



The Effect of Educational Blogs on The Level of Knowledge About Hypertension Among The Productive Age Community in Karawana Village

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ABSTRACT

Hypertension, or high blood pressure, is a dangerous noncommunicable disease (NCDs) that generally occurs with age and is often referred to as a silent killer because the symptoms are often invisible or imperceptible in most patients. Therefore, comprehensive education with easy access to information about the disease is necessary. Education through blogs has great potential as an effective tool for raising awareness, especially in controlling hypertension. This study was quantitative in nature. This study used a quasi-experimental design with a one-group pretest-posttest design. The minimum sample size was 30 respondents of productive age, with sampling using purposive sampling based on inclusion and exclusion criteria. Univariate and bivariate data analysis was performed using the Wilcoxon test. Before the intervention, 4 respondents (13.3%) had good knowledge, sufficient knowledge in 12 respondents (40%), and insufficient knowledge in 14 respondents (40.7%). After the intervention, 15 respondents (50%) had good knowledge, 11 respondents (36.7%) had sufficient knowledge, and 4 respondents (13.3%) had insufficient knowledge. The Wilcoxon test showed a p-value of 0.001 ($p < 0.05$), and the effect size ($r = 0.73$) indicated a large effect. There was an effect of the educational blog on the level of knowledge about hypertension among the productive age community in Karawana Village. This study is expected to contribute to the development of education, increase public awareness of hypertension prevention, and encourage the active role of community health centers in providing health education through socialization and blog media.

Keywords: Educational blog, Knowledge, Hypertension, Productive age.

1. INTRODUCTION

Hypertension is one of the main risk factors for cardiovascular disease, which is the leading cause of death and disability worldwide. This condition is characterized by a persistent increase in arterial blood pressure, which over time can cause damage to target organs such as the heart, kidneys, and brain (Mills et al., 2020). Although hypertension is a condition that can be detected and controlled through medical intervention and lifestyle changes, it is often referred to as a silent killer because most sufferers do not experience obvious symptoms until serious complications arise (Zhou et al., 2021). As a result, hypertension is not only an individual health problem but also a global public health challenge that requires effective prevention and control strategies.

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Globally, the burden of hypertension has continued to increase in recent decades. Global epidemiological analysis shows that more than 1.28 billion adults aged 30–79 years live with hypertension, with about two-thirds of them in low- and middle-income countries ([World Health Organization, 2023](#)). In addition, nearly half of people with hypertension are unaware of their condition, increasing their risk of complications such as stroke, coronary heart disease, heart failure, and chronic kidney disease ([Zhou et al., 2021](#)). The high prevalence and low rates of detection and control of hypertension indicate that population-based prevention approaches still face various challenges, particularly those related to public health literacy.

In the national context, hypertension is also one of the major health problems in Indonesia. Basic Health Research data shows that the prevalence of hypertension in people aged ≥ 18 years reached 34.11%, an increase from 25.8% in 2013 ([Indonesian Ministry of Health, 2019](#)). The prevalence of hypertension in Central Sulawesi Province increased from 47.4% in 2018 to 51.2% in 2019, with Tojo Una-Una having the highest rate (85.5%) and Banggai the lowest (11.17%), while Sigi ranked fourth ([Central Sulawesi Provincial Health Office, 2019](#)). Meanwhile, data from the Dolo Community Health Center recorded an increase from 12% in 2019 to 18.8% in 2020, then decreased to 16.4% in 2022, but hypertension remained the third most common disease ([Dolo Community Health Center, 2024](#)). This increase indicates that hypertension is becoming a significant public health burden due to changes in lifestyle, urbanization, and an increase in risk factors such as excessive salt consumption, lack of physical activity, and chronic stress ([Lamloum et al., 2023](#)). In addition, variations in prevalence between regions in Indonesia indicate disparities in access to health information, health services, and the level of health literacy among the population.

One important determinant in the prevention and control of hypertension is the level of public knowledge about the disease. Adequate knowledge can increase awareness of risk factors, encourage early detection, and improve compliance with therapy and healthy lifestyle changes ([Ranzani et al., 2022](#)). Conversely, low health literacy is often associated with delayed diagnosis, lack of routine blood pressure monitoring, and low adherence to antihypertensive medication ([Iqbal & Gusti, 2024](#)). Therefore, increasing public knowledge through health education interventions is one of the main strategies in community-based hypertension control.

Along with the development of information technology, the approach to health education has also undergone a transformation towards the use of digital media. The concept of digital health promotion enables the delivery of health information in a more widespread, flexible, and sustainable manner through various internet-based platforms ([Chen et al., 2023](#)). Various studies show that digital-based health education interventions, such as health applications, social media, and online platforms, can increase health knowledge, strengthen community involvement, and support better health behavior change ([Katz et al., 2024](#)). This approach is becoming increasingly relevant in the era of digital transformation because it is able to reach a wider audience than conventional education methods.

One digital medium with great potential in health education is the blog. Blogs enable the systematic presentation of health information, are easily accessible, and can be continuously updated, thereby supporting the process of self-directed learning for the community. In addition, blogs can also function as an interactive and informative means of health communication in improving public health literacy ([Kite et al., 2023](#)). In the context of health promotion, blogs can be part of a digital health communication strategy that aims to increase public understanding of chronic diseases, including hypertension.

Although various studies have shown that health education interventions can increase knowledge about hypertension, most studies still focus on conventional educational methods such as lectures, group counseling, or print media. Studies on the use of digital media in hypertension education have mostly highlighted the use of mobile applications or social media, while the use of blogs as a health education medium is still relatively limited ([Yap et al., 2024](#)). In addition, research evaluating the effectiveness of blogs as a means of health education for the productive age group at the community level is still very limited, especially in the context of developing countries such as Indonesia.

This research gap indicates that more in-depth studies are needed on the potential of simple digital media such as blogs in improving public health literacy about hypertension. The use of blogs as a health education medium has advantages in terms of accessibility, flexibility, and the ability to present health information on an ongoing basis. However, empirical evidence on the effectiveness of this medium in increasing public knowledge about hypertension is still lacking.

Based on this research gap, this study offers a new approach by integrating educational blogs as part of a digital health promotion strategy to increase public knowledge about hypertension. The novelty of this study lies in the use of blogs as a health education medium aimed at the productive age group at the community level, thus providing an alternative educational method that is more adaptive to developments in information technology and has the potential to reach a wider audience.

Therefore, the purpose of this study is to analyze the effect of using educational blogs on the level of knowledge about hypertension among the productive age group in Karawana Village. These findings contribute scientifically to the development of digital-based health promotion strategies and support efforts to improve public health literacy in the prevention and control of hypertension.

2. METHODS

This quantitative study used a quasi-experimental design with a one-group pretest-posttest design to assess changes in knowledge levels before and after intervention in the same group without involving a comparison group. This design allowed researchers to conduct initial and final assessments after the intervention. In this study, there was only one experimental group that received the educational blog intervention and underwent a pre-test beforehand and a post-test afterwards. This study was conducted in Karawana Village, Dolo District, Sigi Regency, Central Sulawesi Province.

The research population included productive-age people living in the area. The sample size was no longer based on general recommendations but used a power analysis approach to ensure sufficient statistical power to detect the effects of the intervention. The sample size calculation took into account the significance level ($\alpha = 0.05$), statistical test power (power = 0.80), and an estimated moderate effect size ($d = 0.5$). Based on this approach, the minimum number of respondents required was 27. To anticipate possible data loss or dropouts during the research process, the sample size was increased by 10%. Thus, a total of 30 respondents were recruited in this study, so that the statistical analysis still had sufficient power to identify meaningful changes after the intervention (Kang, 2021; Lakens, 2022).

The sampling technique used in this study was purposive sampling, which is a method of selecting respondents deliberately by considering certain characteristics related to the research objectives. Through this method, the researcher determined the participants who met the predetermined inclusion criteria, so that the individuals involved truly represented the target group of the study. This approach allows the data collection process to focus on respondents who have experience, knowledge, or conditions relevant to the phenomenon being studied. Thus, the respondent selection process is not done randomly, but through planned methodological considerations so that the data obtained has a strong connection with the research objectives (Given, 2025).

The inclusion criteria in this study included respondents who had signed informed consent, were aged 15–64 years, had electronic devices (mobile phones, tablets, laptops, or computers) with internet access, were able to use search engines such as Google, could read, and were willing to participate in the entire research process until completion. Meanwhile, exclusion criteria include respondents who have mental health disorders that may affect their ability to understand information, such as dementia or severe depression, as well as respondents who cannot read.

The instruments used in this study were informed consent forms, an educational blog: <https://s.id/infokespenyakithipertensi>, and a questionnaire on knowledge about hypertension. The validity test of the instruments showed that all items on the questionnaire were valid. The validity test was conducted using Pearson Product Moment Correlation analysis with a correlation value criterion of >0.5 . The correlation values for questions 1 to 10 were 0.677, 0.846, 0.677, 0.846, 0.677, 0.560, 0.846,

0.677, 0.846, and 0.846, respectively. Since all correlation values were above the specified limit, all questions were declared valid and could be used as a measuring tool in the study. Next, a reliability test using Cronbach's Alpha method was conducted to assess the consistency of the instrument. The test results showed a Cronbach's Alpha value of 0.983, which is higher than the minimum threshold of 0.60. This indicates that the questionnaire has an excellent level of consistency, making the instrument reliable and suitable for use in collecting research data.

The intervention in this study was carried out through health education based on a blog containing material on the definition of hypertension, risk factors, signs and symptoms, as well as steps for the prevention and control of hypertension. Respondents were asked to access and study all the material available on the blog for 20 minutes in each session scheduled by the researcher. The intervention lasted for one week, with three sessions on Tuesdays, Thursdays, and Saturdays. In each session, respondents were given the opportunity to read and understand the educational material presented through the blog. During the intervention process, researchers and observers monitored to ensure that respondents actually accessed and read the material provided. After respondents completed 3 sessions, they filled out a post-intervention questionnaire to assess changes in their knowledge level after the intervention.

The types of data used in this study were primary and secondary data. The primary data in this study came from questionnaires distributed by researchers and filled out by respondents, namely the productive-age community in Karawana Village. The secondary data in this study came from the World Health Organization, the Indonesian Ministry of Health, Basic Health Research data, the Health Research and Development Agency, the Central Sulawesi Provincial Health Office, the Sigi District Health Office, Dolo Community Health Center data, and Karawana Village data.

This study used univariate analysis to investigate the characteristics of respondents by utilizing frequency distribution to explore information about various variables such as gender, age range, type of work, and education level of each respondent. Meanwhile, the bivariate analysis approach with the method chosen to evaluate the effect between educational blogs and knowledge level was the Wilcoxon statistical test. The Wilcoxon statistical test was used because this study was a paired categorical comparative study with two repetitions that had more than two categories, namely good, sufficient, and insufficient. In addition to the statistical significance value (p-value), this study also reported the effect size (r) to assess the magnitude of the intervention's influence. The effect size (r) calculation was performed using the formula $r = \frac{Z}{\sqrt{N}}$, where Z is the statistical value obtained from the Wilcoxon test results and N indicates the number of research samples. This approach is widely used in non-parametric statistical analysis to estimate the strength of an intervention's influence on the variable being studied (Lakens, 2022). Effect size interpretation follows the criteria proposed by Jacob Cohen, namely 0.10 (small effect), 0.30 (moderate effect), and ≥ 0.50 (large effect) (Kallogjeri & Piccirillo, 2023).

The fundamental principles of research ethics are important and unavoidable and must be applied in research involving human participation. The Ethics Committee has approved this research, as evidenced by the issuance of an official statement from the Ethics Committee of the Faculty of Medicine, Tadulako University, on July 4, 2024, with Number 130/UN.28.1.30/KL/2024. This approval confirms that the research has met all ethical requirements and standards set forth, and can therefore be conducted in accordance with applicable rules and guidelines. These principles guide the research to consider the rights, safety, protection, and well-being of all participants. These ethical principles serve as guidelines in safeguarding the rights, safety, protection, and well-being of the participants.

3. RESULTS

This study obtained a sample of 30 respondents who were of productive age and residents of Karawana Village. Several data collection methods were used, including interviews using questionnaires before the intervention, provision of educational blog interventions, and interviews using questionnaires after the intervention to obtain comprehensive data.

3.1 Respondent Characteristics

Table 1 shows that of the 30 respondents, in terms of gender, the majority, namely 18 respondents (60%), were female, while 12 respondents (40%) were male. In terms of age, the most common age groups were 26-35 and 46-55, with 8 respondents (26.7%) in each group, while the least common age groups were 15-25 and 36-45, with 7 respondents (23.3%) in each group. In terms of educational background, the most common was high school with 15 respondents (50%), while the least common was bachelor's degree, with 3 respondents (10%). In terms of occupation, the most common was housewife, with 13 respondents (43.3%), while the least common was private employee, with 1 respondent (3.3%).

Table 1. Frequency Distribution of Respondent Characteristics Based on Gender, Age, Education, and Occupation

Characteristics	<i>f</i>	%
Gender		
Male	12	40
Female	18	60
Total	30	100
Age		
15 – 25	7	23.3
26 – 35	8	26.7
36 – 45	7	23.3
46 – 55	8	26.7
Total	30	100
Education		
Elementary	5	16.7
Junior High School	7	23.3
Senior High School	15	50
Bachelor	3	10
Total	30	100
Employment		
Not Working	3	10
Housewife	13	43.3
Farmer	6	20
Private Sector Employee	1	3.3
Self-Employed	5	16.7
Civil Servant	2	6.7
Total	30	100

3.2 Frequency Distribution of Knowledge Before Intervention

Based on the data in Table 2, which involved 30 respondents who were studied before being given an intervention in the form of educational blogs. Of the 30 respondents, 14 respondents (46.7%) had insufficient knowledge, 12 respondents (40%) had sufficient knowledge, and 4 respondents (13.3%) had good knowledge. Based on the initial results of the pre-test conducted by the researcher, it was found that most respondents had insufficient knowledge, with 14 respondents (46.7%).

Table 2. Frequency Distribution of Knowledge About Hypertension Before the Educational Blog Intervention

Knowledge	<i>f</i>	%
Pre – Test		
Insufficient	14	46.7
Sufficient	12	40
Good	4	13.3
Total	30	100

3.3 Frequency Distribution of Knowledge After Intervention

Based on the data in Table 3, it shows that out of 30 respondents, 4 respondents (13.3%) had insufficient knowledge, 11 respondents (36.7%) sufficient knowledge, and 15 respondents (50%) had good knowledge. Based on the final results of the post-test conducted by the researcher, it was found that most respondents' knowledge was in the good category, with 15 respondents (50%).

Table 3. Frequency Distribution of Knowledge About Hypertension After the Educational Blog Intervention

Knowledge	<i>f</i>	%
Post – Test		
Insufficient	4	13.3
Sufficient	11	36.7
Good	15	50
Total	30	100

3.4 Wilcoxon Test Result

Based on the data in Table 4, the Wilcoxon test showed a significant difference between knowledge before and after the intervention ($Z = -4.001$; $p < 0.001$), so the alternative hypothesis was accepted, meaning that there was an effect of the educational blog on the level of knowledge about hypertension among the productive age community in Karawana Village, with an effect size of $r = 0.73$, indicating a large effect with a significant practical impact on the respondents.

Table 4. Wilcoxon Test Result

Variable	N	Z	p-value	Effect Size (r)	Interpretation
Knowledge about hypertension	30	-4,001	<0,001	0,73	Large effect

4. DISCUSSION

Health knowledge is a core component in chronic disease management because it influences risk perception, prevention decisions, and self-management behaviors, and reflects an individual's health literacy. Additionally, knowledge is a determinant component in the self-management of chronic diseases such as hypertension, as it is directly related to risk awareness, symptom recognition, preventive actions, and adherence to disease management strategies (Zou et al., 2024).

Before the intervention, the majority of respondents had low levels of knowledge, a finding consistent with the initial knowledge patterns reported in similar studies in the general population before health education interventions were implemented. Respondents' lack of knowledge primarily reflected limited health literacy, a critical component in individuals' ability to access, understand, and effectively use health information. Furthermore, low knowledge prior to digital education indicates that respondents were unable to effectively understand, evaluate, and apply health information, which conceptually became a barrier to making appropriate health decisions (Shao et al., 2023).

In the context of hypertension, low baseline knowledge levels are often associated with suboptimal health behaviors, such as neglecting risk factors or delayed early detection, which in turn contribute to poor blood pressure control and complications (Yap et al., 2024). This condition indicates that without systematic educational interventions, the productive-age population in Karawana Village tends to have inadequate understanding of hypertension, particularly regarding its prevention and management. These findings align with literature reporting low chronic health literacy as a primary risk factor for insufficient understanding of hypertension in communities (Nock et al., 2023).

After the educational blog intervention, there was a significant shift in the respondents' knowledge distribution from low to good levels. These findings reflect the ability of digital media to convey health

information effectively when organized with relevant content and an informative structure. Digital media-based interventions have the potential to increase health literacy and respondents' understanding of the relationship between knowledge and health actions, especially when educational materials are adapted to the needs of the target audience (Sun et al., 2024). A significant increase in the knowledge category after the educational blog intervention shows that a technology-based approach can substantially improve respondents' cognitive comprehension of hypertension. These findings align with meta-analysis evidence that digital interventions such as mobile applications, telehealth, and online platforms consistently improve patients' understanding of chronic disease management, including hypertension. Digital health education is not only informative but also facilitates self-directed learning, which can enhance patient engagement and strengthen conceptual understanding through content that can be accessed repeatedly and personalized based on individual learning needs (Sun et al., 2024). A study by Sun et al., (2024) demonstrates how a WeChat-based intervention combining education, monitoring, and behavior change techniques impacts understanding and healthy behaviors in hypertensive patients, showing that digital education components can support behavior change beyond mere knowledge.

The Wilcoxon test analysis showing a $p\text{-value} < 0.001$ strengthens the evidence that exposure to material through educational blogs systematically changes the distribution of respondents' knowledge. These results not only show quantitative changes, but also reflect a qualitative cognitive shift from poor knowledge to good knowledge. Digital-based interventions consistently show statistically significant increases in knowledge scores before and after the intervention, whether through mobile applications, educational websites, or other integrated health information systems (Asman et al., 2025).

The results of this study also show an effect size of $r = 0.73$, which falls into the large effect category, indicating that the educational blog intervention provided is not only statistically significant but also has a strong practical impact on increasing respondents' knowledge about hypertension. A high effect size value indicates that the changes that occurred were not only statistically significant but also had practical relevance in the context of public health interventions (Kallogjeri & Piccirillo, 2023). These findings emphasize the importance of educational programs in increasing public awareness and knowledge about hypertension, which can ultimately contribute to the prevention and management of this condition. This significant result is also supported by a meta-analytic review showing that digital health interventions improve knowledge and control of hypertension (Yap et al., 2024).

Digital based educational interventions tend to be more effective when they include interactive elements, multimedia, and personalized materials, as these trigger deeper cognitive processing compared to passive education. Digital education also allows respondents to repeat the material, strengthen long-term memory, and create behavioral cues that are important in the adoption and retention of information. Modern learning theory asserts that active engagement of participants with educational material through quizzes, interactive visuals, and adaptive modules encourages increased self-efficacy, which in turn contributes to changes in attitudes and behaviors related to hypertension (Asman et al., 2025). The effectiveness of digital interventions is also moderated by respondents' education, age, and digital skills. Individuals with higher formal education tend to have better cognitive capacity and digital literacy skills, enabling them to maximize learning opportunities from digital materials (Yuen et al., 2024). Conversely, older age groups or those with limited digital literacy may require simpler materials or assistive support to achieve similar results (Fathurrahman et al., 2024).

Additionally, social support such as family interactions or community facilitators can strengthen the process of internalizing information by providing a supportive social learning context, as found in the literature on the impact of community education on health behavior change (Wu et al., 2025; Zhang et al., 2024).

Community-based health education interventions have also been shown to increase community knowledge and facilitate more positive health behavior changes in at-risk populations (Ogolla et al., 2025). These findings have important implications for public health promotion practices. Blog-based digital education or similar platforms not only provide theoretical information but also serve practical

functions to expand access, reduce geographical barriers, and tailor materials to the needs of specific communities. Based on this, digital health interventions can be part of a broader national hypertension control strategy (Yap et al., 2024).

Education through blog platforms has great potential as an effective tool to reach the wider community in increasing knowledge and awareness about health issues and disease control, especially hypertension. Thus, educational blogs have significantly succeeded in increasing respondents' knowledge about hypertension. This success demonstrates the effectiveness of blogs as an informative, accessible, and wide-reaching health education medium. The use of educational blogs not only helps increase public awareness and understanding of hypertension, but also has the potential to become an important tool in efforts to prevent and manage this disease more effectively. Therefore, the development and dissemination of educational content through digital platforms such as blogs must continue to be encouraged to achieve better public health goals.

CONCLUSION

Based on the results of the study before the educational blog was provided, most respondents' knowledge level was in the poor category. After the educational blog was provided, most respondents' knowledge level was in the good category. Based on the results of the Wilcoxon test, the p-value was 0.001 ($p < 0.05$), so it can be concluded that there is an effect of educational blogs on the level of knowledge about hypertension among the productive age community in Karawana Village. In addition, the effect size value of $r = 0.73$ indicates a large effect category, which indicates that the intervention was not only statistically significant but also had a high level of influence and provided a tangible practical impact in increasing respondents' understanding of hypertension.

RECOMMENDATIONS

This study is expected to make a real contribution to the development of educational science by providing relevant data and insights for improving learning methods and increasing the effectiveness of educational interventions. Furthermore, the results of this study are expected to increase public awareness and active participation in seeking health information, attending counseling sessions, and monitoring blood pressure regularly to encourage the adoption of healthy lifestyles. On the other hand, community health centers are expected to play a more active role in disseminating information related to hypertension and developing blog-based educational media so that public access to health information becomes easier, more widespread, and sustainable. Future research is recommended to involve a larger sample size and incorporate a control group in order to strengthen the validity of the findings. In addition, subsequent studies should explore other factors that may influence the effectiveness of digital educational media.

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DECLARATION OF GENERATIVE AI

In the preparation of this manuscript, the author used ChatGPT (OpenAI) on a limited basis as a tool for language editing and grammatical correction, primarily to improve linguistic quality and ensure consistency in certain sections of the manuscript without affecting the scientific content. The author confirms that all results generated by artificial intelligence have been carefully reviewed, verified, and revised as necessary to ensure alignment with the context and academic standards. The entire research design, data collection, analysis, interpretation, and conclusions are solely the work of the author, who bears full responsibility for the accuracy, integrity, and overall content of the final published manuscript.

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