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CULINARY (Get to Know Hypertension Control Education Efforts): Education and mentoring for hypertension prevention in risk groups

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ABSTRACT

Introduction: The high prevalence of hypertension in Indonesia has a major economic impact, thus requiring improved planning and implementation of effective hypertension management.
Methods: This study aims to evaluate activities in the Community Partnership Program (CPP) or cadres consisting including briefing and educational training for the mentoring team/cadres (partners) and the practice of a healthy food menu in the form of a low-salt diet. In addition, this CPP activity also measures participants' blood pressure using a sphygmomanometer and stethoscope, and the participants' knowledge scale (pre- and post-test) about hypertension using the Indonesian version of the Hypertension Knowledge-Level Scale (HK-LS) questionnaire.
Results: The study discovered a significant correlation (ρ.033) between the use of low-salt food management skills and literacy levels about hypertension before and after health education. Pre-post measurements of diastolic blood pressure (ρ.002) and systolic blood pressure (ρ.045). Increasing their understanding of the importance of health education about healthy food according to diet for chronic diseases.
Conclusion: The community partnership program-cadres significantly enhanced participants' knowledge of food choices, health education, hypertension management, and cooking techniques, emphasizing the importance of educational interventions in improving long-term health outcomes.

Keywords: Diet; hypertension management; knowledge; practice; community partnership program.
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INTRODUCTION

The main risk factor for morbidity and mortality of coronary heart disease (CHD) worldwide is excessive blood pressure or also known as hypertension.[1] Hypertension is the leading modifiable risk factor for cardiovascular disease worldwide, including in the United States and Indonesia. It is a major cause of heart attacks, strokes, blindness, kidney disease, and coronary heart disease.[2,3] Modifiable CHD risk factors can contribute to eliminating or controlling individual factors to reduce the total incidence of CHD significantly. The metrics used to assess the importance of risk factors must be adjusted to the objectives of the study.[3] In patients with hypertension, blood pressure management with antihypertensive drugs reduces the risk of coronary heart disease and all-cause mortality.[4,5] The high prevalence of hypertension in Indonesia has a significant economic impact, thus requiring increased awareness and compliance with treatment in good hypertension care management.[6]

Prevention of this disease can be done early and is very helpful in reducing the incidence. Two factors cause someone to be diagnosed with this disease, namely; (1) Factors that cannot be changed (gender, age, family history, history of chronic kidney failure, ethnicity/race) and (2) Factors that can be controlled/modified (smoking habits and exposure to cigarette smoke, lack of activity, obesity, high cholesterol, and unhealthy diet patterns (low potassium, high salt, and alcohol consumption habits).[7]

Other related studies report that phytochemical compounds from spices and medicinal plants, including ginger, turmeric, cardamom, warak legetan, and guava lambo, have been shown to have health benefits such as alternative medicine for high blood pressure, cancer, diabetes, flu, cough, and sore throat.[8] Another similar study examining the effects of bay leaves, when consumed daily for 30 days, has been shown to reduce risk factors for diabetes and cardiovascular disease, thus potentially beneficial for people with type 2 diabetes,[9] and a related study conducted in Indonesia found that giving boiled bay leaves resulted in an average decrease in blood pressure from 149.87 mmHg/87.87 mmHg to 143.33 mmHg/81.33 mmHg.[10]

Indonesia has an abundant natural resource base of botanicals and spices that have the potential to help maintain

and restore blood pressure. Meanwhile, socialization of the use of spices and local food ingredients that can be used in a healthy diet menu in an effort to prevent heart disease and hypertension is still rarely implemented sustainably. Similar health issues are currently experienced by community partners in two sub-districts, Perkamil and Ranomuut, within the Ranomuut Health Center's working area. These include limited health literacy among cadres, a lack of accessible information, and increased exposure to modern lifestyles and unhealthy diets. Such challenges particularly affect high-risk groups, including the younger generation. Community assistance and empowerment cadres have not been maximally encouraged by officers, and there is minimal support from various related parties (health service agencies, policy makers, related *stakeholders*) in implementing sustainable health education programs. Several related studies have reported that education, support, empowerment, or assistance provided by family, *care givers* , or health workers have a significant impact on knowledge[11,12] and habits of hypertension sufferers in reducing their daily salt intake.[13,14]

Therefore, one of the efforts that can be made is through mentoring and socialization efforts in the form of health education by involving cadres' community activeness in a sustainable manner through the use of a combination method (digital technology and conventional) on the use of local food ingredients in the form of spices as a complement in processing their daily food menus that are healthier and more nutritious. This effort is called "CULINARY" as a complementary and accompanying solution for partner situations and problems. Activities in the Community Partnership Program (CPP) "CULINARY" consist of direction and educational training for the mentoring team /cadre (CULINARY-Mitra). The purpose of this activity is to increase public literacy/understanding of *Posyandu* cadres about preventing hypertension through health education and demonstrations of the use of spices (spices) in processing a healthy diet menu for heart disease-hypertension.

It can be concluded that several local food sources that are widely found around us and are quite economical have proven to be useful in preventing various diseases, such as heart and metabolic diseases. Thus, it is very important to carry out ongoing health education, assistance, and early detection in primary prevention and disease control efforts and to become agents of change in socializing, implementing, and increasing the independence of implementing a sustainable healthy lifestyle.

METHODS

Materials and design

This community service activity is carried out through the delivery of health information or education and demonstration of the use of ingredients/ spices in the processing of daily food menus, especially for those with vulnerable or at-risk conditions. In addition, this CPP activity used cross-sectional design for measures the hypertension knowledge before and after, it was also measures the blood pressure of participants using a *ABN Palm Aneroid sphygmomanometer* and *ABN Majestic stethoscope* as well as the participant's knowledge scale (*pre and post-test*) on hypertension using a questionnaire *Hypertension Knowledge-Level Scale* (HK-LS) Indonesian version.[15] This questionnaire measured six sub-dimensions namely, Definition for items 1 and 2); Medical care in items 7, 8, and 9; Adherence to medication for Items 3, 4, 5, and 12; then for items 10, 11, 13, 16, and 17 related to lifestyle; while items 14 and 15 related to Diet; and Problems with disease complications in Items 19, 20, 21, and 22. Each sentence was measured using a Likert-style scale, where two options were available: "true" and "false/don't know". When a person answers each question accurately, they will receive a maximum score of 22.[15,16]

Sampling, analysis, and procedural CPP activity

The pre-test was conducted before the first activity (I) was implemented, namely health education on hypertension, then the post-test was conducted in the second activity (II) in the evaluation session. The study used total sampling (n=29) from all participants actively managing chronic disease programs at the healthcare centre. This study used IBM SPSS Statistics version 20.0 to analyze the data. Demographic data used means and proportions to characterize respondent characteristics, independent t-test and Pearson correlation coefficient (r) statistics were used to compare participant knowledge pre and post CPP activity, and their blood pressure.

Some of the facilities, tools and materials used in this CPP activity include

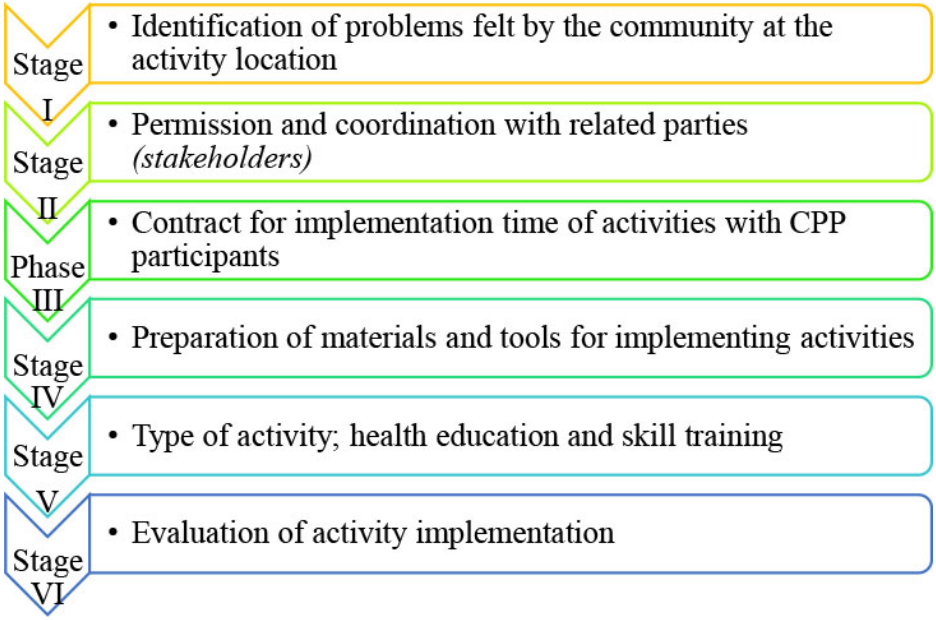

Figure 1. Flow of implementation of CPP activities.

(Figure 1): 1) Facilities (LCD projector, presentation materials, adequate and comfortable room, chairs and tables, loudspeakers, screen/monitor); 2) Tools and materials (presentation media, spice ingredients/samples, portable stove and gas, sea fish for low-salt menu demonstrations, and several samples of ready-to-eat products or preparations that contain high salt that should be avoided). The flow of activity implementation is illustrated as follows:

Ethical consideration

Research ethics refer to the world medical association declaration of Helsinki. The ethical aspects of epidemiological research by the research and development agency (*Balitbang*) of the Ministry of Health. Consent after explanation (informed consent); maximizing benefits; health services to the community being studied; minimizing harm; respect for local culture and customs; and confidentially (anonymity). This study was conducted with ethical permission from the Republic of Indonesia's Ministry of Health. KEPK-KANDOU/V/103/EC/2024.

RESULTS

This community service activity can be implemented according to the previously prepared activity plan. Here is a brief description of the results of this CPP activity, as follows:

Results of implementing CPP activities

a. Stage 1. The community service team identifies problems felt by the community at the activity location and creates a timeline for implementing the activity.
b. Stage 2. The team coordinates with the health center and local government to grant permission to carry out CPP activities.
c. Stage 3. The CPP activity team carries out time contracts with activity participants (cadres and risk groups) and identifies participants as coming from pre-elderly (elderly) and elderly.
d. Stage 4. The CPP team works together with cadres to prepare tools and materials for implementing health education activities and skills training in processing low-salt food menus by being creative in replacing excess salt with natural ingredients/spices in the daily processed food menu.
e. Stage 5. Implementation of activities

Meeting I on June 7, 2024 (figure 2), which consists of Figure (2a), Health education (presentation of health information where participants get material on hypertension management and complementary therapies that can be done in the community/society). Then, continued with a discussion, and question and answer session. In addition, it was also interspersed with FGDs telling (sharing sessions) the experiences of participants in the activity in treating chronic diseases suffered, such as high blood pressure, high blood sugar, habits or eating patterns, and daily activities carried out so far. Blood pressure measurements were taken as well as participant knowledge (pre), Figure 2b and 2c explain that the activities carried out are hypertension exercises and diabetic foot exercises. Figure (2d), in the last session of meeting 1, was carried out documentation.

(a) (b) (c) (d)

Figure 2. Day I activities as of June 7, 2024, include health education, hypertension, and diabetic foot exercises.

(a) (b) (c)

Figure 3. Meeting II on June 28, 2024, demonstration of skills in preparing a low-salt diet menu, processing boiled food ingredients, and evaluating the activity process.

Meeting II: as of June 28, 2024 (figure 3). figure (a) and (b) explain that the training participants' skills in selecting and utilizing several natural ingredients/spices that can be used in processing food so that the food served and consumed still tastes delicious even though the use of flavor enhancers such as salt is reduced (1 teaspoon/day or 4-6 g/day), without Monosodium Glutamate (MSG) and blood pressure measurements and participant knowledge (post) about hypertension. Demonstration of skills in processing low-salt foods and boiled/steamed food ingredients. Figure (c) for documentation activities.

Informed consent was also given to all participants for their willingness and the process of documenting and publishing images or photos. Participants can decide at any time if they no longer want to be involved until the end of the activity.

f. Stage 6. Evaluation
Evaluation of the implementation of the activity: participants were very enthusiastic in participating in the two activities that had been implemented. This was proven by the activeness of asking questions and sharing experiences during the discussion and demonstration sessions of preparing a low-salt menu using alternative ingredients/spices that can add flavor to food. Then, a post-test measurement was carried out using the HK-LS instrument.

Demographic characteristics of participants and results of HK-LS pre- and post-test measurements

Table 1 shows that participants had an average age of 49.28 years with a mean difference of systolic blood pressure pre-post test of 14.76 mmHg and diastolic

Table 1. Demographic characteristics of participants

Variable	$\bar{X}$	Min-Max	P-Value HT literacy*	
			pre	post
Age	49.28	30-71	.322**	.254**
Systolic pressure				
Pre	139.48	100-171	.596**	
Post	124.72	108-141		.460**
Diastolic pressure				
Pre	89.38	60-102	.960**	
Post	78.31	68-90		.641**
HT literacy score				
Pre	38.55	22-54		
Post	54.90	45-64		
	f	(%)		
Gender			.364	.753
Male	16	55.2		
Female	13	44.8		
Education			.858	.776
Elementary education	9	31.0		
Middle education	13	44.8		
High education	7	24.1		
Employment status			.443	.454
Employed	16	55.2		
Unemployed	13	44.8		
Marital status			.327	.631
Married	18	62.1		
Not Married	11	37.9		
Regularly control blood pressure				
Pre:			.535	
Yes	13	44.8		
No	16	55.2		
Post:				.554
Yes	25	86.2		
No	4	13.8		
Smoking history				
Pre:			.486	
Yes	21	72.4		
No	8	27.6		
Post:				.160
Yes	6	20.7		
No	23	79.3		
History of alcohol consumption				
Pre:			.893	
Yes	15	51.7		
No	14	48.3		
Post:				.569
Yes	3	10.3		
No	26	89.7		
History of accompanying/previous diseases				
Hypertension	18	62.1		
Diabetes Mellitus	11	37.9		

Variable	$\bar{X}$	Min-Max	P-Value HT literacy*	
			pre	post
Blood pressure				
Pre:			.466	
Systolic pressure				
Normal	7	24.1		
High/increased	22	75.9		
Diastolic pressure			.218	
Normal	10	34.5		
High/increase	19	65.5		
Post:				.113
Systolic pressure				
Normal	23	79.3		
High/increased	6	20.7		
Diastolic pressure				.164
Normal	27	93.1		
High/increased	2	6.9		

Note: $\bar{x}$ = mean value; ***f*** = frequency; *p-value* = significance value; *$p < .05$, independent t-test; **r, pearson correlation

Table 2. Pre and post-test literacy on hypertension, systolic BP and diastolic BP

Variable		*f*	$\bar{x} \mid \sigma$	*p*	*r*
HT literacy score	**Measurement group**			.033 *	.396
	Pre-test				
	Post test	29	38.5±8.33		
		29	54.9±4.53		
Blood pressure	**Systolic BP**			.045	.376
	Pre	29	139.48±16.31		
	Post	29	124.72±7.70		
	Diastolic BP			.002	.552
	Pre	29	89.38±9.53		
	Post	29	78.31±5.25		

Note: $\bar{x}$ = mean value; ***f*** = frequency; *p-value* = significance value; ***σ*** = standard deviation; *$p < .05$; *r*, pearson correlation

11.7 mmHg, and 16.35 for the literacy score about hypertension. Participants were mostly male, 16 (55.2%) people, middle school education history, 13 (44.8%) people, and more who worked 16 (55.2%) people, married status 18 (62.1%) participants. Mean difference for 'yes' answer of routinely checking blood pressure between pre-post test increased 12 participants, having a history of smoking decreased 15 people, and not consuming alcohol also 12 people. Most of the people with a history of hypertension were 18 (62.1%). Then all of the characteristics of participants that had no significant relationship with the literacy score regarding hypertension.

Table 2 shows a significant relationship (*p*.003) between literacy scores about hypertension before and after health education, and the practice of low-salt food management skills. Measurement of pre-post test of systolic BP (*p*.045); and diastolic BP (*p*.002).

DISCUSSION

Health education can add new insights and experiences for its participants. From this CPP activity, it was found that there was a significant influence on participants' knowledge and experience related to hypertension. Participants also gain new experiences in choosing and processing healthy, good, and recommended food menus for people with chronic diseases (such as hypertension and diabetes mellitus). This study shows a significant relationship with blood pressure since people with hypertension may have been educated. A related review study found that individual and group educational interventions, including telephone calls, reminders, and reading materials, significantly influenced adherence to lifestyle changes and blood pressure management in hypertensive patients. The review study also recommended that health practitioners should incorporate teaching strategies into public health promotion.[17]

The other related studies on dietary patterns or food choices found that improving dietary patterns is recommended as the main or additional therapy for hypertension, and overcoming barriers can increase its efficacy and application in clinical practice.[18] Research conducted in Indonesia proved that health education significantly increased knowledge and compliance with blood pressure in hypertensive patients over 6 months.[19] In line with the statement from the World Health Organization (WHO), it states that reducing calorie intake, increasing physical activity, and processing healthy foods such as reducing saturated fat and salt content, as well as salt levels in processed foods (ready to eat) can significantly lower blood pressure, reduce morbidity, mortality, and the risk of hypertension.[20]

Research conducted in India reported

that there was limited information obtained among hypertensive patients about normal blood pressure, symptoms, and consequences. Those who were active and sought information had good attitudes and practiced it.[21] Other findings showed that combining moderate-intensity strength training with a nutrition program was as effective in lowering blood pressure levels as strength training and a nutrition program alone.[22] Other similar studies suggested that education and incentives for lifestyle changes, including better diet, increased vegetable intake, and community-based sports facilities, should be included in consultation sessions to improve patient outcomes.[23] Supported by previous studies that found that low-salt diet behavior also increased knowledge of elements that increased adherence to a low-salt diet, lowered systolic blood pressure, and improved blood pressure management status.[24,25] Health education activities, physical activity training, and nutritional program management can help participants in hypertension management, such as increasing knowledge and skills in caring for patients with chronic diseases (such as hypertension and diabetes).

LIMITATIONS AND RECOMMENDATIONS

This study involved relatively small participants. However, the study analysed the influence of the characteristics of the participant on their literacy of hypertension and blood pressure. Future studies should involve more participants, follow-up, and perhaps modify the education method.

CONCLUSION

The community partnership program activities successfully increased participants' knowledge and skills related to hypertension management and healthy cooking practices, showing significant improvements in their understanding of food choices and health education. This initiative underscores the importance of educational interventions in promoting better health outcomes for individuals with chronic conditions.

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CONFLICT OF INTEREST

The authors declare there is no conflict of interest in this study.

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AUTHOR CONTRIBUTION

Main idea, compiled the manuscript, method, and conducted the community empowerment = SU

The health education team compiled the manuscript = NSL and MN.

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