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Implementation of Family-Based Education to Improve Medication Adherence Among Older Adults with Hypertension: A Case Study at the Pengadangan Primary Health Center

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ABSTRACT

Hypertension is one of the most prevalent non-communicable diseases and a major contributor to morbidity and mortality worldwide. Successful hypertension management is highly influenced by patients' adherence to medication. However, medication adherence among older adults remains a challenge due to limited knowledge, low awareness of the importance of long-term therapy, and inadequate family support. Family-based education is a nursing intervention that can improve patients' and families' knowledge, strengthen family involvement, and enhance medication adherence among older adults with hypertension. To describe the implementation of family-based education in improving medication adherence among older adults with hypertension through nursing care at the Pengadangan Primary Health Center. This study employed a descriptive case study approach involving one older adult patient diagnosed with hypertension. Nursing care was carried out through the stages of assessment, nursing diagnosis, planning, implementation, and evaluation. The intervention was conducted over 3 × 24 hours, while data were collected through interviews, observations, physical examinations, and documentation. The main intervention consisted of family-based education regarding hypertension, medication adherence, a low-sodium diet, physical activity, routine health check-ups, and strengthening the family's role in supporting the patient's treatment. Prior to the intervention, the patient frequently forgot to take antihypertensive medication, had limited understanding of the importance of medication adherence, and received insufficient family support. Following three educational sessions, both the patient and family demonstrated improved knowledge of hypertension, increased adherence to the prescribed medication regimen, and greater family involvement in reminding the patient to take medication, accompanying routine health check-ups, and providing motivation throughout the treatment process. The patient's blood pressure also decreased from 165/100 mmHg to 145/90 mmHg. The implementation of family-based education improved the knowledge of both the patient and family, enhanced medication adherence, strengthened family support, and contributed to better blood pressure control in an older adult with hypertension. This intervention may serve as an effective nursing strategy for managing hypertensive patients in primary healthcare settings.

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I. INTRODUCTION

Hypertension is a condition characterized by persistently elevated blood pressure above the normal range. An individual is considered hypertensive when the systolic blood pressure is ≥130 mmHg or the diastolic blood pressure is ≥80 mmHg. Hypertension may lead to complications affecting multiple target organs, including the heart, brain, kidneys, eyes, and peripheral arteries. The extent of organ damage depends on both the severity of hypertension and the duration of uncontrolled or untreated elevated blood pressure [1].

Hypertension is a major risk factor for cardiovascular, cerebrovascular, and renal damage, potentially resulting in serious complications such as stroke, myocardial infarction, chronic kidney disease, and heart failure. Persistent uncontrolled hypertension causes structural and functional changes in blood vessels throughout the body, leading to progressive damage of vital organs. As blood pressure continues to increase, the incidence of heart failure, stroke, and kidney failure also rises, contributing substantially to morbidity and mortality. Family support has been reported to have a strong positive correlation with medication adherence among patients with hypertension. In addition, inadequate self-management has been identified as one of the factors contributing to the increasing burden of non-communicable diseases, including hypertension, in Indonesia [2].

According to the World Health Organization (WHO), approximately 1.13 billion people worldwide were living with hypertension in 2015, representing nearly one in every three adults. The global burden of hypertension continues to increase annually and is projected to reach 1.5 billion people by 2025. Hypertension and its associated complications are estimated to cause 10.44 million deaths each year. Several factors contribute to the development of hypertension, including advancing age and socioeconomic conditions. Aging is associated with structural changes in large arteries, resulting in

narrowing of the vascular lumen, increased arterial stiffness, and elevated systolic blood pressure [7].

The prevalence of hypertension in Indonesia has continued to rise. Data from the 2018 Basic Health Research Survey (Riskesdas) reported a hypertension prevalence of 34.1%, representing a substantial increase compared with 25.8% reported in the 2013 Riskesdas survey (Ministry of Health of the Republic of Indonesia, 2018). Age-specific prevalence in 2018 was 13.22% among individuals aged 18–24 years, 20.13% among those aged 25–34 years, and 31.61% among adults aged 35–44 years. These figures represent marked increases compared with the corresponding prevalences reported in 2013, which were 8.7%, 14.7%, and 24.8%, respectively [4].

West Nusa Tenggara (NTB) Province is one of the Indonesian provinces with a relatively high prevalence of hypertension. In 2020, hypertension ranked as the second most common disease in the province, affecting 772,490 adults aged 18 years and older. According to the West Nusa Tenggara Provincial Health Office, the highest numbers of hypertension cases were reported in East Lombok, Central Lombok, and West Lombok Regencies [12].

Medication adherence among older adults is a critical determinant of successful blood pressure control. Medication adherence refers to the extent to which patients follow treatment recommendations and comply with medication regimens prescribed by healthcare professionals. Consistent adherence to antihypertensive medication is essential for maintaining optimal blood pressure control. However, long-term treatment often leads to boredom, treatment fatigue, and reduced motivation, which may contribute to poor medication adherence among patients with hypertension [3].

Several factors contribute to medication non-adherence among older adults, including occupational commitments, declining memory affecting the correct timing and dosage of medication, adverse drug effects such as drowsiness, dizziness, and nausea, and discontinuation of medication once symptoms improve. These factors collectively reduce adherence to antihypertensive therapy [3].

Previous studies have identified several determinants of adherence to antihypertensive medication, including family support, duration of hypertension, and patients' knowledge regarding their disease. Research has also demonstrated that education provided by healthcare professionals, patients' understanding of hypertension and its treatment, trust between patients and healthcare providers, and the availability of adequate healthcare resources are significantly associated with medication adherence among individuals with chronic diseases [4].

Numerous studies have investigated health education interventions for older adults as a strategy to improve medication adherence by modifying patients' perceptions and behaviors regarding hypertension management. These educational interventions have employed various teaching methods, approaches, and durations. However, health education for older adults should consider age-related vulnerabilities, functional limitations, and cognitive decline. Therefore, educational strategies should be tailored to the specific needs of older adults to maximize their effectiveness in improving adherence to antihypertensive medication [5].

Family support plays a crucial role in helping individuals cope with health-related problems. It enhances patients' self-confidence, motivation, and overall quality of life. Consequently, family members should be actively involved in health education programs to enable them to meet patients' needs, recognize situations requiring professional medical assistance, and encourage adherence to prescribed treatment. Family support is particularly important for older adults with hypertension, as family members strongly influence patients' health beliefs and behaviors [6].

Family support encompasses various forms of assistance provided to family members, including emotional, informational, instrumental, and appraisal support. Emotional support consists of providing empathy, motivation, attention, and affection to help individuals feel valued and cared for. Informational support involves providing relevant health information and guidance. Instrumental support includes tangible assistance, such as helping with household activities or providing financial support. Appraisal support refers to providing constructive feedback and evaluation regarding patients' adherence to treatment and overall disease management. Together, these forms of support play a significant role in improving medication adherence and health outcomes among older adults with hypertension [7].

II. RESEARCH METHODOLOGY

This study employed a descriptive case study design. The case study involved a single family with a family member diagnosed with hypertension, specifically a 49-year-old female patient. The study explored the implementation of family nursing care for a patient with hypertension who presented with elevated blood pressure. Family nursing care was provided over a two-week period, with the primary intervention implemented for 3 × 24 hours. The study aimed to evaluate the effectiveness of a family-based educational intervention in reducing blood pressure in a 49-year-old woman with hypertension through a family nursing care approach.

The family nursing care process consisted of assessment, nursing diagnosis, planning, implementation, and evaluation. Data were collected through interviews, observation, physical examination, and documentation. Interviews were conducted using a standardized family nursing assessment format to

identify the patient's complaints and health-related concerns. Physical examinations were performed to assess the patient's general condition, including blood pressure measurements obtained before and after the intervention.

Nursing diagnoses and care plans were established in accordance with the Indonesian Nursing Diagnosis Standards (SDKI), Indonesian Nursing Outcomes Standards (SLKI), and Indonesian Nursing Intervention Standards (SIKI).

The primary intervention consisted of family-based health education. Educational sessions were provided to both the patient and family members regarding the definition of hypertension, risk factors, potential complications, the importance of adherence to antihypertensive medication, adherence to a low-sodium diet, appropriate physical activity, and the importance of regular health check-ups. In addition, family members were motivated and trained to actively support the patient's hypertension management by reminding the patient to take prescribed medications, accompanying the patient during follow-up visits, and monitoring adherence to the prescribed treatment regimen.

III. RESEARCH RESULTS

The patient in this case study was Mrs. S, a 66-year-old Muslim woman whose highest level of education was elementary school. She was a homemaker and resided within the service area of the Pengadangan Community Health Center.

Based on the nursing assessment, the patient had a 6-year history of hypertension and routinely received antihypertensive medication. However, she admitted that she frequently forgot to take her medication because she believed she was healthy whenever she experienced no symptoms. She also rarely attended routine follow-up visits at the community health center and had limited understanding of the importance of lifelong adherence to antihypertensive therapy.

Interviews with family members revealed that they had limited knowledge regarding hypertension, its potential complications, and the importance of providing support to the patient throughout treatment. The family had not established a routine of reminding the patient to take her medication as prescribed or accompanying her to follow-up visits at healthcare facilities. Physical examination revealed a blood pressure of 170/100 mmHg.

The nursing diagnosis established was Ineffective Health Management related to insufficient knowledge and inadequate family support in the management of hypertension, as evidenced by the patient's frequent omission of prescribed medication, failure to attend routine follow-up visits, limited understanding of the importance of medication adherence, and persistently elevated blood pressure.

The expected nursing outcomes, based on the Indonesian Nursing Outcomes Standards (SLKI, 2018), were Improved Health Management (L.12103) and Improved Blood Pressure Status (L.02044). Following 3 × 24 hours of nursing interventions consisting of health education and family support, improvements were observed in both the patient's and family members' knowledge regarding hypertension. Medication adherence increased, family involvement in reminding the patient to follow the prescribed medication schedule improved, and the patient's blood pressure became better controlled.

The nursing interventions implemented were Health Education (I.12383) and Family Support (I.14525) according to the Indonesian Nursing Intervention Standards (SIKI). Educational sessions were provided to both the patient and family members regarding the definition of hypertension, its causes, risk factors, potential complications, the importance of adherence to antihypertensive medication, adherence to a low-sodium diet, engagement in appropriate light physical activity, and the necessity of regular health check-ups. In addition, family members were instructed to develop a medication schedule and actively remind the patient to take antihypertensive medication as prescribed.

IV. DISCUSSION

Based on the implementation of the family-based educational intervention delivered over three sessions, the findings demonstrated improved treatment adherence in Mrs. S, a 68-year-old woman with a six-year history of hypertension. Before the intervention, the patient frequently forgot to take her antihypertensive medication because she believed that medication was unnecessary in the absence of symptoms. In addition, family members had limited understanding of the importance of supporting the patient's treatment, resulting in inadequate involvement in hypertension management. Following the educational intervention, positive behavioral changes were observed in both the patient and her family, as evidenced by improved medication adherence and a reduction in blood pressure from 165/100 mmHg to 145/90 mmHg.

During the first session, the patient reported that she often forgot to take her antihypertensive medication because she felt physically well and was unaware that antihypertensive therapy should be continued even when no symptoms were present. Family members also lacked an understanding of their role in supporting the patient's treatment. At this stage, the patient's blood pressure was 165/100 mmHg. Nursing interventions included a comprehensive assessment to identify factors contributing to medication non-adherence, followed by health education for both the patient and family regarding hypertension, its causes, risk factors, potential complications, the benefits of antihypertensive therapy, and the importance of medication adherence. Family members also received education regarding their role in

reminding the patient to take medication as prescribed and supporting healthy lifestyle modifications.

During the second session, evaluation demonstrated noticeable improvement. The patient reported taking antihypertensive medication according to the prescribed schedule, although reminders from family members were still required. Blood pressure decreased to 155/95 mmHg. The patient was able to explain the benefits of regular medication use and demonstrated a better understanding of the importance of routine medical follow-up. Family members became more actively involved by preparing medications, reminding the patient about medication schedules, and assisting with adherence to a low-sodium diet. Reinforcement education was provided regarding lifestyle modification, including sodium restriction, maintenance of a healthy body weight, regular light physical activity, smoking cessation, and stress management to prevent further deterioration of hypertension.

During the third session, the evaluation indicated that the intervention objectives had largely been achieved. The patient's blood pressure further decreased to 145/90 mmHg. The patient reported no longer forgetting to take medication because family members consistently provided reminders. Furthermore, the patient was able to explain the importance of medication adherence, the benefits of a low-sodium diet, regular physical activity, and routine follow-up visits to the community health center. Family members successfully demonstrated their understanding of the educational materials, actively monitored the patient's medication adherence, and expressed their commitment to continuing support for hypertension management at home. These findings indicate that family-based education effectively improved both family knowledge and involvement, thereby enhancing the patient's adherence to antihypertensive therapy.

The nursing intervention implemented throughout the three sessions extended beyond providing information to the patient by actively involving family members as integral participants in the nursing care process. The first session focused on assessing the knowledge of both the patient and family, followed by education regarding hypertension and medication adherence. During the second session, the patient's and family's understanding was evaluated, and additional education regarding healthy lifestyle modification was reinforced. The third session consisted of a final evaluation of behavioral changes, the family's ability to provide ongoing support, and the patient's adherence to the prescribed treatment regimen. These findings highlight the critical role of family involvement in improving the effectiveness of hypertension management.

Overall, the evaluation conducted across the three sessions demonstrated that family-based education positively influenced patients' and family members' knowledge, improved adherence to antihypertensive therapy, and contributed to better blood pressure control. Therefore, family-based education may serve as an effective nursing intervention for patients with hypertension in primary healthcare settings.

The findings of the present study are consistent with those reported by [8] who found that family support was significantly associated with adherence to antihypertensive medication ($p < 0.001$) with a moderate positive correlation ($r = 0.558$). Patients receiving strong family support were more likely to adhere to antihypertensive therapy. Their study also demonstrated that the involvement of pharmacists contributed significantly to improved medication adherence.

Similarly [6] reported that both patients' knowledge and family support were significantly associated with adherence to antihypertensive medication. Patients with greater knowledge of hypertension and stronger family support demonstrated higher levels of treatment adherence than those with limited knowledge and inadequate family support.

The present findings are further supported by [1] who reported that family support and knowledge were significantly associated with the successful implementation of the PATUH Program among older adults with hypertension. Older adults whose families possessed adequate knowledge and provided optimal support were more likely to adhere to treatment recommendations, maintain better blood pressure control, and utilize healthcare services regularly. These findings further emphasize the importance of family-centered interventions in improving hypertension management among older adults.

V. CONCLUSION

The implementation of family-based health education for Mrs. S, a patient with hypertension receiving care within the service area of the Pengadangan Community Health Center, over a 3 × 24-hour intervention period demonstrated positive outcomes in improving medication adherence. Prior to the intervention, the patient frequently forgot to take her antihypertensive medication, had limited understanding of the importance of continuous antihypertensive therapy, and received minimal support from family members in managing her treatment.

Following the stepwise educational intervention, both the patient and her family demonstrated improved knowledge regarding hypertension, the importance of medication adherence, healthy lifestyle practices, and regular health check-ups. Family members also became actively involved by reminding the patient to take her medication, providing motivation, and accompanying her throughout the treatment process. Evaluation findings showed improved adherence to antihypertensive medication and a reduction in blood pressure from 165/100 mmHg to 145/90 mmHg.

These findings suggest that family-based health education is an effective nursing intervention for improving medication adherence among patients with hypertension. Nurses are encouraged to actively involve

family members throughout the nursing care process to enhance treatment adherence, promote sustained blood pressure control, and reduce the risk of hypertension-related complications.

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