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**The effectiveness of the family-centered empowerment model towards the quality of life of older adults with hypertension**

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**Abstract**

Older adults with hypertension often experience a low quality of life. Family support plays a critical role in maintaining and improving their well-being. This study aimed to analyze the effectiveness of a family-centered empowerment model on the quality of life of hypertensive patients.

This quasi-experimental study included 70 participants with hypertension, who were divided into an intervention group and a control group. Participants were selected through a consecutive sampling technique. The study utilized the Family Empowerment Instrument and the European Quality of Life questionnaire (EQ-5D-5L) for data collection. The data analysis was performed using Levene's, Wilcoxon Signed Rank, and Mann-Whitney U tests.

There were no significant differences in the participants' characteristics between the control and intervention groups (Levene's test p-value >0.05). After the family-centered empowerment intervention, the quality of life in the intervention group was significantly higher than that of the control group (Mann-Whitney U test p-value=0.000 < 0.05).

This suggests that nurses can effectively involve patients with chronic diseases, particularly hypertension, and their families in the treatment process to enhance their quality of life.

## Introduction

Health problems worldwide are shifting from infectious to chronic diseases, such as hypertension.[1] The World Health Organisation's (WHO) data for 2023 showed that 33% of the world's population suffers from hypertension, and two-thirds of them are in poor and developing countries.[2] The number of hypertensive patients worldwide is predicted to continue to increase and is estimated to reach 1.5 billion people by 2025. Hypertension also has the potential to increase the risk of heart disease by 50% and stroke by 75%, and it is estimated that up to 10.44 million people with hypertension die each year due to complications.[3]

Meanwhile, the Indonesian Health Survey in 2023 reported that 9.4% or around 63 million people of the Indonesian population are suffering from hypertension, with a death rate of 427,218 people. According to data from the Social Security Administrator for Health (BPJS Kesehatan) of Indonesia, the Indonesian state health funding for hypertension has increased yearly from 2.8 trillion rupiahs in 2016 to 3 trillion rupiahs in 2017 and 2018 and 22.8 trillion rupiah in 2023.[4]

Hypertension is called the silent killer because its complications can cause life-threatening diseases, such as myocardial infarction, stroke, heart failure, atrial fibrillation, aortic rupture,

peripheral arterial disease, and cognitive problems.[5] The incidence of chronic diseases among older adults can have a major impact on their quality of life, including their physical, psychological, social, and economic dimensions.[6] Hypertension complications can be prevented through early detection by health services and controlled with lifestyle modifications, such as limiting sodium in food, maintaining body weight, increasing activity and exercise, eating fruits and vegetables, not smoking, reducing alcohol consumption, and adhering to the prescribed treatment regimen.[7]

Furthermore, hypertension is a prevalent chronic condition among older adults that significantly impacts their quality of life.[8] Evidence from studies conducted in China and Indonesia indicates that older adults with hypertension experience diminished quality of life, which adversely affects their life expectancy, increases the risk of mortality, depression, and social isolation, impairs daily functioning, and escalates economic burden.[9,10] A primary objective of the health care system is to enhance the quality of life for patients, especially those managing chronic conditions like hypertension. Therefore, various interventions have been developed to address this issue, including health education,[11] health empowerment models,[12] integrated health service delivery,[13] and the health belief model for medication adherence.[14] However, many of these interventions primarily target individuals who are already diagnosed with hypertension, often neglecting preventive measures involving family members.

Many community health centers in Indonesia report a high incidence of hypertension and inadequate health service facilities. Therefore, a family-centered empowerment model is a vital approach to solving this issue from a nursing perspective.[15] Family-centred empowerment reflects the professional interactions between health practitioners, older adults, and their families so that family members can better manage the chronic diseases experienced by the older adults in their families.[16] The family empowerment model has an important role in improving the quality of life of older adult patients with hypertension by considering their needs, improving their hypertension management skills, and improving their ability to do independent care to minimize their dependency on hospital care.[17]

Based on previous research, family empowerment can be conducted through four stages: perceiving the threats, self-efficacy, self-confidence, and evaluation.[18] Previous research conducted in Iran showed that a family-centered empowerment model could increase self-efficacy and reduce stress among coronary syndrome patients.[19] Family-centered empowerment is important in nursing care because of its innovative approach toward reciprocal and mutually

beneficial relationships between older adults, families, and nurses.[20,21] The significant relationship between family support and the health status of older adults shows the crucial role of family empowerment in controlling and preventing diseases in older adults.[22,23] Based on this background information, the researchers examined the effect of the family-centered empowerment model on the quality of life of older adult patients with hypertension.

## Materials and Methods

### *Ethical consideration*

This research was approved by the Health Research Ethics Committee of Nursing Faculty at Sultan Agung Islamic University (Unissula) Semarang, Indonesia, with the number 1112/A.1-KEPK/ FIK -SA/X/2022.

### *Study design and setting*

This is a quasi-experimental study with a control group design. The study was conducted at the Bangetayu Community Health Centre, Central Java Province, Indonesia, from February to April 2023.

### *Sample size and sampling technique*

The population in this study were older adult patients with hypertension who received treatment at the Bangetayu Health Centre, Central Java Province, Indonesia, in 2022, totaling 11,855 patients. Based on a study conducted by Hamedani *et al.* (2021) and considering the significance level of 0.05 and test power of 80%, a sample size of 35 people was considered appropriate for each group.[18] The researchers used the consecutive sampling technique to select respondents with the following criteria: (a) a hypertensive individual with a blood pressure of greater than 140/90 mmHg and with a family history of hypertension, (b) an individual diagnosed with hypertension for at least three consecutive months based on a medical doctor's diagnosis, (c) 60 years or older, (d) living with their family, and (e) one family member who is the primary caregiver can actively participate during the empowerment activities. The exclusion criteria were older adults who were unwilling to participate, reluctant to complete the research and those who did not attend all meetings.

### *Data collection tool and procedure*

Before starting the research, the researchers gave the informed consent forms to the potential respondents and conducted a pre-test to obtain data on their quality of life. The next step was dividing the intervention group into five small groups, each consisting of seven older adults. During the family-centered empowerment intervention, the respondents remained in the same group they were initially assigned to. The intervention was conducted over four weeks; each step of the intervention was performed on the same day (Monday) of each week. At the same time, the control group was provided with standard service interventions at the health center, *i.e.*, blood pressure checks and medication. The family-centered empowerment intervention was conducted at the homes of the intervention group respondents to prevent them from interacting with the control group. The family-centered intervention followed the standard operating procedures (SOP) for family empowerment from the Bangetayu Community Health Centre. The intervention included discussions on threat perception, self-efficacy, and self-confidence, along with an assessment stage. The respondents were also allowed to contact the researchers via WhatsApp if they had any questions.

*Step 1 (threat perception)*

The first step in the family-centered empowerment model is to increase the older adults' perceptions of health threats to improve their knowledge, attitudes, and awareness. This research built the participants' awareness through a group discussion. Seven older adults and their families were gathered at one of the respondents' houses, and a discussion was held for 45 minutes. After the discussion session, the researcher concluded the results and shared a summary of all the discussion topics with the participants and their families. The media used was a booklet about hypertension. The topics discussed included: 1) the physiological decline of aging; 2) risk factors, chronic diseases, and hypertension; 3) symptoms, acute recurrence, and prognosis of chronic hypertension; 4) pharmacological and nonpharmacological treatment for chronic hypertension; and 5) lifestyle. During the sessions, the older adult participants were asked to share about their self-care management of hypertension. At the end of the session, the researchers stated in a brief closing sentence that hypertension is dangerous and must be treated immediately.

*Step 2 (self-efficacy)*

The self-efficacy step aimed to increase the self-confidence of the older adult participants. This step was conducted through a group discussion and a booklet. Each group comprised seven older adults and their families. This session's duration was 45 minutes. Older adults were taught about skills for lifestyle changes (diet, exercise, smoking cessation, and stress coping skills), skills for managing blood pressure, and treatment planning skills. After explaining

the skills practically to the older adults and their families, they shared their experiences with other participants about the supporting and inhibiting factors for following a healthy lifestyle. During group discussion sessions, the researchers supervised and provided objective examples of solutions, such as arranging a sports schedule by writing it down on a calendar. This discussion helped empower the participants and apply the skills they learned in their daily lives.

*Step 3 (self-belief)*

The third step aimed to increase the family members' self-belief in confidently and independently caring for older adults. The participant's family members were asked to participate actively during the session and asked to solve problems, such as regulating diet patterns and measuring blood pressure. In this session, the families were given a training card or brochure that contained the family's role and support in managing hypertension in older adults. The training card includes a section that families could fill in with questions about their older adult family member's illnesses and their roles in supporting them. In this third session, the topics shared enabled the family to learn and increase their sense of responsibility for their older adult family members.

*Step 4 (assessments)*

The fourth step consists of assessing the interventions provided, namely the question-and-answer sessions and group discussions in steps 2 and 3. During the intervention, the older adult participants and family members actively participated in group discussions. After evaluating the process and providing family empowerment materials, the researchers evaluated the intervention's results. The researchers then monitored the results via WhatsApp messages by asking the families whether they practiced the skills they learned from the intervention. A post-test was then performed one month later through a questionnaire to assess the older adult participants' quality of life. One month is considered enough time to assess the family's ability to care for older adult patients with hypertension, as evidenced by the fact that the older adults had their blood pressure under control during the medical check-up at the community health center.

***Instruments***

The tools used in this research included the demographic characteristics and the European Quality of Life (EQ-5D-5L) questionnaire. These tools have undergone content validation but do not require reliability testing. The European Quality of Life questionnaire is a standardized questionnaire for assessing the quality of life of patients with chronic diseases. This questionnaire

has been widely used in various countries to assess the quality of life in older adults with hypertension. The questionnaire can measure the respondent's quality of life and consists of five domains: walking ability, self-care ability, usual activities, pain, and anxiety. The EQ-5D-5L utility index values range between 0 (very poor health condition equivalent to death) and 5 (very good health condition). Another part of the EQ-5D-5L is the visual analogue scale (EQ-VAS), which can be used to assess the respondent's health status using a scale of 100 with a score range of 0 (worst health condition) to 100 (best health condition). The EQ-VAS assessment is based on the respondents' answers regarding their health condition with a range of 0 (worst health or equivalent to death) to 100 (best health condition). The domains in the European Quality of Life (EQ-5D-5L) questionnaire assess the quality of life of older adults and consider their physical, psychological, social, spiritual, and environmental functions. This questionnaire has been translated into Indonesian and tested for validity with a Pearson correlation of 0.680-0805 and reliability with a Cronbach alpha of 0.799.[24]

***Data analysis***

Data were analyzed using the SPSS software (version 23). This research used the Levene test to assess the homogeneity of the two groups, which is said to be homogeneous if the p-value is >0.05. The Wilcoxon signed-rank test was used to compare the quality-of-life variables in each group; a difference is significant if the p-value is <0.05. Next, the Mann-Whitney U test was used to compare group analysis regarding quality-of-life variables; a difference is significant if the p-value is <0.05.

## Results

The Levene test results in Table 1 show that the intervention group and the control group obtained p-values of >0.05, indicating that the characteristics of the two groups were not significantly different. Most respondents in both groups were male, 55-64 years old, married, working, had a normal BMI, had hypertension for 0-12 months, had comorbidities, had a family history of hypertension, and did not take medication to control their blood pressure.

The Wilcoxon Signed Rank test results in Table 2 show that the p-value of the intervention group is <0.05 (0.003), indicating a difference in the quality of life in the intervention group before and after the family empowerment intervention. In the control group, the p-value was >0.05 (0.910), suggesting that there is no difference in the participant's quality

of life. Meanwhile, the Mann-Whitney U test conducted two months after the intervention obtained a p-value of <0.05 (0.000), suggesting a difference in the quality of life of the intervention and control groups.

## Discussion

This study shows that the family-centered empowerment model can improve the quality of life of patients with hypertension. The family empowerment interventions in this research consisted of four steps: the perceived threat, self-efficacy, self-belief, and assessment stages. The interventions were conducted through health education with lectures and discussions on blood pressure measurement, BMI measurement, lifestyle modification, and continuing contact with the researchers via WhatsApp to solve any issues.

This study's results align with a previous study from Iran regarding the effectiveness of family empowerment in improving the quality of life of patients with chronic disease.[18] This study found a significant increase in the average score of the intervention group. Thus, the interventions conducted can be considered effective in improving the quality of life of patients with hypertension. Keshvari *et al.* (2015) examined the effect of implementing a family-centered empowerment model to control blood pressure among patients with hypertension. The results showed that after receiving the intervention for 1.5 months, the participants' blood pressure in the intervention group was well controlled.[25]

The time and number of sessions in the family empowerment intervention stage provided many opportunities for the patients and their families to increase their knowledge and skills regarding self-care procedures for hypertension.[26] Previous research that provided health education interventions to control blood pressure found that the intervention was effective in increasing physical activity, stress management, and nutritional regulation, resulting in patients with hypertension being able to have their blood pressure under control when they were evaluated two months later. The intervention can also be repeated and evaluated every three months to evaluate the positive effects on the quality of life of older adults in the long term.[27] Moreover, Mohalli *et al.* (2018) researched the effect of a family-centered empowerment model to improve the ability to care for hypertensive patients. The results showed that the participants' knowledge, self-esteem, and self-efficacy increased in the intervention group. In this study, acceptance, active participation, and a desire for discussion from the participants and their

families are the main reasons the empowerment model achieved positive results.[28]

The family-centered empowerment model is more effective than health education because it involves patients and their families in the treatment and care processes. This model is designed to help families support chronically ill older adults by improving their communication skills, problem-solving skills, conflict resolution, and self-care management.[29] Meanwhile, health education only involves the patients and increases their knowledge.[30]

Furthermore, the family-centered empowerment model aims to increase the family's awareness of hypertension risks, self-control over the disease, the family self-efficacy to care for older adults independently, their self-confidence in solving the health problems of their older adult family member, and the ability and skills to solve problems in the family under the supervision and assistance of health workers.[25] The knowledge and practical skill transfer from the family to older adult patients with hypertension will increase their self-esteem, happiness, self-efficacy, and control over the disease. The strategies to achieve this goal include providing health education, having problem-solving discussions and consultations, learning new skills, and providing support for access to health services based on joint decision-making involving the patients, family members, and health workers.

The implementation of the empowerment model in older adults should be prioritized because aging is inevitable. Along with increasing age, the risk of developing chronic diseases, including hypertension, increases. As healthcare workers, community nurses have an essential role in preventing and improving the health management of patients with chronic hypertension. Therefore, implementing a family-centered empowerment model can help patients and their families control the disease and improve the quality of life of older adult patients with hypertension.

This study's limitation is that the participants were only monitored and evaluated one month after the intervention. Therefore, it did not measure the intervention's long-term effects. Additionally, this study's results are still limited to analyzing the effect of family-centered empowerment interventions on the quality of life of older adults. It did not analyze in detail how the family members contribute to improving the participant's quality of life and any of the challenges they face.

## Conclusions and implications for practice

There is no difference in the participants' characteristics between the control and intervention groups. However, after receiving a family-centered empowerment intervention, the quality of life of the intervention group increased compared to the control group. Therefore, the family-centered empowerment model effectively improves the quality of life of older adult patients with hypertension.

As healthcare workers, community nurses play a vital role in improving the health status of patients with chronic hypertension by applying the family-centered empowerment model in nursing care. The model's implementation can help patients and their families control the disease and ultimately improve their quality of life.

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**Table 1.** Respondents' characteristics.

| Variable | Intervention group | Control group | Levene test p-value |
|---|---|---|---|
| **Gender** | | | 0.62 |
| Male | 20 (57.1) | 18 (51.4) | |
| Female | 15 (42.9) | 17 (48.6) | |
| **Age** | | | 0.61 |
| 60–74-year-old | 13 (37.1) | 12 (34.3) | |
| 75–90-year-old | 15 (42.9) | 17 (48.6) | |
| >90-year-old | 7 (20) | 6 (17.1) | |
| **Occupation** | | | 0.68 |
| Working | 22 (62.9) | 20 (57.1) | |
| Not working | 13 (37.1) | 15 (42.9) | |
| **Marital status** | | | 0.73 |
| Married | 25 (71.4) | 23 (65.7) | |
| Not married | 10 (28.6) | 12 (34.3) | |
| **Body Mass Index** | | | 0.83 |
| Underweight | 8 (22.9) | 6 (17.1) | |
| Normal weight | 17 (48.6) | 16 (45.7) | |
| Overweight | 10 (28.6) | 13 (37.1) | |
| **Length of illness** | | | 0.41 |
| 0-12 months | 17 (48.6) | 15 (42.9) | |
| 13-24 months | 8 (22.9) | 12 (34.3) | |
| >25 months | 10 (28.6) | 8 (22.9) | |
| **Comorbidities** | | | 0.41 |
| Yes | 13 (37.1) | 11 (31.4) | |
| No | 22 (62.9) | 24 (68.6) | |
| **A family history of hypertension** | | | |
| Yes | 25 (71.4) | 22 (62.9) | 0.44 |
| No | 10 (28.6) | 13 (37.1) | |
| **Blood pressure management** | | | 0.71 |
| Use medication | 9 (25.7) | 10 (28.6) | |
| Does not use medication | 26 (74.3) | 25 (71.4) | |

**Table 2.** Differences in the quality of life of hypertensive patients in each group.

| Variable | Intervention group | | p-value* | p-value** |
|---|---|---|---|---|
| | Before | After | | |
| **Quality of life of the intervention group** | | | | |
| Poor | 15 (42.9) | 6 (17.1) | 0.003 | |
| Moderate | 13 (37.1) | 8 (22.9) | | |
| High | 7 (20) | 21 (60) | | 0.000 |
| **Quality of life of the control group** | | | | |
| Poor | 13 (37.1) | 12 (34.3) | 0.910 | |
| Moderate | 12 (34.3) | 14 (40) | | |
| High | 10 (28.6) | 9 (25.7) | | |

*Wilcoxon Signed Rank Test; **Mann-Whitney U