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# The Effectiveness of Health Promotion Models with Comic Media, Videos, and Lectures on Helminthiasis to Medical Faculty Students at Universitas Prima Indonesia

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**Abstract:** The research aims to assess the knowledge about worm infections among students at the Faculty of Medicine, Prima Indonesia University, through health promotion media. The methodology involves the Sample T test Pretest and Posttest method, with a sample size of 154, determined based on prior research outcomes. The data analysis utilizes SPSS 25. The findings of the study indicate that the mean knowledge score prior to educational intervention via media was 36.3506, with a standard deviation of 3.32653. After the intervention, the mean knowledge score rose to 50.4416, accompanied by a standard deviation of 3.63891. This indicates an improvement in student knowledge scores before and after the health education intervention, utilizing video lectures and comics as media. The pretest and posttest outcomes exhibit an increase from 77.50% to 119.35% after the media intervention.

**Keywords:** Effectiveness; Health; Media; Promotion

## Introduction

As a developing country, Indonesia continues to address the high incidence of infectious diseases, especially those caused by an unhealthy environment. Worm infection is a disease that is strongly influenced by environmental conditions and still has a significant incidence rate. This is understandable given that most regions in Indonesia are characterized as agrarian countries with low socioeconomic levels and unhealthy environmental conditions, low public hygiene, and low knowledge All of these factors increase the risk of the occurrence and spread of helminth infections (Anwar, Irawati and Masri, 2016)

Growth and developmental abnormalities in children can be caused by worm infections. In addition to taking nutrients from the child's intestines, worms also cause damage to the intestinal wall, inhibiting the absorption of essential nutrients. Children affected by the infection usually show lethargy, pallor or anemia, weight loss, lack of energy, difficulty concentrating, and sometimes coughing. While deworming is not deadly, it can jeopardize public health by reducing nutritional status and general health conditions. On an ongoing basis, these conditions could potentially lead to a decline in the quality of human resources (Veridiana, Sumolang and Chadijah, 2014)

According to WHO (2016), helminth infection involves the introduction of one or more parasitic worms into the human body. Indonesia's population still

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experiences a high burden of helminth infections, especially intestinal nematodes. According to a World Health Organization study in 2019, soil-transmitted helminth infections affect an estimated 1.5 billion individuals globally, or more than 24% of the total world population. Regions such as the Americas, China, East Asia and sub-saharan Africa account for the majority of cases of the disease. In regions with tropical or subtropical climates, the infection is common. The World Health Organization (WHO) reported that in 2019, more than 267 million preschool children and more than 568 million school-age children lived in regions with high rates of parasite spread, so they needed medical care and preventive measures.

The prevalence of worm infections in Indonesia remains high, ranging from 45 to 65%, and can even reach 80% in areas with inadequate sanitation (Veridiana, Sumolang and Chadijah, 2014)

The incidence of worm infection in children ranges from 2.7% to 60.7% in some provinces, according to the results of a survey conducted by the Indonesian Ministry of Health in 2009. The prevalence of worm infections in children aged 1-6 or 7-12 years in Indonesia is significant, ranging from 30% to 90% (Ministry of Health, 2015). Worm infections are a common health problem in tropical and subtropical regions such as the Americas, China, East Asia and Sub-Saharan Africa. According to a 2017 WHO study, more than 1.5 billion people, or more than 24% of the world's population, have soil-transmitted helminth (STH) infections. The incidence rate of helminth infection was above 20% in a number of cities and regions in Indonesia in 2012; the highest in one region was 76.67% (Directorate General of PP&PL Ministry of Health, 2013).

Worm infections have a number of effects. Worms can affect metabolism, digestion and nutrient absorption. These combined effects can lead to blood loss and nutrient deficiencies, including calories and protein. In addition, worm infestation can impair mental and physical development, and reduce productivity in daily activities. It can also be detrimental to the immune system, increasing the risk of developing diseases (Ministry of Health of the Republic of Indonesia, 2006). The high risk of worm infection is caused by a lack of environmental sanitation and poor personal sanitation behavior. Pinworms (Enterobius vermicularis), tapeworms (Taenia saginata) and roundworms (Ascaris lumbricoides) are common worms that occur widely around the world. From the above background, the purpose of this study is to determine the effectiveness of the Health Promotion Model with Comic Media, Videos, and Lectures on Helminths for Medical Students at Prima Indonesia University.

## Method

A pre-test-post-test control group design and analytical observation techniques were used in the context of quantitative research. The research method used was a Pretest Posttest Non-Equivalent Control Design, where each group experienced a pretest before the intervention and a posttest afterwards. The study population involved all current students at the Faculty of Medicine, with the study sample consisting of Prima University Faculty of Medicine students selected using purposive sampling technique. Data was collected through questionnaires as the research instrument.

This study used direct delivery of questionnaires to Prima Indonesia University Faculty of Medicine students as the main data collection method. The questionnaire was designed to measure the level of effectiveness in reducing anxiety levels in students. Meanwhile, the independent variables in the study included health promotion models using comic, video and lecture media.

In this study, data analysis involved both univariate and bivariate approaches. The frequency of distribution of the independent variable, health promotion through media, on the dependent variable, the degree of worm infestation, was assessed by automated methods and univariate statistical analysis. Bivariate analysis, on the other hand, looked at the relationship between the two variables to assess the relevance of the effectiveness of the health promotion model on students. The Kolmogorov-Smirnov statistic was used to process the data to conduct a normality test before testing the hypotheses. If the findings indicate a distribution that does not follow a normal pattern, then the Wilcoxon statistical test will be applied.

## Result and Discussion

Frequency distributions for each study variable, such as gender, as well as mean findings regarding the pretest and posttest impact on the effectiveness of the health promotion model through media (comics, lectures, and videos) before or after the use of media were determined using univariate analysis.

**Table 1.** Frequency Distribution of Knowledge Before and After using media

| | | Mean | N | Std Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Pretest | 36.3 | 154 | 3.32653 | 0.26806 |
| | Posttest | 50.4 | 154 | 3.63891 | 0.29323 |

Based on the table, it can be seen that the average promotion before using the media was 36.3 with a standard deviation of 3.32653. After using the media, the average promotion increased to 50.4416 with a standard deviation of 3.63891. By calculating the difference between 50 and 36, it can be observed that there was an increase of about 14% in the average value of students' knowledge about worms before and after the health education intervention through lectures, videos, and comics. It can be concluded that the effectiveness of the health promotion model increased after the use of media, indicating that students were better able to understand and respond better to information through the approach.

Findings from the study showed that the mean promotion before media education was 36.3506, with a standard deviation of 3.32653. After the intervention, the mean promotion increased to 50.4416 with a standard deviation of 3.63891, an increase in the students' knowledge score of 14%, calculated from the difference between 50 and 36. This finding is in line with Haris' (2015) study, which showed significant improvement after intervention using comic, lecture, and video media. The mean pretest of this study increased from 10.07 to 16.42 in the posttest, and favorable attitude changes were also observed. (Haris, 2015)

Additional support was found in Pamengku's (2018) study, which showed a significant difference between the lecture group and the group with the flip sheet media in knowledge improvement. From the research findings, it can be concluded that the utilization of media such as lectures, videos, and comics proved to be more effective in improving students' knowledge and attitudes. Therefore, it is recommended to prioritize the use of these media because it provides a more efficient explanation and arouses students' enthusiasm in seeking information.

**Table 2.** Wilcoxon test

| | | N | Mean Rank | Sum Of Ranks |
|---|---|---|---|---|
| Postest-Pretest | Negative Ranks | 0[a] | 0.00 | .00 |
| | Positive Ranks | 154[b] | 77.50 | 11935.00 |
| | Ties | 0[c] | | |
| | Total | 154 | | |

a. postest < pretest
b. postest > pretest
c. postest = pretest

Based on the data in Table 2, it can be seen that the pretest and posttest scores increased from 77.50 to 11935.00 after the application of the media. The results of this study have concluded that providing explanations to students at Prima Indonesia University is more effective when using media such as lectures, videos, and comics.

The pretest and posttest results before and after using the media showed an increase from 77.50% to 119.35%. From these findings, it can be concluded that Prima Indonesia University students prefer when promotional activities are carried out through the media, because they are considered easier to understand and absorb.

According to additional research by Rizka Melati (2020), primary school students' understanding of balanced nutrition can be improved by health promotion utilizing print media such as comics, flashcards, edutainment cards, posters, and nutrition cards. Puzzles and crosswords are examples of game media that have proven successful in expanding this knowledge. In addition, audio-visual media such as kinesthetic audio also contribute to increasing knowledge.

The eating habits of primary school children can also be improved by utilizing various media, including websites, calendars, puzzle games, Android apps, and pamphlets. The government has taken measures to improve health, such as encouraging people to lead hygienic lives, wash their hands with soap, and eat foods rich in nutrients.

The national policy on health promotion is regulated by the Decree of the Minister of Health of the Republic of Indonesia Number 1193/MENKES/SK/X/2004. It is important to choose media that suits the target group, such as using games for primary school children and toddlers, while android and website-based media can be effective for adolescents and adults.

## Conclusion

This study provides results that show below the results if the average promotion before getting education through the media is 36.3506 with a standard deviation of 3.32653. After the media intervention, the average promotion increased to 50.4416 with a standard deviation of 3.63891. The media education intervention in health promotion succeeded in increasing understanding and participation, becoming a more effective option to achieve health promotion goals.

The effectiveness of health promotion before and after using media is shown by the pretest and posttest results, which showed an increase from 77.50% to 11935%. From this finding, it can be concluded that Prima Indonesia University students prefer promotions carried out through the media because they are considered easier to understand and absorb. In this context, video media proved to be more effective, because students could more easily understand the health promotion material delivered through the media.

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**Author Contributions**
Ali Napiah Nasution writing-original draft preparation, result, discussion; Lia Christiana methodology, conclusion; Intan review, and editing; Christina analysis and proofreading.

**Conflicts of Interest**
The authors declare that there is no conflict of interest regarding the publication of this paper

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