical activity, appropriate to the patient's condition.

- Encouragement on home blood pressure monitoring
- Education on medication adherence, including purpose and dosing of prescribed medications.

The intervention was supportive and educational in nature. It is important to note that the patient received concurrent pharmacological treatment during hospitalization. Therefore, the observed outcomes reflect the combined effects of medical treatment and self-management education.

Timeline and Follow-Up Assessment

The patient was followed for a total duration of one week, with assessments conducted at three key time points:

1. Baseline (Day 1 – Admission): Clinical assessment, laboratory investigations, and evaluation of baseline self-management practices.
2. Post-intervention (Day 2 – During Hospitalization): Reassessment of vital signs, symptoms, and engagement with self-management education.
3. Follow-up (Day 7 – One Week After Discharge): Evaluation of blood pressure readings, symptom status, medication adherence, and self-management behaviors through follow-up assessment.

Ethical Considerations

Written informed consent was obtained from the patient for the publication of this case report and any accompanying clinical information. Patient confidentiality was strictly maintained, and no identifying information has been included in this manuscript.

RESULTS

Case Presentation

A 65-year-old woman presented to the emergency department with intermittent chest pain described as stabbing in nature, worsening with physical activity, and accompanied by generalized weakness. The patient had no previous routine medical follow-up and had never undergone health screening at a community health center or hospital. Family history revealed that her father had a history of heart disease. The patient reported an irregular lifestyle with no

dietary restrictions and no prior use of antihypertensive medication.

Baseline Clinical Findings (Day 1)

At admission, the patient’s clinical parameters were as follows:

- Blood pressure: 197/138 mmHg.
- Pulse rate: 99 beats/min.
- Respiratory rate: 20 breaths/min.
- Body temperature: 36.7°C.
- Oxygen saturation: 98.

Electrocardiogram findings showed sinus rhythm with Q waves in lead I (anterolateral changes). Chest X-ray revealed no cardiomegaly. Laboratory results indicated elevated Troponin-H (26.03 pg/mL), supporting a diagnosis of ischemic heart disease.

Medical and Nursing Management

During hospitalization, the patient received standard pharmacological management, including antihypertensive agents, antiplatelet therapy, analgesia, and gastric protection. Nursing care focused on chest pain management, monitoring of vital signs, and delivery of self-management education. Upon discharge, antihypertensive therapy included amlodipine and bisoprolol. (Pharmacological treatments are summarised in **Table 1** and **2**).

Table 1: Pharmacology treatments (During hospitalization)

Medication	Dosage	Frequency
Tramadol	50mg	IV
Pantoprazole	40 mg	IV
Tab Amodipin	10mg	OD 1x1 x 7days
Tab Bisoprolol	2.5mg	OD 1x1 x 7days
Tab Clopidogrel	300mg	STAT
Tab Aspirin	300mg	STAT
Maxolon	10mg	IV STAT

Table 2: Pharmacology treatments (During Discharge)

Medication	Dosage	Frequency
Tab Amodipin	10 mg	OD 1x1 x 7d
Tab Bisoprolol	2.5mg	OD 1x1 x 7d

Self-Management Assessment (Baseline)

Initial assessment identified limitations in four key self-management components:

- Diet: The patient consumed fast food and salty foods regularly and avoided foods perceived as bland.
- Physical activity: The patient rarely engaged in regular exercise.
- Blood pressure monitoring: The patient was unable to recognize symptoms of elevated blood pressure and had never monitored blood pressure at home.
- Medication adherence: The patient had no prior experience with antihypertensive medication and limited understanding of its importance.

Short-Term Outcomes During Hospitalization (Day 2)

By the second day of hospitalization, the patient reported improvement in chest pain and general well-being. Clinical parameters showed improvement:

- Blood pressure: 170/100 mmHg.
- Pulse rate: 87 beats/min.
- Respiratory rate: 20 breaths/min.
- Body temperature: 36.5°C.
- Oxygen saturation: 98%.
- Troponin-H: decreased to 24.93 pg/mL.

The patient demonstrated improved awareness of blood pressure control, dietary choices, and medication use.

Follow-Up Outcomes (Day 7)

At one-week follow-up, the patient reported continued adherence to prescribed antihypertensive medication and implementation of recommended lifestyle modifications, including reduced salt intake and increased daily physical activity through walking. The patient also reported regular home blood pressure monitoring.

Blood pressure readings at follow-up showed sustained improvement compared to baseline. The patient reported no recurrence of severe chest pain and demonstrated improved engagement in self-management behaviors.

Discussion

This case report describes the short-term outcomes of self-management education in a 65-year-old woman with ischemic heart disease (IHD) and uncontrolled hypertension. The findings suggest that structured self-management support, delivered alongside standard medical treatment, may enhance patient engagement in health behaviors and

contribute to short-term improvements in blood pressure control. However, these outcomes must be interpreted cautiously due to the concurrent use of pharmacological therapy and the limited follow-up period.

Educational level and health awareness play an important role in shaping individuals' health behaviors, including lifestyle choices and medication adherence. Limited understanding of hypertension and its consequences has been associated with poor self-management and suboptimal blood pressure control (24). In this case, the patient initially demonstrated limited knowledge regarding dietary practices, physical activity, blood pressure monitoring, and medication use. Following structured education, the patient showed improved awareness and willingness to adopt recommended self-management behaviors, highlighting the importance of patient education as a foundation for chronic disease management.

Lifestyle modification is a cornerstone of hypertension management, particularly dietary sodium reduction and increased physical activity. Extensive evidence supports the association between high sodium intake and elevated blood pressure (25). Dietary patterns such as the DASH diet and Mediterranean diet have been shown to effectively reduce blood pressure and improve cardiovascular outcomes (26). In the present case, dietary counseling focused on gradual salt reduction and healthier food choices, which the patient reported implementing during the one-week follow-up period.

Physical activity, especially walking, has been identified as an accessible and effective intervention for blood pressure reduction across age groups (20). The patient's engagement in light physical activity, primarily walking, aligns with international recommendations advocating at least 150 minutes of moderate-intensity activity per week (27). While long-term effects could not be evaluated, early engagement suggests that simple, low-cost interventions may be feasible and acceptable even among older adults with cardiovascular disease.

Home blood pressure monitoring (HBPM) is recognized as an effective self-management strategy that can improve treatment adherence and blood pressure control when combined with professional support (23). In this case, education on blood pressure

monitoring increased the patient's awareness of her condition and fostered a sense of responsibility for managing her health. Previous studies have shown that HBPM enhances patient-provider communication and supports self-efficacy, although appropriate guidance is essential to avoid misinterpretation of readings (28). Medication adherence remains a critical challenge in hypertension management. Simple reminder strategies, such as alarms and pill organizers, have demonstrated effectiveness in improving adherence, particularly among older adults (29).

The patient in this case reported improved adherence after receiving education and reminders, underscoring the value of low-cost, practical interventions. Despite these positive observations, the reduction in blood pressure observed in this case cannot be attributed solely to self-management education. The patient received multiple antihypertensive and cardiovascular medications during hospitalization, which likely contributed to the improvement. Additionally, the short follow-up period limits the ability to assess sustained blood pressure control and long-term self-management behaviors.

Limitations of the Study

This study has several limitations that should be acknowledged. First, as a single-patient case report, the findings cannot be generalized to a broader population of patients with hypertension and ischemic heart disease. Second, the follow-up period was limited to one week, which restricts the ability to evaluate long-term sustainability of self-management behaviors and blood pressure control. Third, improvements observed in blood pressure and self-management practices may have been influenced by concurrent pharmacological treatment, making it difficult to attribute outcomes solely to the self-management intervention. Additionally, self-reported behaviors related to diet, physical activity, and medication adherence are subject to recall and reporting bias. Lastly, objective outcome measures beyond blood pressure, such as long-term cardiovascular outcomes or biochemical markers, were not assessed.

Recommendations

Despite these limitations, this case highlights the importance of integrating structured self-management education into routine care for

patients with hypertension and ischemic heart disease. Future studies should employ longitudinal or interventional designs with larger sample sizes to evaluate the sustained effectiveness of self-management interventions over time. Longer follow-up periods are recommended to assess behavioral maintenance and long-term blood pressure control. Incorporating standardized assessment tools and objective outcome measures may strengthen the validity of findings. In clinical practice, healthcare professionals should emphasize patient education, home blood pressure monitoring, lifestyle modification, and medication adherence as complementary strategies to pharmacological therapy in managing hypertension among patients with ischemic heart disease.

CONCLUSION

This case report highlights the potential role of self-management education in supporting blood pressure control in a patient with ischemic heart disease and uncontrolled hypertension. Improvements were observed across four key self-management components: diet, physical activity, blood pressure monitoring, and medication adherence over a short follow-up period. These components are interrelated and collectively essential for effective hypertension management.

While the findings suggest that self-management support may enhance patient engagement and short-term outcomes, conclusions regarding effectiveness should be made cautiously due to confounding pharmacological treatment, short duration of follow-up, and the single-case design. Further studies employing robust designs and longer follow-up periods are needed to evaluate the sustained impact of self-management interventions in patients with ischemic heart disease.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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AUTHOR CONTRIBUTIONS

TAK: Data collection, intervention implementation and patient care, manuscript drafting.

TS@SJ: Conceptualization and study design, ideas for intervention implementation and patient care, critical revision of the manuscript.

MH: Data collection, intervention implementation and patient care.

MSN: Data analysis and interpretation.

EW: Literature support.

HS: Literature support, revision of the manuscript.

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