


The Effect of Education with Digital Leaflets on Increasing Knowledge about Dyslipidemia and its Treatment in Kediri City

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Article Info	ABSTRACT
Keywords: Dyslipidemia, Leaflet, Drugs Education	Dyslipidemia is a major risk factor for cardiovascular diseases such as coronary heart disease and stroke. Leaflets are a suitable information delivery medium for providing education to patients. This study used a quasi-experimental design with a one-group pre-test and post-test design. Respondents were given a knowledge questionnaire before the intervention (pre-test), then received education using a digital leaflet, and then were re-measured (post-test) to see any changes in their level of knowledge. Population: Kediri City residents who are at risk or have predisposing factors for dyslipidemia. The results showed a significant increase in knowledge among respondents after receiving education using a digital leaflet. In the pre-test, the average percentage of correct answers was 79.5%. This measurable increase in knowledge proves that digital leaflets are an effective medium for conveying health information. Education using digital leaflets is effective in increasing public knowledge about dyslipidemia and its treatment in Kediri.
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INTRODUCTION

Dyslipidemia is a major risk factor for cardiovascular diseases such as coronary heart disease and stroke (Aburas, 2020). According to the 2018 Basic Health Research (Riskesdas), the prevalence of dyslipidemia in Indonesia remains quite high (78%), characterized by elevated levels of total cholesterol, LDL, and triglycerides in the community (Lin, 2024). This condition often goes unnoticed by sufferers because the symptoms are not typical, resulting in many patients presenting with advanced complications. Lack of public knowledge about dyslipidemia, its prevention, and treatment is one of the obstacles in controlling this disease (Putra, 2023). Health education has been shown to increase patient awareness and understanding, thereby encouraging behavioral changes and adherence to therapy (Bahlol, 2021).

In the digital era, educational media has evolved from printed forms to digital leaflets, which are more easily accessible through mobile devices (Yiti, 2020). Digital leaflets have several advantages over printed leaflets, such as being cost-effective, having wider distribution, and allowing people to save and read them at any time. The use of digital media is considered relevant to the increasing trend of smartphone use among the public, including

in Kediri City (Eza, 2020). However, the effectiveness of educational use of digital leaflets in increasing public knowledge, particularly regarding dyslipidemia and its treatment, has rarely been studied at the regional level.

Kediri City, as an area with a high prevalence of cardiovascular disease, requires effective educational interventions to improve public awareness. Lack of knowledge about dyslipidemia and its treatment is a major barrier to the prevention and management of this condition in the community. Many residents of Kediri City do not understand the importance of regular checkups, a low-fat diet, exercise, or adherence to pharmacological therapy, resulting in high rates of non-compliance and disease progression. Health education has been shown to be effective in raising awareness and empowering individuals to manage their condition, thereby reducing the risk of complications and improving quality of life (prasetyo, 2022).

Based on this, research on "The Effect of Education Using Digital Leaflets on Increasing Knowledge about Dyslipidemia and Its Treatment in Kediri City" is important. This research is expected to provide scientific evidence regarding the effectiveness of digital media as a health education tool and serve as a basis for health workers in selecting appropriate educational methods to increase public knowledge and awareness..

METHODS

This study used a quasi-experimental design with a one-group pre-test and post-test design. Respondents were given a knowledge questionnaire before the intervention (pre-test), then received education using a digital leaflet, and then re-measured (post-test) to see any changes in their level of knowledge. The population was the people of Kediri City who were at risk or had predisposing factors for dyslipidemia. The sample in this study were respondents who met the inclusion criteria, namely being ≥ 18 years old, domiciled in Kediri City, willing to participate in the study and fill out the questionnaire, having a smartphone to access the digital leaflet, and exclusion criteria were respondents who did not complete the entire series of studies. Sampling technique: purposive sampling. The number of samples: determined by the paired sample test formula, with a tolerance of error ($\alpha = 0.05$) and power 80%.

The independent variable was education using digital leaflets. The dependent variable was the level of knowledge about dyslipidemia and its treatment. Demographic data were analyzed descriptively (percentage, mean, SD). The normality of the knowledge data was tested using the Shapiro-Wilk test. If the data were normally distributed, the paired t-test was used. If the data were not normally distributed, the Wilcoxon Signed Rank Test was used. The significance level was set at $p < 0.05$..

RESULTS AND DISCUSSION

According to Table 1, regarding the characteristics of the study participants, the majority of respondents were aged < 65 years (98%), both in the control and treatment groups. This indicates that most participants were in the productive age group, where the ability to receive information, read digital leaflets, and understand educational materials is still good. There was

no significant difference ($p = 0.159$), so age characteristics were not a confounding factor in this study. The proportion of men (40%) and women (60%) was relatively balanced between the control and treatment groups ($p = 0.872$). This equality is important because previous research has shown that gender factors do not significantly influence the level of health knowledge, including knowledge about dyslipidemia. Thus, the effect of increasing knowledge can be attributed more to the digital leaflet educational intervention. Almost all respondents had an education level above high school (98%). This is an advantage because a higher level of education is usually correlated with better health literacy skills. The distribution between the two groups did not differ significantly ($p = 0.912$), so it can be assumed that the difference in knowledge results was more due to the educational intervention, rather than educational background. The majority of respondents were not from a health background (75%). Although there was a difference in proportion between the control and treatment groups, statistical tests showed no significant difference ($p = 0.518$). The majority of respondents were employed (66%), and the distribution was relatively equal between the two groups ($p = 0.755$). This indicates that busyness or employment status did not influence baseline knowledge. Therefore, the digital leaflet can be a flexible educational tool for both employed and unemployed respondents.

Tabel 1. Karakteristik Peserta Penelitian

Karakteristik	N (%)	Kelompok Kontrol	Kelompok Perlakuan	<i>p value</i>
Usia	< 65 tahun	80 (98)	47 (100)	0,159
	> 65 tahun	2 (2)	0 (0)	
Jenis Kelamin	Laki-laki	40 (40)	19 (40)	0,872
	Perempuan	42 (60)	28 (60)	
Pendidikan Terakhir	< SMA	12 (2)	1 (2)	0,912
	> SMA	79 (98)	46 (98)	
Latar Belakang Pendidikan	Kesehatan	23 (25)	13 (28)	0,518
	Non-Kes	68 (75)	34 (72)	
Pekerjaan	Bekerja	60 (66)	32 (66)	0,755
	Tidak Bekerja	31 (34)	15 (32)	

Table 1 Question analysis results

POST TEST RESULTS				PRE-TEST RESULTS			
No.	Question	N is correct	%	No.	Question	N is correct	%
1	What is meant by dyslipidemia?	79	89%	1	What is meant by dyslipidemia?	60	67%
2	What is LDL cholesterol?	69	78%	2	What is LDL cholesterol?	60	67%
3	Which are risk factors for dyslipidemia?	80	90%	3	Which are risk factors for dyslipidemia?	64	72%
4	What are the main complications of uncontrolled dyslipidemia?	80	90%	4	What are the main complications of uncontrolled dyslipidemia?	59	66%
5	The following are symptoms of dyslipidemia, EXCEPT:	80	90%	5	The following are symptoms of dyslipidemia, EXCEPT:	70	79%
6	What is the role of HDL cholesterol in the body?	81	91%	6	What is the role of HDL cholesterol in the body?	72	81%
7	What can be done to prevent dyslipidemia?	78	88%	7	What can be done to prevent dyslipidemia?	72	81%
8	What is the minimum frequency of physical activity to prevent dyslipidemia?	82	92%	8	What is the minimum frequency of physical activity to prevent dyslipidemia?	73	82%
9	Commonly used drugs to lower cholesterol levels are:	80	90%	9	Commonly used drugs to lower cholesterol levels are:	69	78%
10	What are the possible side effects of using statins?	77	87%	10	What are the possible side effects of using statins?	77	87%
11	What to do if high cholesterol levels are detected?	65	73%	11	What to do if high cholesterol levels are detected?	80	90%
12	Why is it important to check blood lipid levels regularly?	66	74%	12	Why is it important to check blood lipid levels regularly?	65	73%
13	What foods should be avoided to prevent dyslipidemia?	99	111%	13	What foods should be avoided to prevent dyslipidemia?	10	11%
14	What is the relationship between obesity and dyslipidemia?	82	92%	14	What is the relationship between obesity and dyslipidemia?	68	76%
15	What is meant by triglycerides?	82	92%	15	What is meant by triglycerides?	83	93%

16	What total cholesterol level is considered normal?	83	93%	16	What total cholesterol level is considered normal?	83	93%
17	What is the role of fiber in the diet in preventing dyslipidemia?	81	91%	17	What is the role of fiber in the diet in preventing dyslipidemia?	80	90%
18	Which of the following are non-pharmacological treatments for dyslipidemia?	81	91%	18	Which of the following are non-pharmacological treatments for dyslipidemia?	82	92%
19	What should be done to increase HDL levels?	81	91%	19	What should be done to increase HDL levels?	72	81%
20	Why is dyslipidemia often called the "silent killer"?	81	91%	20	Why is dyslipidemia often called the "silent killer"?	75	84%

Table 2 shows the results of the study, which show a significant increase in respondents' knowledge after receiving education using digital leaflets. In the pre-test, the average percentage of correct answers was 79.5%. This figure indicates that most respondents in Kediri City already had a fairly good basic knowledge of dyslipidemia. However, after the educational intervention, the average percentage of correct answers in the post-test increased to 88.95%. This 9.45% increase demonstrates that digital leaflets are effective as an educational medium for increasing respondents' knowledge about dyslipidemia and its treatment. This finding aligns with research conducted by Sun et al. (2022), which found a similar finding (Sun, 2022).

Question 1 ("What is dyslipidemia?") saw an increase in the percentage of correct answers from 67% to 89%. This indicates that education successfully clarified respondents' basic understanding of the definition of dyslipidemia. Importance of lipid screening: Question 12 ("Why is it important to regularly check blood lipid levels?") showed a substantial increase, from 73% to 74%. Although the increase was not significant, it indicates that education successfully emphasized the importance of early detection (Ouyang, 2022). Treatment of dyslipidemia: Knowledge of pharmacological and non-pharmacological treatments also increased. Question 17, on "the role of fiber in preventing dyslipidemia," rose from 90% to 91%, while question 18, on "non-pharmacological treatments," rose from 91% to 91%. While these figures were already high, this education reinforced existing understanding.

This measurable increase in knowledge demonstrates that digital leaflets are an effective medium for conveying health information. The advantages of digital leaflets over print media, such as easy access and widespread distribution through digital platforms, enable information about dyslipidemia to reach a wider audience, especially in urban settings like Kediri City. These results strengthen the argument that technology-based educational media can be a powerful tool in improving public health literacy..

CONCLUSION

Education using digital leaflets has proven to be an effective method for increasing public knowledge about dyslipidemia and its treatment in Kediri City. This is because digital leaflets can be easily accessed via electronic devices such as mobile phones and computers, making it more practical for the public to obtain health information without having to visit a health care facility in person. Furthermore, the presentation of information in visual form and simple language makes health messages easier to understand for various groups, including lay people who are previously unfamiliar with medical terms. This digital education also supports broader, faster, and more cost-effective information dissemination, given that its distribution coverage is not limited by space and time. By increasing public knowledge about the risk factors, prevention, and treatment of dyslipidemia, it is hoped that this will lead to changes in behavior toward healthier behaviors, such as maintaining a healthy diet, exercising regularly, and adhering to medication recommendations as prescribed by medical professionals. Ultimately, digital leaflet-based education is not only beneficial in improving individual health literacy but can also serve as a preventative strategy to reduce the incidence of complications due to dyslipidemia, such as heart disease and stroke, thus contributing to improving the overall health of the Kediri City community.

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