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Development of Information Technology-Based Community Health Promotion Applications to Improve Public Health

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ABSTRACT

The development of information technology offers significant opportunities to increase the effectiveness of health promotion in the community. The use of information technology-based applications can provide easily accessible, interactive, and sustainable health education media. This study aims to develop and evaluate an information technology-based community health promotion application to improve public health knowledge and behavior. This study used a *research methodology. and This research was conducted in the field of health promotion development* (R&D) with a quantitative approach. The research sample was the community in the X community area. Data were collected through questionnaires before and after using the application, then analyzed descriptively and inferentially. The results of the study showed an increase in public health knowledge and behavior after using the health promotion application. The conclusion of this study is that the information technology-based health promotion application is effective as a community health promotion medium.

Keywords: Health Applications, Health Promotion, Information Technology, Public Health

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1. Introduction

Health promotion is a crucial effort to improve public health by enhancing knowledge, attitudes, and healthy lifestyle behaviors. However, conventional health promotion methods, such as face-to-face counseling and print media, have limitations in terms of reach and sustainability. With the advancement of information technology, innovation in health promotion implementation is needed to make it more effective and responsive to community needs.

The use of information technology in health promotion enables the delivery of information quickly, interactively, and easily accessible to the public. Information technology-based applications can be used as health education tools, providing health information, reminders for healthy behaviors, and as a means of communication between the public and healthcare professionals.

Today's society is increasingly accustomed to using digital devices such as smartphones and the internet in everyday life. This presents a strategic opportunity to develop community health promotion applications that can independently and sustainably improve public health knowledge and behavior.

The development of health promotion applications needs to be tailored to the characteristics and needs of the community to ensure optimal acceptance and utilization. Therefore, this research was conducted to develop an information technology-based community health promotion application and evaluate its impact on improving public health.

2. Research Methods

a. Types and Design of Research

This research uses the Research method and Development (R&D) with a quantitative approach. The research stages include needs analysis, application design, application development, testing, and evaluation.

b. Location and Time of Research

The research was conducted in community area X in April-August 2025.

c. Population and Sample

The research population is the entire community in community area X. The research sample was taken using purposive sampling technique.

d. Inclusion criteria:

1) People aged ≥ 18 years
2) Have a smartphone
3) Willing to be a respondent

e. Research Variables

- Independent variable: Use of health promotion applications
- Dependent variable: Public health knowledge and behavior

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f. Research Instruments

The research instruments are:

- Health knowledge questionnaire
- Health behavior questionnaire
- Application usage evaluation sheet

g. Data analysis

Data were analyzed univariately and bivariately using *paired t- test* to see the differences before and after using the application.

h. Research Ethics

The research was conducted by paying attention to the principles of research ethics, including *informed consent. consent*, data confidentiality, and respondent anonymity.

3. Research Results And Discussion

a. Research result

1) Respondent Characteristics

Table 1
Distribution of Respondent Characteristics

Characteristics	Frequency (n)	Percentage (%)
Age		
18–35 years	24	40.0
36–55 years	26	43.3
> 55 years	10	16.7
Gender		
Man	28	46.7
Woman	32	53.3
Total	**60**	**100**

2) Health Knowledge Level Before Using the Application

Table 2
Health Knowledge Before Intervention

Level of Knowledge	Frequency (n)	Percentage (%)
Not enough	22	36.7
Enough	25	41.7
Good	13	21.6
Total	**60**	**100**

3) Health Knowledge Level After Using the Application

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Table 3
Health Knowledge After Intervention

Level of Knowledge	Frequency (n)	Percentage (%)
Not enough	8	13.3
Enough	26	43.4
Good	26	43.3
Total	**60**	**100**

4) Public Health Behavior Before Using the Application

Table 4
Health Behavior Before Intervention

Health Behavior	Frequency (n)	Percentage (%)
Not good	29	48.3
Good	31	51.7
Total	**60**	**100**

5) Public Health Behavior After Application Use

Table 5
Health Behavior After Intervention

Health Behavior	Frequency (n)	Percentage (%)
Not good	14	23.3
Good	46	76.7
Total	**60**	**100**

b. Discussion

The research results show that the use of an information technology-based health promotion application significantly improves public health knowledge. This improvement is evident in the decrease in respondents with low knowledge and an increase in respondents with good knowledge after using the application. This demonstrates that the application is able to convey health information effectively and easily understood by the public.

In addition to increased knowledge, this study also showed positive changes in public health behaviors. After using the app, most respondents demonstrated improved health behaviors, such as increased physical activity, healthier eating patterns, and adherence to health recommendations. This indicates that the app serves not only as a source of information but also as a means of motivating healthy behaviors.

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The success of this health promotion app is influenced by its ease of access, attractive design, and content relevant to community needs. The digital presentation of information allows people to access health materials anytime and anywhere, thereby increasing the intensity of exposure to health information.

The results of this study align with health promotion theory, which states that technology-based media can increase the effectiveness of health education through an interactive and sustainable approach. The use of information technology can also reach a wider audience than conventional health promotion methods.

The implications of this research indicate that developing information technology-based health promotion applications is a potential strategy for improving public health. However, ongoing support from healthcare professionals and the government is needed to ensure the continued use of the applications and the development of content tailored to community needs.

4. Conclusion And Suggestions

a. Conclusion

The development of an information technology-based community health promotion application has proven effective in improving public health knowledge and behavior. This application can be an innovative and sustainable health promotion tool.

b. Suggestion

1) For Health Workers

Utilizing applications as a medium for public health education.

2) For Government and Program Managers

Supporting the development and implementation of technology-based health promotion applications.

3) For the Community

It is hoped that the application can be actively utilized to improve healthy living behavior.

4) For Further Researchers

It is recommended to conduct further research with an experimental design and a longer time period.

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