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Interactive Training and Education Improves Basic Hypertension Knowledge of Woman Cadres in Surabaya

Andrianto Andrianto*, Meity Ardiana, Muhammad Aditya, Sondang Jasmine Sitorus, Dita Aulia Rachmi, Imanita Septianda, Makhyan Jibril Al-Farabi

Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Airlangga, Surabaya, Indonesia

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***Correspondence:** Andrianto Andrianto, Department of Cardiology and Vascular Medicine, Faculty of Medicine, Universitas Airlangga, Surabaya, East Java, Indonesia. E-mail: andrianto@fk.unair.ac.id
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Abstract

BACKGROUND: Hypertension is the major risk factor for cardiovascular disease, a leading cause of premature death and disability. Interactive education and training are potentially used to improve hypertension knowledge.

AIM: This study aimed to identify the impact of training and education programs toward knowledge in hypertension for women cadres.

METHODS: This quasi-experimental study was conducted in Surabaya, Indonesia, involving 100 women cadre. The data were collected through interviews, pre- and post-training using a validated researcher-made questionnaire of demographic characteristics, and knowledge tests of hypertension. Data were analyzed using SPSS 21.

RESULTS: Knowledge of cadre was significantly increased by 50% after the training and education program ($p < 0.001$). The median score of the pre-test and post-test was 40.00 (30.00–50.00) and 60.00 (50.00–70.00), respectively. The level of education found to have a negative correlation with the post-test score ($p = 0.008$). There was no difference in knowledge increment after training among age groups ($p = 0.261$), marital status ($p = 0.849$), or occupations type ($p = 0.827$).

CONCLUSION: Training and education programs significantly improve the hypertension knowledge of woman cadre. This method can be a preferable early public health intervention to tackle hypertension.

Introduction

Hypertension is one of the most common worldwide diseases affecting humans which act as a major risk factor for myocardial infarction, stroke, vascular disease, and chronic kidney disease [1]. Hypertension has become a global burden for its associated morbidity, mortality, and cost to society. Thus, prevention and management of hypertension are major public health challenges [2], [3], [4]. The global burden of hypertension is estimated to rise from 0.9 billion in 2000 to 1.6 billion in 2025 [5]. In 2016, 17.9 million deaths globally are due to cardiovascular disease with hypertension as the leading risk factor [6]. In Indonesia, ischemic heart disease and cerebrovascular disease are the leading causes of disability-adjusted life years lost in 2016 [7].

The survey from the Indonesian Health Ministry in 2018 of non-communicable disease revealed that 8.8% of an adult age 18 years old and above had hypertension. About 32.3% of the population were not taking medicine routinely and 13.3% not taking any medicine at all. The two most common reasons for this improper behavior are asymptomatic patient with hypertension usually perceive themselves as healthy and not routinely going to health-care facilities [8]. These facts showed that sufficient hypertension education is important to ensure optimum hypertension control in society. This strategy is consistent with the government policy which prioritizes health promotion and community development a strategic plan of the Indonesian Health Ministry [9].

Interactive education and workshops are considered as one of the most effective strategies in community-based health education programs in improving knowledge [10]. However, to achieve behavioral change, this approach should be delivered specifically to the correct segment. Conventionally, women as a mother and wife spending most of their time at home to fulfill the needs of their family [11]. In Indonesian culture, women have a central role in the family. They take responsibility for arranging the daily menu, cooking for the family, having an awareness of sick family members, and even being as decision-maker whether it needs to seek medical help [12]. Through their influence, women will be able to influence the family diet and behavior. In addition, women cadre

is socially connected with various community groups, including the elderly and their neighborhoods who are susceptible to and suffer from hypertension [12]. Women will able to recognize those who need more attention and can act accordingly [12]. Hence, women cadre can be a great candidate to become the front-line health agent to the community and receive proper education about hypertension.

Data form the Health Office of Surabaya Government stated that Mojo district had the third-highest prevalence of hypertension among 68 other districts in Surabaya in 2018. Unfortunately, only 6.43% of the Mojo population has proper hypertension treatment [13]. Based on this finding, we aim to increase community awareness of hypertension, especially in Mojo district, Surabaya, through training and education in women cadre. In this research, we evaluate the impact of interactive education and workshops on the hypertension knowledge of women cadre.

Materials and Methods

Design

This one-group pretest-posttest quasi-experimental was conducted in the Mojo district, Surabaya, Indonesia. One hundred women cadres (a neighborhood-based non-physician community health care worker) were invited using quota sampling from 13 neighborhood in the Mojo district. The inclusion criteria were female which has been worked as health-care cadre in the Mojo region. Exclusion criteria were cadres who were not willing to participate in the study and cadres who did not attend the whole program.

The data were collected using a validated researcher-made questionnaire of demographic characteristics and knowledge tests of hypertension, through interviews pre- and post-training and education programs. Data collection included demographic characteristics. Age was categorized into three groups (29–45 years old; 46–59 years old; and >60 years old). Marital status was categorized into three groups (unmarried; married; and widow). For education level, junior high school or less was labeled as primary education level, while senior high school or higher was labeled as secondary education level. For occupation, the cadre who did not work and only took care of the house was labeled as a housewife, while occupation other than housewife was labeled as non-housewife.

The hypertension knowledge test consisted of 20 questions including definition, etiology, classification, symptoms, risk factors, complications, prevention, treatment, and diet in hypertension. The validity of the hypertension knowledge test was analyzed using factor analysis with KMO and Bartlett's test ($p = 0.003$), and the reliability was analyzed using Kuder–Richardson Formula 20 ($rKR20 = 0.72$). The baseline knowledge of hypertension (pre-test) was collected through interviews. The post-test was collected after the third session.

Ethical clearance

The research was conducted in accordance with the Helsinki Declaration of 1975 as revised in 2000. All participating patients have signed written informed consent. The study protocol has been approved by the local ethics committee. Data that show patient personal information were omitted.

The educational and training program

Women cadre was taught and trained by qualified cardiology residents. Cadres took educational and training programs for 3 h session once a month, for 3 months. The first session was about the basic knowledge of hypertension including definition (according to JNC 8), signs and symptoms, risk factors, complications, management, prevention, and follow-up intervals. The second session focused more on the implementation of the DASH diet. The DASH diet educational material in this program focused on the application of daily salt restrictions using a 5 g measuring spoon and the food ingredients selection for daily cooking for hypertension. At the end of the session, a cooking demonstration of two types of food was carried out using predominantly vegetable and egg ingredients and salt of fewer than 5 g a day. The third session highlighted the exercises for hypertension. The exercise education material in this program focused on the type of exercise, duration, and frequency of exercise for hypertension. A healthy heart exercise demonstration consisted of a warm-up, core, and cooling movements. We choose those topics based on the latest recommendation from Centers for Disease Control and Prevention [14].

In each session, cadres were asked to review the previous materials and trained on how to measure blood pressure using a sphygmomanometer. Blood pressure measurement training was done in groups. Cadres were divided into 10 groups; each group was accompanied by three trainers. Blood pressure was measured using a sphygmomanometer and a stethoscope. The procedure for measuring blood pressure was as follows: Subject in a sitting position, arm at heart level, and set the cuff on the upper arm with lower edge cuff at 1 inch above the antecubital fossa. Place the diaphragm stethoscope just below the lower edge of the cuff. Check the radial pulse, expand the cuff until the radial pulse is not palpable, look at the pressure on the sphygmomanometer then add 30 mmHg, listen using the stethoscope while gently releasing air from the cuff. The first knock sound (Korotkoff) is the subject's

systolic pressure. When the knocking sound ends, that is the subject's diastolic pressure.

Statistical analysis

Data were analyzed using SPSS statistical software for Windows, version 21. Data analysis was performed by comparing the pre-test and post-test knowledge score, and their relationship with sociodemographic characteristics. A paired t-test was used to analyze the mean difference between pre- and post-test knowledge scores, while the Wilcoxon test was used as alternatives. The analysis of mean differences between sociodemographic groups used independent t-test, while the Mann–Whitney U-test or Kruskal–Wallis test was used as an alternative if the data were not normally distributed. Continuous data were presented as mean and standard deviation, or median and interquartile range (IQR) if the data were not normally distributed. Categorical data were presented as proportion. The significance level used was 0.05 and a confidence interval 95%.

Results

A total of 97 women cadre, of the Mojo district, Surabaya, attended the hypertension interactive education and training, three cadres refused to participate. Their mean age was 49.09 ± 8.48 years. Most of them are married (81 of 94, 86.17%); finished senior high school education (62 of 94, 65.96%); and as a housewife (80 of 94, 85.11%). The demographic characteristic of the women cadre is shown in Table 1.

Table 1: Demographic characteristics of the women cadre (n=94)

Variable	n
Age, mean±SD	49.09±8.48
Marital status, n (%)	
Unmarried	2 (2.13)
Married	81 (86.17)
Widow	11 (11.70)
Education level, n (%)	
Not completed primary school	1 (1.06)
Primary school	1 (1.06)
Junior high school	21 (22.34)
Senior high school	62 (65.96)
Associate degree (D3)	3 (3.19)
Undergraduate	6 (6.38)
Occupation, n (%)	
Civil servants	1 (1.06)
Employee of private sector	1 (1.06)
Entrepreneur	5 (5.32)
Retired	3 (3.19)
Housewife	80 (85.11)
Other	4 (4.26)

Post-test scores (median 60.00; IQR 50.00–70.00) knowledge of hypertension in the cadres increased significantly compared to pre-test scores (median 40.00; IQR 30.00–50.00), as shown in Table 2. Post-test results are still not optimal on several questions, as shown in Table 3. The suboptimal understanding of hypertension included asymptomatic hypertension, unmodifiable risk factors of hypertension, untrue statements about the risk factors of hypertension, iatrogenic causes of hypertension, hypertension therapy, and what should be done if one suffers from hypertension.

Table 2: Pre- and post-test scores of hypertension knowledge of women cadre (n=94)

Hypertension knowledge score	Mean±SD	Median (IQR)	Mean difference	p*
Pre-test score	42.82 ± 15.25	40.00 (30.00–50.00)	17.55 ± 14.00	<0.001
Post-test score	60.37 ± 15.14	60.00 (50.00–70.00)		

*Wilcoxon signed-rank test.

Table 4 shows the association between sociodemographic factors in women cadre and the score of hypertension knowledge post-interactive education and training program (post-test score). There was a significant difference in the post-test scores between the primary education level and secondary education level.

Discussion

From this study, training and education programs were shown to significantly increase the cadre's knowledge. The data showed that the pre-test median score was 40.00, while the post-test was 60.00. Statistical analysis showed significant increase in the level of knowledge by 50%. This median post-test score of basic hypertension knowledge was 60.00 which can be categorized as a moderate level of knowledge [15]. This result was consistent with the previous study that evaluates the effect of interactive education and workshop improved the post-test score between 3% and 40% [16], [17], [18], [19], [20]. Interestingly, this study showed higher post-intervention knowledge score than other previous studies.

In the post-test score evaluation, the question about asymptomatic hypertension had the fewest number of participants with the right answer (9.57%). Interestingly, most of the women cadre could identify symptoms which are not related to hypertension (95.88%). This contradictive finding suggests an uncomprehensive understanding of the signs and symptoms of hypertension among women cadres. In addition, the influence of hypertension myths could further distort their understanding. One of the popular myth said that renal disease can be occurred due to prolonged use of the hypertensive drug. Before training, 74.47% of participants believed that long-term consumption of antihypertensive agent can cause kidney disease. After the training, the percentage was greatly reduced to 27.66% (Table 3, item number 19).

Fifteen out of 20 questions were answered incorrectly by more than 50% of participants before training. However, after training, it remained only seven

Table 3: Pre- and post-test correct response comparison of hypertension knowledge

Item number	Question	Number of respondents with the correct answer (%)		p*
		Pre-test (n=94)	Post-test (n=94)	
1	Definition of hypertension according to the latest guideline	34 (36.17)	81 (86.17)	<0.001
2	Asymptomatic hypertension	9 (9.57)	22 (23.40)	0.005
3	Etiology of primer hypertension	49 (52.13)	71 (75.53)	0.001
4	Hypertension classification	59 (62.77)	74 (78.72)	0.007
5	Definition of secondary hypertension	59 (62.77)	76 (80.85)	0.002
6	Unmodifiable risk factor of hypertension	21 (22.34)	38 (40.43)	0.002
7	Modifiable risk factor of hypertension	28 (29.79)	54 (57.45)	<0.001
8	Etiology of hypertension	24 (25.53)	42 (44.68)	0.005
9	Unrelated symptoms of hypertension	90 (95.74)	92 (97.87)	0.157
10	Iatrogenic cause of hypertension	27 (28.72)	33 (35.11)	0.273
11	Hypertension complication	72 (76.60)	92 (97.87)	<0.001
12	Primary prevention of hypertension	31 (32.98)	52 (55.32)	0.001
13	Secondary prevention of hypertension	27 (28.72)	21 (22.34)	0.289
14	Frequency of visiting medical health care for routine follow-up for people who suffer from hypertension	30 (31.91)	52 (55.32)	<0.001
15	Hypertension therapy	13 (13.83)	34 (36.17)	<0.001
16	Non-pharmacology therapy of hypertension	40 (42.55)	54 (57.45)	0.023
17	Diet plan recommendation for hypertension	84 (89.36)	71 (75.53)	<0.001
18	Management of hypertension	39 (41.49)	49 (52.13)	0.096
19	Myth about hypertension	24 (25.53)	68 (72.34)	<0.001
20	The right way to measure blood pressure	45 (47.87)	59 (62.77)	0.011

*Wilcoxon signed-rank test.

questions that incorrectly answered. Topics that remain poorly understood were asymptomatic hypertension, the unmodifiable risk factor of hypertension, etiology of hypertension, iatrogenic cause of hypertension, secondary prevention of hypertension, hypertension therapy, and management of hypertension. Thus, we need to try different types of approaches and a more intense learning method to improve their understanding of these particular topics.

Table 4: Post-test score difference based on sociodemographic characteristics

Variable	Frequency	Mean±SD	Median (IQR)	p
Age				
29–45 years old	29	57.59 ± 13.27	55.00 (50.00–67.50)	0.261*
46–59 years old	54	60.93 ± 16.54	60.00 (55.00–71.25)	
>60 years old	11	65.00 ± 11.83	65.00 (55.00–75.00)	
Marital status				
Unmarried	2	57.70 ± 3.54	57.50 (55.00–60.00)	0.849**
Married	81	60.68 ± 15.14	60.00 (55.00–70.00)	
Widow	11	58.64 ± 17.04	65.00 (45.00–72.50)	
Level of education a				
Primary education level	23	67.61 ± 12.96	70.00 (60.00–75.00)	0.008**
Secondary education level	71	58.03 ± 15.13	60.00 (50.00–70.00)	
Occupation				
Housewife	80	60.06 ± 15.74	60.00 (50.00–70.00)	0.827*
Non-housewife	14	62.14 ± 11.39	60.00 (55.00–71.25)	

[a]Junior high school or less was labeled as primary education level; senior high school or higher was labeled as secondary education level. *Kruskal–Wallis test. **Independent t-test.

From sociodemographic data, we found that there was no difference in knowledge score after training between age groups (p = 0.261). The post-test median scores of cadre age 29–45 years old, 46–59 years old, and >60 years old were 55.00 (50.00–67.50), 60.00 (55.00–71.25), and 65.00 (55.00–75.00), respectively. However, in this study, the level of education correlated with the post-test score paradoxically (p = 0.008). Cadres with primary education level had a mean score of 67.61 ± 12.96, while secondary education level was 58.03 ± 15.13. This finding might be due to the willingness to learn as an individual was more related to motivation than age or level of education factors [21], [22].

The demographic association with the knowledge level of hypertension in this study was similar to the previous study in Jakarta. A study by Fatmah showed no association in knowledge after training in different age groups. However, there was a higher increment of a score in primary than in secondary education level [19]. In contrary, these findings were different in a study by Pantip. This study found that the level of education has a positive correlation with the increment of knowledge after training, while age was negatively correlated [18]. Furthermore, in this study, we found that occupational status did not correlate with knowledge improvement (Table 4).

There were some limitations in our study which should be taken into account in the interpretation. The limited sample size might affect the lack of significance in the correlation between demographic factors and knowledge level. Since the data were collected from a single location, the result may not be able to be generalized to other populations. This study also only evaluates the effect of training and education on the knowledge after interactive education and training, rather than its real impact on hypertension in the community. Therefore, future studies should be done using more samples from various locations to evaluate the benefit of hypertension knowledge improvement in the women cadre toward public awareness of hypertension and willingness to control their lifestyle and compliance with hypertension treatment [23].

Conclusion

Interactive education and training can significantly improve the basic knowledge of hypertension for women cadre.

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