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THE EFFECT OF ELECTRONIC *TINDAK LANJUT TENSIKU* (e-TITENKU) MODEL TO KNOWLEDGE OF CORONARY HEART DISEASE PREVENTION

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ABSTRACT

Cardiovascular disease is still a major global health problem. Hypertension is the most risk factor for the incidence of cardiovascular disease and increases the risk of death. Primary and secondary prevention efforts are needed by increasing patient awareness of identifying risk factors and carrying out preventive management. "Electronic-Tindak lanjut Tensiku", known as e-TITENKU, is a web and smartphone-based application designed to manage coronary heart disease prevention in patients with hypertension. The purpose of this study was to determine the effect of the e-TITENKU intervention model on knowledge of coronary heart disease prevention. This research design is true experiment pre and post control group design. The sample size is 120 respondents with primary hypertension in Banyumas Regency, Indonesia. The sampling technique used is simple random sampling. The inclusion criteria included respondents with primary hypertension, adults aged 40-65 years, cooperative and willing to be respondents, while the exclusion criteria were respondents experienced complications of other diseases due to hypertension. This research has passed the ethical test of the Ethics Committee of FIKES Jenderal Soedirman University No: 771/EC/KEPK/IV/2021. The results of the study were that the age of the respondents in the intervention group was 64.91 years old, the systolic blood pressure was 169 mmHg and the diastolic blood pressure was 97 mmHg. The characteristics of the respondents in the control group were the mean age of 65.98, the mean systolic blood pressure of 172 mmHg and the diastolic of 93 mmHg. The mean score of pre-intervention knowledge in the treatment group was 3.65, while in the control group was 3.43. While the mean score of knowledge after the intervention was 7.98 and the score of knowledge on the second measurement in the control group was 3.53. The e-TITENKU intervention model was able to increase the knowledge score of coronary heart disease prevention. This model can be used by nurses in hospital and community services.

Keywords: blood pressure, coronary heart disease, intervention model, knowledge, smartphone

BACKGROUND

Cardiovascular disease is still a major global health problem. Hypertension is the most risk factor for the incidence of heart disease and increases the risk of death from cardiovascular disease (James et al., 2014; Shrout et al., 2017; Utami & Azam, 2019). The incidence of hypertension in Indonesia is quite high. The results of the 2018 Basic Health Research (Riskesdas) show that most cases of hypertension in the community have not been diagnosed. The prevalence of hypertension at the age of 18 years and over in Indonesia is 34.11%, which routinely measures blood pressure is only 12%, the incidence of hypertension will increase with increasing age (Kemenkes RI, 2018).

Hypertension is a cardiovascular disorder characterized by systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg (An et al., 2021; Shrout et al., 2017). Patients with hypertension often do not experience symptoms, they will feel symptoms if they have experienced complications in other organ systems, for example to the heart and cause coronary heart disease, which can be life threatening. The majority of hypertensive patients find that they have hypertension accidentally, that is, when they experience severe complaints and complications and blood pressure checks, it turns out that their blood pressure is very high, this incident causes a more complex management (Awaludin et al., 2020).

Seeing this phenomenon, high blood pressure experienced by sufferers needs to be carried out in primary and secondary prevention efforts by increasing patient awareness of identifying risk factors and carrying out preventive management of coronary heart disease events (Febriani & Fitri, 2019; Indrawati, 2015). Efforts can be made in the form of discontinuing the known blood pressure. The first effort is through increasing knowledge and making immediate efforts to follow up on high blood pressure experienced in accordance with high blood pressure management guidelines, such as quitting smoking, low-salt diet, exercising regularly, reducing psychological stress, regularly taking antihypertensive drugs given, and monitor blood pressure regularly (Mullie & Clarys, 2011; Nuraeni et al., 2016; Su et al., 2021). Increased follow-up can be pursued through a medium that is currently easily accessible, namely Mobile Health (m-Health).

m-Health is a rapidly evolving health information delivery methodology with high potential in health care and health outcomes. In particular, m-Health has the potential to enhance primary and secondary disease prevention and deliver personalized, adaptive and sustainable interventions, improve patient communication, access to treatment services, healthcare, and patient engagement and provide real-time medication monitoring and adherence support. The use of m-Health can use applications on smartphones (Hamilton et al., 2018; Neubeck et al., 2015). Nowadays almost every family already has a smartphone device.

E-TITENKU is a web-based and smartphone-based application designed to manage coronary heart disease prevention in patients with hypertension. This application contains the interpretation of the results of independent blood pressure checks and intervention guidelines that must be carried out by people with hypertension after knowing their blood pressure. The guidelines in the smartphone application can provide information related to efforts to prevent heart disease through controlling blood pressure that will be carried out by people with hypertension. The purpose of this study was to determine the effect of the E-TITENKU model on knowledge of coronary heart disease prevention.

METHODS

This study used true experimental pre and post control group design. The sample size was 120 respondents, 60 intervention groups and 60 control groups. The sampling technique used is simple random sampling. The inclusion criteria included respondents with primary hypertension, adults aged 40-65 years, cooperative and willing to become respondents, while the exclusion criteria were respondents experienced complications of other diseases due to hypertension. Data was collected by creating two groups of patients, namely the intervention group which was given model intervention and the control group was given standard intervention. The measurement of knowledge scores was carried out using an observation sheet. The knowledge score measurement in the intervention group was carried out 2 times, before being given therapy and immediately after the intervention model. This research has passed the ethical test of the Ethics Committee of Jenderal Soedirman University No: 771/EC/KEPK/IV/2022.

RESULT

1. Characteristics of the respondents

Table 1. Frequency Distribution of Respondents by Age, Systolic and Diastolic Blood Pressure (N=120)

Characteristics	Intervention Group (n=60)		Control Group (n=60)	
	Mean	SD	Mean	SD
Age	64,91	4,06	65,98	3,08
Blood Pressure				
Systolic	169	11,34	172	16,42
Diastolic	97	9,67	93	6,94

Characteristics of respondents according to age, gender, and systolic and diastolic blood pressure

Tabel 2.Frequency Distribution of Respondents by Gender (N=120)

Characteristics of Respondents	Intervention Group (n=60)		Control Group (n=60)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Gender				
Man	31	51,7	37	61,7
Woman	29	48,3	23	38,3

Tables 1 and 2 show the characteristics of the respondents in the intervention group, namely the mean age of 64.91 years, systolic blood pressure of 169 mmHg and diastolic blood pressure of 97 mmHg, most of which were male in the intervention group (51.7%) and the control group (61.7%). Characteristics of respondents in the control group, namely the average age of 65.98, the mean systolic blood pressure of 172 mmHg and diastolic of 93 mmHg.

2. Knowledge score description

Table 3. Description of Knowledge Score Average (N=120)

Variable	Intervention Group (n=60) Mean	Kelompok Kontrol (n=60) Mean
Knowledge Score		
Pre-Intervention	3,65	3,43
Post-Intervention	7,98	3,53

Table 3 shows the categories of the mean pre-intervention knowledge score in the intervention group 3.65, while in the control group 3.43. While the mean score of knowledge after the intervention was 7.98 and the score of knowledge on the second measurement in the control group was 3.53. Bivariate analysis in this study was carried out after the data normality test and homogeneity test were carried out. The results of the data normality test on the knowledge variable for the treatment and control groups used the Kolmogorov-Smirnov test which showed that all variables had a p-value <0.05

so that the data distribution was not normal, so the different test used was the non-parametric test, namely the Wilcoxon test and the Wilcoxon test. Mann-Whitney test.

3. Test Results Differences in Pre and Post-Intervention Knowledge Scores

The results of the pre- and post-intervention differences test according to knowledge scores in the treatment group and control group are presented in the following table:

Tabel 4.Test Results Differences in Knowledge Scores Between Pre and Post-Intervention (N=120)

Variable	Score Intervention (n=60) p-value	Score Control (n=60) p-value
Knowledge score Pre – Post Intervention	3.65-7.98 <0,001[a]	3.43-3.53 0,421[a]

a= Wilcoxon test

Table 5 shows that the results of the difference in knowledge scores in the treatment group showed a significant difference (p-value <0.05), while in the control group there was no significant difference (p-value>0.05).

4. The result of the difference in the mean knowledge score between the post-intervention groups.

The results of the difference in intervention scores after being given the e-TITENKU model between the intervention group and the control group are presented in the following table:

Tabel 5. Test Results Differences in Mean Knowledge Scores of Respondents Between Post-Intervention Groups (N=120)

Variable	Intervention group (Mean)	Control group (Mean)	p-value
Knowledge score	7.98	3.53	<0,001*

*= p-value < 0,05

Table 5 shows that the post-intervention knowledge score data of the e-TITENKU model showed a significant difference (p-value <0.05). These results support the research hypothesis (alternative hypothesis) that the e-TITENKU model influences the Knowledge Score of Coronary Heart Disease Prevention.

DISCUSSION

This chapter describes the discussion of the research results that have been carried out. This discussion consists of interpretation and discussion of the results as well as the relationship between the results of the study with a review of the theory and the results of previous studies. This chapter also describes the limitations of the study and the implications of research in nursing. The full discussion is explained as follows:

Table 1 shows the characteristics of the respondents in this study, it was found that the average age of the research respondents was 65-66 years or included in the elderly category. Physiologically the elderly have begun to experience a decline in all organ functions so that they are at risk of experiencing degenerative diseases such as physical, cognitive, emotional, social, and sexual changes (Agustina & Sari,

2014). Physically, the elderly are at high risk for hypertension, heart disease, stroke, and kidney failure. This study is in accordance with the results of research conducted by Agustina (2014) that the average age of respondents with hypertension is 60-70 years.

Table 2 also shows that the average blood pressure of respondents in the intervention and control groups is in the range of 169-172 which according to WHO is in the category of moderate and severe hypertension. High blood pressure is in line with the increase in a person's age, this is because with increasing age there is a change in the lumen of the blood vessels to become narrower and stiffer or known as atherosclerosis, so it will increase blood pressure. With increasing age, there will be an increase in systolic and diastolic blood. This is in line with hi esearch. Ningsih and Indri (2017) who got the results of age related to the incidence of hypertension (p = 0.000), Odds Ratio (OR = 15,706, 95% CI 3.615-68.230), meaning that the older a person is, the 15.7 times the chance of experiencing severe hypertension (Ningsih & Indriani, 2017). The results of Adam's research (2019) that the determinants with the strongest correlation to hypertension in the elderly are age and smoking (Adam, 2019).

The results of the intervention research of the e-Titenku model on the knowledge score of coronary heart disease prevention showed that there was a significant effect of giving the intervention of the e-Titenku model on the knowledge score (tables 5 and 6). Health education using appropriate media and based on nursing information technology with smartphones through app tions is an innovation to facilitate and optimize one's knowledge, understanding. Smartphone health (m-Health) as a medical and public health practice supported by mobile phones and other wireless devices has presented new opportunities to improve patient care. Different from telemonitoring stations and personal computer-based systems, the m-Health application is inexpensive, ubiquitous, intuitive, and flexible for a variety of lifestyles. Currently a large number of m-Health applications have been developed for diabetes, but evidence of efficacy is still limited, for m-Health applications with communication and intervention from services. Available from Apple App Store and Google Play. Applications fall into different categories, such as logbooks and diaries (Chatrati et al., 2022; Mufidah et al., 2020).

The score of respondents' knowledge about the prevention of coronary heart disease using the e-TITENKU model can increase significantly. Through this model, respondents can know whether their blood pressure is in the category of hypertension or not. In addition, respondents are able to follow up on existing blood pressure based on the recommendations in the e-Titenku application program, so that the final result of coronary heart disease prevention can be carried out by each respondent personally in their respective homes.

CONCLUSION

The e-TITENKU model can increase knowledge of coronary heart disease prevention in the community.

SUGGESTION

The e-TITENKU model can be used at any time to determine the classification of blood pressure and determine follow-up interventions based on the classification results

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