Implementation of Health Education and Home Visits to Adult Patient's Hypertension

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Abstract— *Hypertension is a public health issue and a silent risk for cardiovascular disease. The goal of this study is of health education sessions and home visits to reduce blood pressure in patients and adults with uncontrolled hypertension. The study is a cluster randomized controlled trial was performed. The trial will be conducted on 40 individuals aged ≥36 to 45 years old with hypertensive (with systolic BP ≥ 140 mmHg and diastolic BP ≥90 mmHg and patients with uncontrolled blood pressure were equally and randomly allocated into 2 groups. We provide health education sessions with the syllabus of the American Heart Association with modification of booklet and a home visits. The period of intervention is 12 weeks. 2 weeks each month. The participants of the control received only usual care. SPSS 22 programs utilize to analyze the findings, using the analysis of covariance.*

Results*: The level of knowledge hypertension is 80% with Low level pre interventions and post-intervention with knowledge of 80% High level. This shows that statistically there is a significant effect of Health Education interventions through Home Visits on the level of knowledge (p-value 0.000; <0.05). The difference in the level of knowledge after the intervention with the control group was obtained (p-value 0.00; <0.05). Health Education intervention based on Home Visit to Self Efficacy (p-value 0.000; <0.05).*

Conclusion*: The results showed that health education and home visits were very effective in increasing patient knowledge about hypertension and reducing blood pressure in patients with hypertension.*

Keywords— Implementation, Health Education, Home Visits, Adult Patient's, Hypertension.

I. INTRODUCTION

World Health Organization (WHO) data for 2018 shows that around 1.13 billion people in the world have hypertension, meaning that 1 out of 3 people in the world is diagnosed with hypertension. The number of people with hypertension continues to increase every year, it is estimated that by 2025 there will be 1.5 billion people affected by hypertension, and it is estimated that every year 10.44 million people die from hypertension and its complications.

(1). Community-based health education programs can assist in improving health outcomes in patients with chronic diseases (2). Hypertension is a silent disease of the masses with an increasing prevalence and poor control (3) Empowering nurses to manage hypertension at the community level is feasible with positive good probability results for patients . The worldwide burden of hypertension contributes significant risk of heart failure, coronary artery events, stroke, renal failure, disability, and premature death. Modifiable lifestyle behaviors such as tobacco use, physical inactivity, unhealthy diet, and alcohol abuse are major risk factors contributing to the increased incidence of high blood pressure. A population-based approach to lowering blood pressure levels in the general population even at modest levels has the potential to substantially reduce morbidity and mortality and possibly delay the onset of hypertension (4).

II. MATERIALS AND METHODS

2.1 Study Design

The study used quasi-experimental design with a cluster randomized controlled trial.

2.2 Intervention Protocols

We randomly assigned 2 groups, namely the intervention group and the control group. The intervention group received door-to-door health education while the control group received regular health care. After that in session 1 the nurse made a home visit to the intervention patient to discuss previous basic knowledge, experience, obstacles, difficulties, misunderstandings, behavior, treatment, and lifestyle of people with hypertension, and create a comfortable environment between participants and nurses. In the second session, the nurse measures blood pressure and provides an intervention pretest questionnaire to assess the client's level of knowledge regarding hypertension using the Hypertension Knowledge Level Scale (HK-LS) questionnaire.

3rd Session Nurses visit homes with hypertension and provide health education about hypertension from house to house using booklets modified from the guidelines for the Hypertension Syllabus from the American Heart Association, namely the definition of hypertension, factors that cause hypertension, signs and symptoms of hypertension, complications of hypertension. Management of hypertension care, and treatment of hypertension. Nurses also discuss personal/family problems they face in controlling blood pressure, remind them of physical activity and fruit and vegetable intake, suggest visiting health care facilities if blood pressure is not within the normal range, and provide feedback to families after counseling. After that, the nurse gave a post-test knowledge questionnaire about hypertension using the Hypertension Knowledge Level Scale (HK-LS) questionnaire. The nurse measures blood pressure one week later after the counseling and the nurse measures the patient's behavior after the counseling using a self-efficacy questionnaire.

2.3 Sampling and Sample Size

The implementation of this study was with the population of the Jawa District community in RT 19 and RT 25 with the final adult population aged 36-45 years. The inclusion criteria for this study were aged 36-45 years, could speak Indonesian well, had a history of uncontrolled hypertension of 140/90 mmHg, and were currently on anti-hypertension medication, and available contact numbers such as mobile phones. The exclusion criteria were pregnant women, blind or hearing impaired people, bedridden patients, and participants diagnosed with kidney disease, cancer, heart disease, chronic obstructive pulmonary disease, and mental illness. There were 40 participants, namely 20 people in the control group and 20 people in the intervention group.

2.4 Instruments

The instrument used was a knowledge questionnaire about hypertension from the Hypertension Knowledge Level Scale (HK-LS). As well as the Behavior questionnaire from the self-efficacy questionnaire. The variable measured is the level of knowledge about hypertension using a questionnaire and assessed using an ordinal scale with a range of results (0-21) low knowledge, (22-43) moderate knowledge, and (44-66) high knowledge. Self-efficacy questionnaires were assessed using an ordinal scale with a range of (0-6) obedient behavior, (7-10) moderately obedient behavior, and (11-14) obedient behavior. Blood pressure measurement using a digital sphygmomanometer measuring instrument brand Omron with a range of 120-130/80-85 Normal and> 180/.110 Severe hypertension.

2.5 Ethical Consideration

This study was approved by Jawa District Primary Health care Pasundan and Jawa District No. 03/Kel. Jawa/011/2022 for voluntary participants, informed consent, and confidentiality of participant’s identity.

2.6 Data collection and Data analysis

The author uses primary data sources from the residents of Jawa District with predetermined criteria. Participants fill out the approval form to follow the research implementation process.

Analysis data used the Statistical Program for Social Science (SPSS) version 22 which included *Wilcoxon,* and *Mann-Whitney*. Difference Test Analysis.

III. RESULTS AND DISCUSSION

3.1 Results

Data was collected by visiting participants who had hypertension. The age of participants was 36 to 45 years old. The total of intervention participants is 20 and the control participants are 20.

The majority age 45 years of respondents 12 people (30%). Female 26 people (65%). The education of respondent is high school 22 people (55%). The majority of respondents had been diagnosed with hypertension for 1-5 years as many as 24 people (60%).

3.1.1 Age Variable

The frequency distribution of the age of the respondents in the intervention group and the group can be seen in table 1 as follows:

TABLE 1
AGE FREQUENCY DISTRIBUTION OF AGGREGATE ADULT RESPONDENTS AGE 36-45 YEARS OLD.

Characteristics	Intervention		Control		Total	
	n	%	n	%	n	%
36 Years Old	3	15%	4	20%	7	17,5%
37 Years Old	1	5%	0	0%	1	2,5%
38 Years Old	0	0%	1	5%	1	2,5%
39 Years Old	0	0%	1	5%	1	2,5%
40 years Old	3	15%	1	5%	4	10%
41 Years Old	0	0%	3	15%	3	7,5%
42 years Old	2	10%	2	10%	4	10%
43 Years Old	4	20%	0	0%	4	10%
44 Years Old	1	5%	2	10%	3	7,5%
45 years Old	6	30%	6	30%	12	30%
Total	20	100	20	100	40	100

(Source: Primary data for 2022)

The result of the frequency distribution of the age of the respondents in the intervention group and the group can be seen in table 1 with Frequency Distribution of Aggregate Adult Respondents Age 36-45 years old with 45 Years old (30%) 6 people intervention and variable control 6 people (30%). (Table 1)

3.1.2 Gender Variable

The frequency distribution of the gender of the respondents in the intervention group and the group can be seen in table 2 as follows:

TABLE 2
DISTRIBUTION OF AGGREGATE GENDER FREQUENCY OF RESPONDENTS AGGREGATE ADULTS AGE 36-45 YEARS OLD.

Characteristics	Intervention		Control		Total	
	n	%	n	%	n	%
Man	2	10%	12	60%	14	35%
Woman	18	90%	8	40%	26	65%
Total	20	100	20	100	40	100

(Source: Primary data for 2022)

The result of gender distribution of the respondents can be seen it shows that the majority of respondents are female, amounting to 26 people (65%). (Table 2)

3.1.3 Education Level Variable

The frequency distribution of respondents' education level in the intervention and control groups can be seen in table 3 as follows:

TABLE 3
FREQUENCY DISTRIBUTION OF AGGREGATE AGGREGATE EDUCATION LEVELS OF ADULT RESPONDENTS EDUCATION 36-45 YEARS OLD.

Characteristics	Intervention		Control		Total	
	n	%	n	%	n	%
Junior high school	6	30%	6	30%	12	30%
Senior High School	11	55%	11	55%	22	55%
Bachelor degree	3	15%	3	15%	6	15%
Total	20	100	20	100	40	100

(Source: Primary data for 2022)

The result of education level of distribution of respondents' education can be seen in it shows that the majority of respondents have a secondary education level, totaling 22 people (55%). The majority of respondents in this study had basic education (elementary school) as many as 10 people (44%). While the second respondent has high school education as many as 6 people (30%). (Table 3).

3.1.4 Variable Diagnosed with Hypertension

The distribution of length of time diagnosed with hypertension in the intervention and control groups can be seen in table 4 as follows:

TABLE 4
FREQUENCY DISTRIBUTION OF AGE OLD DIAGNOSED WITH HYPERTENSION AGGREGATE RESPONDENTS AGGREGATE ADULTS AGE 36-45 YEARS OLD.

Characteristics	Intervention		Control		Total	
	n	%	n	%	n	%
1-5 Years	12	60%	12	60%	24	60%
6-10 Years	7	35%	7	35%	14	35%
>11 Years	1	5%	1	5%	2	5%
Total	20	100	20	100	40	100

(Source: Primary data for 2022)

The result of variable diagnosed with hypertension distribution of length of time diagnosed with hypertension to respondents can be seen it shows that the majority of respondents have been diagnosed with hypertension for 1-5 years as many as 24 people (60%). (Table 4)

3.1.5 Level of Knowledge about Hypertension

The distribution of hypertension knowledge in the intervention and control groups can be seen in table 5 as follows:

TABLE 5
DISTRIBUTION OF EMPLOYMENT FREQUENCY OF RESPONDENTS AGGREGATE ADULTS AGED 36-45 YEARS OLD.

Characteristics	Intervention		Control		Total	
	n	%	n	%	n	%
Housewife	16	80%	7	35%	23	57,5%
Seamstress	1	5%	1	5%	2	5%
Teachers	1	5%	2	15%	3	7,5%
Private	2	10%	10	50%	12	30%
Total	20	100	20	100	40	100

(Source: Primary data for 2022)

The results of the knowledge showed that differences in the level of knowledge about hypertension of respondents before and after the Home Visit-based Health Education intervention showed that the majority of respondents had a high level of knowledge of 16 respondents (80%), but there were respondents who had a moderate level of knowledge of 5 respondents (20%). This shows that statistically there is a significant effect of Health Education interventions through Home Visits on the level of knowledge (p-value 0.000; <0.05). (Table 5)

3.1.6 Level of Blood Pressure

The distribution of blood pressure in the intervention group can be seen in table 6 as follows:

TABLE 6
DISTRIBUTION OF AGGREGATE BLOOD PRESSURE OF ADULT RESPONDENTS AGE 36-45 YEARS OLD.

Category	Blood pressure				Category	Blood pressure			
	Pre systole		Post systole			pre diastole		Post diastole	
	n	%	n	%		n	%	n	%
130	0	0%	7	35%	80	0	0%	9	45%
140	6	30%	6	30%	90	10	50%	10	50%
150	6	30%	6	30%	100	9	45%	1	5%
160	5	25%	0	0%	110	1	5%		
170	0	0%	1	5%					
180	2	10%	0	0%					
190	1	5%	0	0%					
Total	20	100	20	100	Total	20	100	20	100

(Source: Primary data for 2022)

The distribution of blood pressure in respondents showing that the majority of respondents had pre-test systolic blood pressure of 140-190 mmHg while post-test systolic blood pressure decreased to 130-150 mmHg. The pre-test diastolic blood pressure ranged from 90-110 mmHg while the post-test diastolic blood pressure was 80-90 mmHg (Table 6).

3.1.7 Level of Anthropometry Abdominal Circumference

Anthropometric distribution of abdominal circumference in the intervention and control groups can be seen in table 7 as follows:

TABLE 7
ANTHROPOMETRIC DISTRIBUTION (ABDOMINAL CIRCUMFERENCE) IN AGGREGATE ADULT RESPONDENTS AGED 36-45 YEARS OLD.

Category	Abdominal Circumference				Category	Abdominal Circumference			
	Pre intervention		Post intervention			Control pre		Control Post	
	n	%	n	%		n	%	n	%
Not obese (< 80 cm)	6	30%	7	35%	Not obese (< 80 cm)	6	30%	0	0%
obesity (>80 cm)	14	70%	13	65%	obesity (>80 cm)	14	70%	14	70%
Total	20	100	20	100	Total	20	100	20	100

(Source: Primary data for 2022)

The result of the Body Mass Index respondents showed that the majority of respondents were obese, 16 people (80%) in the intervention group and 14 people (70%) in the control group (Table 7).

3.1.8 Level of Body Mass Index

The distribution of Body Mass Index in the intervention and control groups can be seen in table 8 as follows:

TABLE 8
DISTRIBUTION OF BODY MASS INDEX IN AGGREGATE ADULT RESPONDENTS AGED 36-45 YEARS OLD.

Category	*Body Mass Index*				Category	*Body Mass Index*			
	Pre intervention		Post intervention			Control Pre		Control Post	
	n	%	n	%		n	%	n	%
Underweight (BB< 18,5 kg/m2)	0	0%	0	0%	Underweight BB< 18,5 kg/m2)	1	5%	1	5%
Normal (BB 18,5-24,9 kg/m2)	3	15%	2	10%	Normal (BB 18,5-24,9 kg/m2)	3	15%	3	15%
Excess body (BB > 25 kg/m2)	1	5%	2	10%	Excess bodies (BB > 25 kg/m2)	14	70%	14	70%
Obesity (BB > 30 kg/m2)	16	80%	16	80%	Obesity (BB > 30 kg/m2)	2	10%	2	10%
Total	20	100	20	100	Total	20	100	20	100

(Source: Primary data for 2022)

The result of distribution Body Mass Index to respondents can be seen in showing that the majority of respondents were obese, 16 people (80%) in the intervention group and 14 people (70%) in the control group. (Table 8)

3.1.9 Level of Knowledge Levels Hypertension

The distribution of Knowledge Levels about Hypertension in the intervention and control groups can be seen in table 9 as follows:

TABLE 9
DISTRIBUTION OF KNOWLEDGE LEVELS ABOUT HYPERTENSION IN AGGREGATE RESPONDENTS OF ADULTS AGE 36-45 YEARS OLD.

Characteristics	Knowledge level			
	Pre		Post	
	n	%	n	%
Rendah (0-21)	22	55%	16	40%
Sedang (22-43)	18	45%	8	20%
High Level of Knowledge (44-66)	0	0%	16	40%
Total	40	100	40	100

(Source: Primary data for 2022)

The result distribution of the knowledge level of respondents in the intervention and control groups can be seen in table 9. It shows that the majority of respondents had a low level of knowledge before the intervention, totaling 22 people (55%) and experienced an increase after the intervention, totaling 16 people (40%) had a high level of knowledge. (Table 9)

3.1.10 Level of Differences in Knowledge before and after the intervention

The distribution of Knowledge Levels about Hypertension in the intervention group before and after the action can be seen in table 10 as follows:

TABLE 10
DISTRIBUTION OF KNOWLEDGE LEVELS ABOUT HYPERTENSION BEFORE AND AFTER INTERVENTION IN AGGREGATE RESPONDENTS OF ADULTS AGE 36-45 YEARS OLD.

Characteristic	Knowledge level				Value
	Pre		Post		*p-value*
	n	%	n	%	
Low knowledge (0-21)	6	30%	0	0%	0,000
Currently (22-43)	14	70%	4	20%	
high knowledge (44-66)	0	0%	16	80%	
Total	20	100	20	100	

(Source: Primary data for 2022)

The results of differences in the level of knowledge about hypertension of respondents before and after the Home Visit-based Health Education intervention can be seen in table 10 showing that the majority of respondents have a high level of knowledge as many as 16 respondents (80%), but there are respondents who have a moderate level of knowledge as many as 4 respondents (20%) . This shows that statistically there is a significant effect of Health Education interventions through Home Visits on the level of knowledge (pvalue 0.000; <0.05). (Table 10).

IV. DISCUSSION

The existence of genetic factors in certain families will cause that family to have a risk of suffering from hypertension. This is associated with an increase in intracellular sodium levels and a lower ratio of potassium to sodium. Someone who has parents with hypertension is twice as likely to suffer from hypertension than someone who does not have a family history of hypertension. In addition, 70-80% of essential hypertension cases are found with a family history of hypertension. Based on the theory above, the researchers synthesized that there were genetic factors that led to an increased incidence of hypertension cases in adults. From the data above, it can be concluded that a very significant increase in cases of hypertension has occurred almost all over the world, especially cases of hypertension occurring in the late adult age group. The cause of the increased

incidence of hypertension cases is due to genetics. Hypertension tends to increase, especially in those aged over 40 years (5). The older a person is, the regulation of calcium metabolism becomes disrupted, resulting in large amounts of calcium circulating in the blood vessels. Blood will become denser and blood pressure increases, calcium deposits in the walls of blood vessels cause narrowing so that blood flow is disrupted and triggers an increase in blood pressure (6).

There are also large studies as well assess the relationship between measurements BMI with disease incidence associated with cardiovascular disease (hypertension), indicating that waist circumference measurement and/or waist-to-hip ratio have a better degree of accuracy in estimating the degree of obesity and the risk of cardiovascular disease. Where is abdominal obesity (central) and visceral obesity have an important role in the pathogenesis occurrence of hypertension. Research others have also shown that compared to the population in Europe, Asian populations have a tendency to gain fat abdominal viscera and insulin resistance which is higher at BMI levels that do not show fibrous tissue such as in hypertensive patients (7). Nurses performing relevant interventions are included teaching/guidance/counseling in lifestyle modification changes, medications and procedures such as timing and dosage as well as drug and physical activity interactions, and cases management. After the home visit, follow-up was done via telephone call performed every two weeks by a trained nurse. During follow-up, Trained nurses monitor previous health problems and current patient conditions, as well as modifications in them knowledge, behavior, and status (3).

Health education using the syllabus from health education from the American Hearth Association are modified by using a Hypertension buckle let accompanied by home visits and controlling blood pressure checks, Showed that health education and home visits were very effective in increasing patient knowledge about hypertension and lowering blood pressure in patients with uncontrolled hypertension in adults.

V. CONCLUSIONS

The level of knowledge hypertension is 80% with Low level pre interventions and post-intervention with knowledge of 80% High level. This shows that statistically there is a significant effect of Health Education interventions through Home Visits on the level of knowledge (p-value 0.000; <0.05). The difference in the level of knowledge after the intervention with the control group was obtained (p-value 0.00; <0.05). Health Education intervention based on Home Visit to Self Efficacy (p-value 0.000; <0.05).

VI. RECOMMENDATIONS

Based on the implementation of community nursing practice that has been carried out, there are several suggestions addressed to:

6.1 Development of nursing knowledge

Nursing science education can develop special nursing care guidelines for hypertension in adult aggregates in families and communities using integrated nursing theory. The guide is expected to involve the participation of families and communities to support changes in adult behavior, especially aggregate late adults so that the activities designed can be more comprehensive in efforts to prevent complications of hypertension.

6.2 For the Health Service

Providing a special program for controlling hypertension in late-adult aggregates aged 36-45 years and providing facilities and infrastructure for prevention and control of hypertension in late-adult aggregates.

6.3 Community Health Care Center (Puskesmas)

Providing health promotion media about hypertension with audio and visual for hypertensive patients in adult aggregates and dissemination through social media such as What Sapp and other media to special Community Health Workers (Kader) of hypertension in adult aggregates aged 36-45 years.

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