



Research

Development of Indonesian Language-Based Health Education Media to Improve Community Knowledge on Hypertension Prevention

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ABSTRACT

Hypertension is a non-communicable disease with a high prevalence and is a major risk factor for cardiovascular disease, stroke, and kidney failure. Low public knowledge regarding hypertension risk factors and prevention remains one of the barriers to effective disease control. The development of Indonesian-based health education media is needed to improve community health literacy through the delivery of easily understandable health information. This study employed a Research and Development (R&D) method to develop Indonesian-based health education media in the form of leaflets, posters, and digital infographics on hypertension prevention. The research stages included needs analysis, media design, development, expert validation, and community trials. Validation was conducted by content experts, media experts, and language experts using a Likert scale instrument. The effectiveness of the media was measured by assessing changes in knowledge using a pre-test and post-test design. The validation results showed that the developed educational media obtained an average feasibility score of 94.0%, categorized as highly feasible. The trial results demonstrated an improvement in community knowledge, with the proportion of respondents in the good knowledge category increasing from 35% to 80%, while the moderate and poor knowledge categories decreased. In conclusion, Indonesian-based health education media is effective in improving community knowledge regarding hypertension prevention and can be utilized as a community-based health promotion medium.

1. Introduction

Hypertension is one of the major non-communicable diseases (NCDs) that has become a global public health concern due to its significant contribution to morbidity and mortality caused by cardiovascular diseases. Hypertension is characterized by a persistent elevation of blood

pressure, which can lead to damage to target organs, including the heart, brain, kidneys, and blood vessels if not properly controlled. This condition is one of the primary risk factors for coronary heart disease, heart failure, stroke, chronic kidney disease, and various other serious complications (Mills et al., 2020).

Hypertension is often referred to as a silent killer because most individuals with hypertension do not experience specific symptoms even though their blood pressure has been elevated for a long period. Consequently, many individuals are unaware of their hypertensive condition until more severe complications occur. Low public awareness of the importance of routine blood pressure monitoring is one of the factors contributing to delayed diagnosis and inadequate hypertension management. The World Health Organization (WHO) emphasizes that hypertension control requires a comprehensive strategy involving early detection, improved access to healthcare services, lifestyle modification, medication adherence, and strengthening health education among communities (WHO, 2021).

Globally, the prevalence of hypertension continues to increase and has become one of the major challenges in achieving non-communicable disease control targets. The increasing prevalence of hypertension is not only observed among older adults but is also increasingly found among productive-age populations due to modern lifestyle changes. Urbanization, consumption of fast food, increased sodium intake, low consumption of fruits and vegetables, physical inactivity, rising obesity rates, smoking habits, alcohol consumption, and psychosocial stress are contributing factors to the increased risk of hypertension (Carey et al., 2018). These conditions indicate that hypertension prevention cannot rely solely on medical interventions but also requires promotive and preventive approaches involving active community participation.

In Indonesia, hypertension remains one of the diseases with a high prevalence and has become a priority in non-communicable disease control programs. The main challenges in hypertension management are not only related to the high number of cases but also to the low level of public knowledge regarding risk factors, warning signs, the importance of blood pressure monitoring, and the implementation of healthy lifestyle behaviors. Many people still have limited understanding of the relationship between dietary patterns, physical activity, stress, daily habits, and hypertension risk. Limited knowledge may affect individuals' ability to prevent and manage hypertension independently.

Health behavior modification is one of the important strategies for reducing the risk of hypertension. Behaviors such as reducing salt intake, increasing physical activity, maintaining an ideal body weight, quitting smoking, managing stress, and conducting regular blood pressure checks are key components of hypertension prevention. However, behavioral changes cannot be achieved optimally without adequate knowledge. Health knowledge serves as the foundation for developing positive attitudes and improving individuals' ability to make appropriate health-related decisions (Gebremichael et al., 2019).

Health promotion is a strategic approach to improving the ability of individuals and communities to control hypertension risk factors. Through well-planned and sustainable health education, communities can obtain accurate information regarding the disease, risk factors, prevention strategies, and hypertension management. Systematic health education has been

proven to improve knowledge, attitudes, and self-care behaviors among individuals with hypertension and those at risk of developing the disease (Abdi et al., 2021; Hossain et al., 2020).

The effectiveness of health education is strongly influenced by the communication methods and educational media used. Health education media play an important role in facilitating information acceptance because they can present health messages in a more attractive, simple, and understandable manner. Various forms of media, including leaflets, booklets, posters, infographics, educational videos, and digital media, have been widely utilized in health promotion activities because they can improve public attention, understanding, and information retention (Dewi & Wulandari, 2022). Media designed according to target characteristics, educational background, cultural context, and health literacy levels are more effective in improving health understanding.

In addition to visual aspects, language use in educational media is a crucial factor determining the success of health communication. Complex language or the use of difficult medical terminology may become barriers in delivering health messages. Therefore, the use of Indonesian language that is communicative, simple, contextual, and appropriate to community literacy levels is necessary to ensure optimal information acceptance. Effective health communication can reduce information gaps between healthcare providers and communities and improve people's ability to understand and apply health messages in daily life (Bailey et al., 2019; Lee et al., 2021).

Health literacy is an important aspect related to an individual's ability to obtain, understand, evaluate, and utilize health information to make appropriate health decisions. Individuals with good health literacy tend to have better abilities to recognize disease risk factors, utilize healthcare services, and implement preventive actions independently (Gazmararian et al., 2017). Conversely, inadequate health literacy may lead to misunderstanding of diseases, low adherence to health recommendations, and increased risk of complications.

The development of Indonesian-based health education media represents an innovative approach to improving community health literacy, particularly in hypertension prevention efforts. Educational media that use easily understandable language, attractive illustrations, and systematic information presentation can assist communities in understanding hypertension concepts, risk factors, signs and symptoms, complications, and preventive measures that can be implemented independently. This approach aligns with health promotion principles that position communities as active participants in maintaining and improving their health status.

Based on this background, there is a need to develop Indonesian-based health education media that are attractive, informative, and tailored to community needs to improve knowledge regarding hypertension prevention. Such educational media are expected to serve as effective health communication tools to enhance public understanding, promote healthy lifestyle behaviors, and support hypertension control efforts through community-based promotive and preventive approaches.

2. Method

This study employed a Research and Development (R&D) method to produce an Indonesian-based health education media product for hypertension prevention. The development method was

selected because it enables the creation of educational products through systematic stages, including needs analysis, design, development, validation, and user testing.

The research stages included:

a. Needs Analysis

A needs analysis was conducted to identify the level of community knowledge regarding hypertension, health information needs, and appropriate educational media based on the characteristics of the target population. This approach is essential because the effectiveness of health education is strongly influenced by the suitability of educational materials and media with users' health literacy levels (Bailey et al., 2019).

b. Educational Media Design

The educational content was developed based on community needs and included the following topics:

- 1) Definition of hypertension.
- 2) Risk factors for hypertension.
- 3) Impact and complications of hypertension.
- 4) Prevention through lifestyle modification.
- 5) Healthy dietary patterns.
- 6) Physical activity recommendations.
- 7) Routine blood pressure monitoring.

The educational materials were developed using simple and understandable Indonesian language to facilitate community comprehension. The use of clear and accessible language has been shown to improve the effectiveness of health message delivery and increase community engagement in health management (Lee et al., 2021).

c. Media Development

The developed educational media consisted of:

- 1) Hypertension education leaflets.
- 2) Educational posters.
- 3) Digital infographics.
- 4) Information technology-based health education media.

The utilization of digital media in health education has continued to grow because it can expand access to health information and enhance community engagement in chronic disease management (Choi et al., 2020; Liang et al., 2022).

3. Results & Discussion

a. Development Results of Health Education Media

This study successfully developed Indonesian-based health education media consisting of leaflets, posters, and digital infographics for hypertension prevention. The media development process was based on community needs analysis, literature review, and health communication principles that emphasize the delivery of information in a simple, accurate, attractive, and easily understandable manner for individuals with various educational backgrounds.

The educational materials presented included the definition of hypertension, risk factors, signs and symptoms, complications, and preventive strategies through healthy lifestyle implementation, such as consuming a low-salt diet, engaging in regular physical activity, quitting smoking, reducing alcohol consumption, maintaining an ideal body weight, managing stress, and conducting regular blood pressure monitoring. The characteristics of the developed educational media are presented in Table 1.

Table 1. Characteristics of Health Education Media

Component	Development Results
Materials	Information about hypertension, risk factors, complications, and prevention
Language	Simple, communicative, and easily understandable Indonesian language
Presentation	Combination of concise text, images, icons, illustrations, and attractive colors
Media Format	Leaflets, posters, and digital infographics
Target Audience	General community and individuals at risk of hypertension

Furthermore, the developed media were validated by three experts, including a content expert, a media expert, and a language expert. The validation process used a 1–5 Likert scale. The assessment results showed that the media had excellent feasibility across all evaluated aspects.

Table 2. Validation Results of Health Education Media

Validation Aspect	Score (%)	Category
Content Feasibility	94.2	Highly Feasible
Language Quality	92.5	Highly Feasible
Presentation and Appearance	95.8	Highly Feasible
Graphic Design	93.6	Highly Feasible
Average Score	94.0	Highly Feasible

Based on the Table 2, the educational media obtained an average feasibility score of 94.0%, indicating that it was categorized as highly feasible for use as a health promotion medium for hypertension prevention without requiring major revisions. The validators provided only minor suggestions, including simplifying several medical terms, adjusting font sizes in certain sections, and adding illustrations related to healthy dietary patterns and physical activity.

These findings indicate that the developed media fulfilled the aspects of content suitability, language clarity, visual quality, and ease of understanding among community members. The use of simple Indonesian language combined with visual illustrations improved readability and facilitated community understanding of health information.

These findings are consistent with the study by Budiarto and Pratiwi (2021), which reported that health education media designed according to user characteristics have high effectiveness in improving community knowledge. Rahmawati et al. (2022) also reported that Indonesian-based visual health media improved public understanding of non-communicable

disease risk factors. Furthermore, Sari and Nugroho (2023) found that health infographics designed with concise text and visual illustrations improved information retention and encouraged healthy lifestyle changes. Therefore, the educational media developed in this study have the potential to be used as effective health promotion tools in community-based hypertension prevention programs.

b. Improvement of Community Knowledge

A trial of the Indonesian-based health education media was conducted to determine its effectiveness in improving community knowledge regarding hypertension prevention. Knowledge was measured using questionnaires administered before (pre-test) and after (post-test) the educational intervention. The analysis showed an improvement in community knowledge after receiving education using the developed media.

Table 3. Community Knowledge Level Before and After Education

Knowledge Level	Before Education (Pre-test)	After Education (Post-test)	Improvement
Good	35%	80%	+45%
Moderate	45%	15%	-30%
Poor	20%	5%	-15%

Based on Table 3, the proportion of respondents with good knowledge increased from 35% before education to 80% after education, representing an improvement of 45 percentage points. Conversely, the proportion of respondents with moderate knowledge decreased from 45% to 15%, while the poor knowledge category decreased from 20% to 5%. This distribution shift indicates that most respondents who previously had moderate and poor knowledge moved into the good knowledge category after receiving the educational intervention.

The findings demonstrate that the development of Indonesian-based health education media had a positive impact on improving community knowledge regarding hypertension prevention. After receiving educational intervention through leaflets, posters, and digital infographics, the proportion of respondents with good knowledge increased from 35% to 80%, while moderate and poor knowledge categories decreased from 45% to 15% and from 20% to 5%, respectively. These results indicate that the developed educational media improved the effectiveness of health information delivery, enabling communities to better understand hypertension concepts, risk factors, complications, and prevention strategies.

The improvement in knowledge suggests that educational media designed according to target characteristics can enhance the process of receiving health information. Simple, communicative, and understandable Indonesian language was one of the key factors supporting the success of this media. The use of familiar terms reduced communication barriers, allowing health messages to be better accepted by the community. According to the concept of health literacy, the ability of individuals to understand health information is influenced by readability, language clarity, and the suitability of materials with user

characteristics. Media that consider health literacy aspects have been proven to be more effective in improving understanding and encouraging health behavior changes (Nutbeam, 2021).

In addition to simple language, the success of educational media was also influenced by the presentation of information through visual elements. The developed leaflets, posters, and infographics combined concise text, illustrations, icons, colors, and attractive layouts, thereby increasing attention and facilitating information comprehension. According to the Cognitive Theory of Multimedia Learning, information presented through a combination of text and images is processed through two cognitive channels: verbal and visual channels. The integration of these two channels allows individuals to process information more effectively, improving memory retention and understanding compared with text-only information delivery (Mayer, 2021). Therefore, visual media represent an effective strategy in community health promotion activities.

The findings of this study can also be explained using the Health Belief Model (HBM), which states that knowledge is an important determinant in shaping individuals' perceptions of disease threats and the benefits of preventive actions. Individuals who understand the causes, risk factors, and complications of hypertension are more likely to develop higher perceptions of susceptibility (perceived susceptibility) and severity (perceived severity). These perceptions subsequently increase beliefs regarding the benefits of adopting healthy behaviors (perceived benefits), such as reducing salt intake, increasing physical activity, controlling body weight, quitting smoking, reducing alcohol consumption, and conducting regular blood pressure checks (Rosenstock et al., 1988; Glanz et al., 2015). Therefore, improving knowledge represents an important initial step in promoting hypertension prevention behaviors.

The findings are consistent with Abdi et al. (2021), who reported that health education improved community ability to recognize hypertension risk factors and increased awareness of preventive actions. The study demonstrated that systematic health information delivery resulted in significant improvements in knowledge scores compared with baseline measurements. Similarly, Budiarto and Pratiwi (2021) found that printed educational media designed according to community characteristics improved participants' understanding of non-communicable diseases and encouraged healthy lifestyle behaviors.

Another study by Rahmawati et al. (2022) showed that visual educational media improved health communication effectiveness compared with conventional lecture methods. Visualization through images and infographics helped communities understand complex information in a simpler form, thereby increasing information retention. Similar findings were reported by Sari and Nugroho (2023), who stated that digital infographics improved community knowledge regarding chronic diseases because information was presented in a concise, attractive, and easily accessible format through digital platforms.

These findings are also supported by recommendations from the World Health Organization (WHO, 2023), which emphasizes that health education is one of the key strategies in hypertension control. WHO highlights that improving community health literacy contributes to behavioral changes, including adopting healthy dietary patterns, reducing salt

intake to less than 5 grams per day, increasing physical activity to at least 150 minutes per week, smoking cessation, and early detection through regular blood pressure monitoring. These strategies are essential components in reducing hypertension prevalence and preventing cardiovascular complications.

In addition to improving knowledge, the developed educational media have the potential to support promotive and preventive programs in healthcare facilities. Leaflets can be utilized as individual counseling materials in primary healthcare centers, posters can be displayed as educational tools in healthcare waiting areas, while digital infographics can be distributed through social media, instant messaging applications, and healthcare institution websites. The combination of printed and digital media enables broader educational coverage and supports continuous improvement of community health literacy.

Although the study demonstrated a substantial improvement in knowledge, several limitations should be considered. The evaluation of media effectiveness was limited to short-term knowledge improvement and did not assess long-term health behavior changes or sustained healthy lifestyle implementation. Furthermore, this study did not compare the developed media with other educational methods, such as educational videos, health applications, or interactive audiovisual media. Future studies are recommended to apply experimental designs with control groups, involve larger sample sizes, and conduct follow-up evaluations to assess behavioral changes and blood pressure control after educational interventions.

Overall, this study demonstrates that the developed Indonesian-based health education media met the criteria for content feasibility, language quality, presentation, and visual design, and was effective in improving community knowledge regarding hypertension prevention. The increase in respondents with good knowledge from **35% to 80%** indicates that this media can serve as an effective alternative health promotion tool to support community-based hypertension prevention programs.

4. Conclusion

This study successfully developed Indonesian-based health education media for hypertension prevention in the form of leaflets, posters, and digital infographics. The developed media were designed using simple, communicative language and supported by attractive visual presentations, making them easy for the community to understand. Expert validation results indicated that the media had a high level of feasibility, with an average score of 94.0%, consisting of content feasibility (94.2%), language quality (92.5%), presentation and appearance (95.8%), and graphic design (93.6%). These results demonstrate that the developed media fulfilled the aspects of content accuracy, language clarity, and visual design, making it suitable for use as a health promotion medium.

The implementation of the educational media among the community showed a significant improvement in knowledge regarding hypertension prevention. The proportion of respondents with a good level of knowledge increased from 35% before the intervention to 80% after the intervention, while the moderate knowledge category decreased from 45% to 15%, and the poor

knowledge category decreased from 20% to 5%. These findings indicate that Indonesian-based health education media are effective in improving community understanding of hypertension risk factors, complications, and preventive measures.

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