

The Effectiveness of Family-Based Dash Education on Older People's Blood Pressure at the Public Health Center of Kutalimbaru

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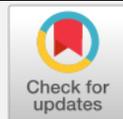
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ABSTRACT

Hypertension cases continue to increase worldwide and are the biggest cause of death. In Medan, North Sumatra, the number of hypertensive patients is 7,174 people, and the cause of death is the 4th cause of death. The study aimed to formulate the effectiveness of family-based Dash education on elderly blood pressure at the Kutalimbaru Health Center. This research is a Quasi-Experimental design with one group pretest and posttest design. The population is hypertensive clients at the Kutalimbaru Health Center with a sample of 31 respondents, taken through a purposive sampling technique with the criteria of elderly hypertensive 2-4 years, blood pressure > 140/90 mmHg, age 55 years to 65 years, living with family, receiving medication the same antihypertensive and willing to be a respondent. The instrument used was a sphygmomanometer, a 24-hour Recall observation sheet, and a booklet – analysis with a Wilcoxon sign rank test. Research shows the average systolic blood pressure before 155.16 mmHg after 147.74 mmHg. The average diastolic blood pressure before 85.81 mmHg after 82.26 mmHg. The results of statistical tests showed an effect of family-based education on the blood pressure of older people at the Kutalimbaru Health Center ($p = 0.000$). The conclusion of

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family-based education is effective in reducing blood pressure in older people. Suggestions for families are expected to control eating patterns routinely and for older people to have their blood pressure checked regularly at the public health center.

Keywords: Blood Pressure; DASH; Family-Based Education; Older People

1. Introduction

Hypertension is the most common non-communicable disease globally, with 57.6%, and a cause of death with 40%. In 2025 it is estimated that there will be an increase in cases of hypertension worldwide, namely 29%. The prevalence of hypertension in Medan, North Sumatra, is 7,174 people and is the 4th cause of death from other diseases (Kementerian Kesehatan Republik Indonesia, 2019).

Two hundred fifty-eight people with hypertension went to the Kutalimbaru Health Center, Deli Serdang Regency, in 2021. Families who pay less attention to older people's diet (68.5%), such as fried foods and salted fish, and besides that, families who do not understand controlling emotions which can lead to increased older people's blood pressure. 65% of the elderly work as farmers and do sports activities while working in the fields. Most older people are Toba Batak and Karo Batak. The life of older people in this area is very thick with customs, including socializing by attending traditional parties. Traditional party habits in this area are always accompanied by foods that contain lots of fat, such as offal and nuts.

The causes of high cases of hypertension are unhealthy lifestyles, such as unhealthy diets such as fast food, not doing regular exercise, and unhealthy habits (Hasibuan & Susilawati, 2022). Another factor that causes hypertension is a person's culture/habits lacking in managing eating habits. In North Sumatra, most Batak tribes have customs/habits of frequenting parties, and each party is served with food containing fat and palm wine (alcohol) (Handini & Sirait, 2019). The Batak people like to consume strong and bitter coffee every morning, afternoon, and evening as a companion to rice (Harianja et al., 2022). The Batak people also consume salty food and smoke. If hypertension is improperly handled, it will result in kidney failure, coronary heart disease, and stroke (Tackling & Borhade, 2021).

Treatment of hypertension takes a long time and often causes side effects such as drug allergies and damage to certain organs (Prabasari et al., 2021). Batak Toba people use traditional medicine to treat and prevent diseases like ginger, *curcuma*, and turmeric (Nasution et al., 2020). The Karo people use medicinal plants and evaporation processes (*Oukup*, a traditional medicinal practice passed down from generation to generation in the Karo people), which can treat and prevent disease (Batubara et al. 2017). They utilize herbal plants to treat and prevent disease (Handini & Sirait, 2019).

Efforts are made to control blood pressure, prevent complications, and provide simple and cost-effective treatment, namely family-based education about DASH in controlling blood pressure. Family-based education can reduce negligence, laziness, medication, and treatment adherence (Alamanda et al., 2022; Maidartati et al., 2021). Actions taken by the family in caring for family members with hypertension are recognizing hypertension problems, making decisions, caring for sick family members, modifying the environment, and utilizing health

facilities (Amalia et al., 2021)—good and positive support for increasing adherence to a hypertensive diet (Nur'aini & Nisak, 2022).

Family-based education with a Community Health Nursing Service approach where the family is involved in helping to regulate eating patterns and control sick family members' blood pressure. Where the role of the nurse, namely as an educator, can provide health education to individuals, families, and risk groups, in this case, the family. DASH is a dietary approach to stop hypertension, such as reducing the consumption of salt, sugar, meat, and fat and avoiding sweet drinks (Astuti et al., 2021). This study aimed to determine the effectiveness of family-based DASH education on elderly blood pressure at the Kutalimbaru Health Center. Based on the above problems, it is necessary to research the effectiveness of family-based DASH education on elderly blood pressure at the Kutalimbaru Health Center.

2. Literature Review

2.1. Family-Based Education

Family approaches for family empowerment include visiting high-risk patients and conducting comprehensive, informative, educational communications with families (Saragih et al., 2022). Family-based education is an empowerment effort to strengthen the role of the family in improving the health status of family members. Family-based education involves people living in the same house with the authority to make decisions (Windyastuti et al., 2016). Family-based education can change healthy living behavior by learning about health for individuals and families to manage, control or prevent complications in family members (Situmorang et al., 2021).

The family-based education method uses a two-way educational process (the Socratic method) through intrapersonal communication, counseling, and negotiations with the family (Saragih et al., 2022). The goals of family-based education are to motivate families to pay attention, to be directly involved in assisting, to assist in treatment, to create an environment that supports healthy behavior, and to familiarize family members with involvement in behavioral education activities (Situmorang et al., 2021).

The family is the smallest unit of society, so the health status of the household or family determines the health status of the community (Kementerian Kesehatan Republik Indonesia, 2016). The family is the first person to provide assistance and maintain health when one of the family members has health problems (Rahayu, 2019). The family also plays an important role in making decisions about problems that occur in family members, so families need to know the characteristics of their family members (Herman & Kusbaryantlo, 2020).

The function of the family in health care (The Health Care Foundation) is to maintain the health condition of family members to have high productivity. This function is developed into a family task in health care, including 1) recognizing health development disorders of each family member; 2) making decisions for appropriate health actions; 3) providing care to sick family members; 4) maintaining a favorable home atmosphere for the health and personality development of family members; 5) maintain a reciprocal relationship between the family and health facilities (Kementerian Kesehatan Republik Indonesia, 2016).

The role of each family member will be affected by any health problems that occur in the family so that the family has a mutually supportive relationship and communication in the care/treatment of the family (Nuriyanto, 2020). Each family member has an important role in maintaining health and preventing disease because members can support and care for one another at all stages of life. The health of each family member influences one another, so each member must maintain their health (Silalahi et al., 2022). Family support and involvement are

crucial for older people in adjusting and controlling disease and elderly diet rules (Rohmah et al., 2022).

2.2. The DASH Diet (Dietary Approaches to Stop Hypertension)

The DASH diet is designed to prevent hypertension and is effective compared to other diets (Kucharska et al., 2014). The DASH diet, rich in fruits, vegetables, and low-fat dairy products, can lower systolic and diastolic blood pressure (Filippou et al., 2020). The DASH diet contains less saturated fat, trans fat, and cholesterol and avoids consuming sugary drinks, fat, red meat, and processed meat (Mukti, 2019; Astuti et al., 2021). The DASH diet controls blood pressure within normal or controlled limits and prevents hypertension (Marbun et al., 2020).

Applying the DASH diet first calculates individual energy and nutrient needs and, from there, the amount or portion of food to be consumed (Astuti et al. 2021).

3. Research Methodology

The research design is a Quasi-Experimental design with one group pretest and posttest design where only one intervention group has no comparison (Polit & Beck, 2008).

The population in the study, namely elderly hypertension at the Kutalimbaru Health Center, consisted of 457 respondents. To determine the sample size use the formula:

Lemesshow: $n = \frac{1.96^2 \times 0.912 \times 0.088}{(0.1)^2}$ so a total sample of 31 respondents was obtained (Ziegel et al., 1994). The sampling technique was Purposive Sampling with the criteria of elderly hypertension 2-4 years, blood pressure > 140/90 mmHg, age 55 to 65 years, living with family, receiving the same antihypertensive medication, and willing to become respondents.

Family-based educational intervention for 30 minutes for six days with booklet media. Family-based education begins with measuring older people's blood pressure. Family-based DASH education is carried out: foods high in vegetables, fruits, nuts, fish, whole grains, and non-fat or low-fat milk three times a day. Then, on the 7th day, blood pressure was reduced (Mukti, 2019). The tool to measure blood pressure is a sphygmomanometer, and the tool to measure food intake uses a 24-hour Recall observation sheet. Differences in blood pressure values before and after family-based DASH education were tested with the Wilcoxon sign rank test.

4. Results and Discussion

Table 1. Frequency of Respondents at the Kutalimbaru Health Center

Characteristics	f	Percentage (%)
Age		
55-60 years old	24	77.4
61-65 years old	7	22.6
Total	31	100

Based on Table 1, out of 31 respondents, there were 24 (77.4%) aged 55-60, and 7 (22.6%) aged 61-65.

Table 2. Differences in Respondents' Blood Pressure Based on Pretest and Posttest Family-Based Dash Education Intervention at the Kutalimbaru Health Center

Blood Pressure	Pretest				Posttest			
	Mean	SD	Min-Max	n	Mean	SD	Min-Max	n
Systole	155.16	9.616	140-170	31	147.74	8.835	130-170	31
Diastole	85.81	8.475	80-110	31	82.26	5.603	70-90	31

Table 2 shows that the systolic blood pressure before the intervention, the mean was 155.16 mmHg with a standard deviation of 9.616. The lowest blood pressure score is 140 mmHg, and the highest is 170 mmHg. After the intervention, it was at a score of 147.74 mmHg with a standard deviation of 8.835. The lowest blood pressure score was 130 mmHg, and the highest was 170 mmHg. Diastolic blood pressure before the intervention, the mean was 85.81 mmHg with a standard deviation of 8.475. The lowest blood pressure score was 80 mmHg, and the highest was 110 mmHg. After the intervention, it was at a score of 82.26 mmHg with a standard deviation of 5.603. The lowest blood pressure score was 70 mmHg, and the highest was 90 mmHg, caused by age and gender factors. Where the age of most of the respondents aged 55-60 years was 77.4%, and female sex was 100%.

In older people, hypertension often occurs when the elasticity of blood vessels is reduced, and stiffness in the arterial walls occurs. Collagen accumulation in the muscle layer occurs with age, so the blood vessels constrict and become frozen. Reduced heart and peripheral blood vessels can increase peripheral vascular resistance. The decrease in the strength of contractility will be significant when experiencing anxiety, pleasure, illness, and activity. Older people also experience increased sensitivity to sodium intake, resulting in hypertrophy of adipocyte cells and narrowing of the blood vessels (Akbar, 2018).

A diet with high-fat animal-based consumption causes hypertension (Siregar, 2022). Excessive fat consumption will increase LDL cholesterol, causing blockage of blood vessels. This is because elasticity and blood flow are disrupted, increasing blood volume and blood pressure. To increase appetite, older people are given foods containing sodium and fat to trigger an increase in blood pressure. Excessive salt consumption causes the concentration of sodium in the fluid to increase, increasing blood volume and hypertension (Adam, 2019).

Gender women experience more hypertension than men. Women experience menopause which can cause levels of the hormone estrogen to decrease and increase cholesterol. Estrogen increases High-Density Lipoprotein (HDL). High levels of High-Density Lipoprotein (HDL) are a protective factor in preventing atherosclerosis, resulting in hardening of the arteries (Fitriyana & Wirawati, 2022).

Based on the research above, it can be concluded that with increasing age, older people are at high risk of suffering from hypertension where physiologically, the elderly experience changes in the structure of blood vessels so that the elasticity and contractility of blood vessels decrease, resulting in an increase in the narrowing of blood vessels which ultimately increases blood pressure. In addition, an unhealthy diet that often consumes meat, fried peanuts, and salted fish can cause hypertension. The consumption of fatty foods can increase cholesterol in the blood, which causes atherosclerosis and resistance of the walls of blood vessels, increasing blood pressure. Older people also often consume high sodium, which results in water retention, so blood volume increases, and eventually, there is an increase in blood pressure.

After the intervention, the average blood pressure was 147.74, which decreased by 7.42. The DASH family-based educational process spans six successive days with the same material, so it's easy to understand. The media used in the DASH booklet contains text and pictures to make the information conveyed clear. Family-based education can increase knowledge, ability, and family support in managing the diet of older people so that the eating patterns of older people can be controlled.

Conduct behavior to live healthier through increasing skills, knowledge, and changing attitudes related to lifestyle changes (Andini, 2022). The information helps accelerate a person's acquisition of knowledge. Various kinds of information can increase the knowledge of hypertensive patients and their families (Soviarni & Rosiska, 2022). Someone who knows will be able to know and understand the meaning, benefits, and goals so that they can undergo a hypertension diet regularly (Utami, 2020).

To increase the awareness of older people controlling their diet for elderly hypertension, family support and involvement are needed (Windyastuti & Solikhah, 2022). Family involvement can support clients in managing their diet (Windyastuti et al., 2016). Forms of family involvement in caring for older people with hypertension include helping them control themselves routinely, comply with diets, advise them to stop smoking, do physical activity, and so on (Khan et al., 2017). The daily diet is an effort to prevent or control hypertension. The DASH diet reduces salt and saturated fat consumption and increases potassium, calcium, magnesium, and high fiber (Fitriyana & Wirawati, 2022). The DASH diet, dominated by vegetables and fruit, affects blood circulation and controls the body's metabolism, thereby reducing and controlling blood pressure (Luthfiana et al., 2019). The one-week DASH Diet can lower blood pressure (Juraschek et al., 2017). The DASH diet was very helpful and significantly reduced systolic blood pressure by 6.74 mmHg and diastolic blood pressure by 3.54 mmHg (Mukti, 2019).

Based on the research above, it can be concluded that providing DASH family-based education can reduce blood pressure because families and older people can control eating patterns to be better and more focused on reducing the occurrence of deposits in blood vessel walls which cause hypertension. By managing your diet, such as consuming rich vegetables, fruits, side dishes, low-fat milk, and nuts, and reducing salt and flavorings in food, the blood pressure of older people will be controlled.

Table 3. The Effectiveness of Family-Based DASH Education on Blood Pressure on Older People at the Kutalimbaru Health Center

		N	Mean Rank	Sum of Ranks	P-value
Before - after being given Family-Based DASH Education	Negative Ranks	18	9.50	171.00	0.000
	Positive Ranks	0	.00	00	
	Ties	13			
	Total	31			

Based on **Table 3**, the results of the Wilcoxon statistical test obtained a value of $p = 0.000 < 0.05$, meaning that DASH family-based education influenced changes in pressure on older people at the Kutalimbaru Health Center.

Family-based education, namely giving to families to increase client and family understanding of the DASH diet, namely controlling eating patterns and blood pressure.

Family-based education provides information on clients' health problems that are not yet known to clients and families (Putranto, 2021). Family education can increase the value of knowledge and adherence to therapy and diet (Parvan et al., 2016). Involving family members in one home makes it easier to decide about health needs. Families can find out, meet the family needs, deal with problems with existing resources, and decide on appropriate actions to care for family members. When family members are involved in dietary management interventions, they will support clients (Kurnia, 2021).

Family-based education can influence dietary behavior to control the client's blood pressure (Soviarni & Rosiska, 2022). Family-based education is a promising method for treating patients with hypertension and other cardiovascular diseases (Putranto, 2021). Education to families can reduce the level of negligence, laziness, and medication, increase adherence, and change patient perceptions of treatment to be more compliant in the treatment being undertaken (Alamanda et al., 2022).

The media the researcher used was a booklet repeated for six days. Education through booklet media is more effective in increasing knowledge because it can be presented fully, stored for a long time, is easy to carry, is more attractive, and focuses more on clients.

Based on the research above, it can be concluded that family-based DASH education can reduce blood pressure in older people because providing information to families to implement the DASH diet by controlling healthy eating patterns so that they are more controlled to reduce the accumulation of plaque on blood vessel walls which results in increased blood pressure in older people. The role of the family is very important in controlling the behavior of older people related to diet and maintaining blood pressure in older people within normal limits. Family involvement is positively effective with adherence to implementing DASH and reducing blood pressure in older people.

5. Conclusion

Family-based DASH education effectively reduces blood pressure in older people. The role of the family is very important in caring for family members with hypertension. The success of older people in controlling blood pressure can be achieved by controlling their diet of older people by consuming foods rich in vegetables, fruits, side dishes, low-fat milk, and nuts, and reducing salt and flavorings in food so that the blood pressure of older people will be controlled. Family-based education is appropriate and can be applied in nursing care, where the family is responsible for the family's health and members who are sick with hypertension. Researchers suggest that families increase their role and knowledge regarding DASH. For future research, it is hoped that further research regarding family cultural background in the care of elderly hypertension.

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7. Declaration of Conflicting Interests

The authors have declared no potential conflicts of interest concerning this article's research, authorship, and/or publication.

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