

## E-Comic–Based Health Education and Its Effect on Children’s Knowledge of Sexual Violence Prevention at SDN Joglo 08 Pagi

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### Abstract

*Sexual violence is the most common form of child abuse in Indonesia. Sexual violence against children has a negative impact that can damage the development process and future of children, so it is necessary to provide health education about sexual violence in the right way. One way that can be used is by utilizing digital media through e-comics. The purpose of this study was to determine the effect of health education using e-comics media on children's knowledge about efforts to prevent sexual violence. This study is a quantitative research model using a pre experimental research design with a one group pretest-posttest design. This study used primary data with a sample of 42 students in grade 6 of Sekolah Dasar Negeri (SDN)/Public Elementary School Joglo 08 Pagi with a sampling technique using simple random sampling. And data analysis using a parametric test (paired t-test). The results of this study stated that there was a significant difference in the level of children's knowledge before is mean value 46.88, and std deviation 9.541. after is mean value 84.43, std deviation 9.034 and after being given intervention through e-comic media about efforts to prevent sexual violence against children with a p value of 0.001 <0.05.*

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## INTRODUCTION

Currently, global society consists of diverse groups. Among these groups are those with unique and distinctive characteristics, which require greater access to basic services (1). Vulnerable groups need to receive special protection because the more vulnerable a person is, the greater their risk of becoming a victim of crime (2).

One of the vulnerable groups frequently targeted by crimes is children. Children's relatively smaller physical stature and their psychological vulnerability make them more susceptible to influence, thereby creating opportunities for adults to commit criminal acts against them (3). Violence against children, or child abuse, can occur in any child regardless of background, including race, socioeconomic status, and culture. Data on the number of child violence cases in Indonesia and globally continue to increase each year. The phenomenon of sexual violence against children has become increasingly prevalent in many countries around the world (4).

Sexual violence is an act that can cause profound trauma in children. Such trauma may persist as lasting memories that affect their psychological development and future life. The significant impact of sexual violence on children may lead to a reduced quality of life. The increasing incidence of sexual violence against children has become an issue that requires special attention, particularly because it has consistently ranked as the most prevalent form of violence over the past five years. Therefore, the issue of sexual violence must be addressed carefully by all relevant

stakeholders. The government has initiated strategic programs aimed at preventing sexual violence against children through health education. However, one of the main challenges encountered in implementing this strategy is the perception among some Indonesian communities that sexual health education is inappropriate for children. Consequently, appropriate strategies are required to ensure that sexual violence prevention programs are acceptable to society (4)

One potential solution to improve children's understanding is the use of appropriate learning media (5). Learning media that can effectively convey messages in a light and engaging manner include comics (6). A reading revolution and the implementation of digital reading have also occurred in comic media through the development of e-comics. E-comics are electronic or digital media that can be used as educational tools to enhance the effectiveness of information delivery (7). Electronic comics combine visuals and storytelling, making them more engaging than traditional text. This motivates students to read and understand the material. E-comics can be accessed via smartphone, tablet, or laptop, thus supporting independent learning at any time (8,9).

Engaging educational media is crucial because it will influence the results of respondents' knowledge improvement. Therefore, selecting health education media is a crucial step for researchers to carefully consider. Children's awareness of preventing sexual violence was influenced by body mapping programs and audiovisual media education (10).

Based on this background, the researcher aims is to investigate an effect of health education using e-comic media on knowledge regarding efforts to prevent sexual violence.

## **METHODS**

This study employed a quantitative approach using a pre-experimental research design with a one-group pretest–posttest design. The study measured children's knowledge before and after the intervention. The population consisted of students from the educational environment of SDN Joglo 08 Pagi. The research instrument consisted of a questionnaire administered directly to respondents to measure their level of knowledge before and after the intervention. The number of respondents in the study was determined using the sample size formula for two proportion difference test. The respondents had homogeneous characteristics, namely sixth grade elementary school students. Therefore, the sampling technique used was simple random sampling, meaning the entire population had an equal chance of being sampled. The sample size included 42 sixth-grade elementary school students, determined based on sample size calculation using the formula for testing the difference between two proportions. The samples were selected using a simple random sampling technique.

Validity and reliability tests were conducted using the Pearson product moment correlation and Cronbach's alpha. The Total of 23 questionnaire items tested, only 17 items were declared valid, so data collection was carried out with 17 question items. The intervention was carried out by providing health education using e-comics on preventing sexual violence. Respondents were given an explanation of the activities to be carried out and completed an informed consent. Respondents who had completed the pre-test were then given an intervention in the form of an e-comic on efforts to prevent sexual violence. After the intervention, the researcher immediately asked respondents to complete the post-test form that had been distributed by the researcher.

This research has passed an ethics review conducted by Prima Indonesia University on February 19, 2025, with the decree number: 099/KEPK/UNPRI/II/2025. This e-comic health education media was tested by media experts from the Informatics Engineering Department of Panca Sakti University. As media experts, the examiners determined that the e-comic media development was deemed suitable for research. The health education program received approval from the

school administration of SDN 08 Joglo Pagi, West Jakarta, and the teachers who acted as guardians of the students, who were the research respondents. Univariate analysis was performed to compare the average knowledge of respondents before and after receiving the intervention using e-comic media. This was followed by a normality test using the Shapiro–Wilk test prior to conducting bivariate analysis (11). After confirming that the data were normally distributed, a paired samples t-test was performed to determine whether health education delivered through e-comic media had an effect on knowledge related to the prevention of sexual violence.

## RESULTS AND DISCUSSION

### Results

#### A. Univariate Analysis

Table 1. Distribution of Knowledge Scores Before and After the Intervention

Pengetahuan	N	Mean	Std. Deviation	Min-Max
<i>Pre-Test</i>	42	46.88	9.541	24-65
<i>Post-Test</i>	42	84.43	9.034	65-100

Table 1 shows that there was an increase in student knowledge of 37.55 points, namely from an average mean score of 46.88 during the pretest to 84.43 during the posttest.

#### B. Bivariate Analysis

##### a. Normality Test

Table 2. Normality Test Results Before and After the Intervention

Pengetahuan	N	P
<i>Pre-Test</i>	42	0.067
<i>Post-Test</i>	42	0.052

Table 2 presents the results of the normality test for children’s knowledge data before the intervention on the prevention of sexual violence. The normality test was conducted using the Shapiro–Wilk test because the sample size in this study was fewer than 50 respondents. The data were considered normally distributed if the asymptotic significance (probability) value was greater than 0.05 (12,13).

The results of the normality test shown in the table indicate that the pre-intervention data were normally distributed with a significance value of 0.067. Similarly, the post-intervention normality test results also indicated a normal distribution with a significance value of 0.052. Based on the normality test results for both the pretest and posttest data, it was concluded that the data were normally distributed. Therefore, hypothesis testing in this study could be conducted using a parametric test, namely the paired samples t-test.

##### b. Paired Samples T-Test

Table 3: The Effect of E-Comic–Based Health Education on Children’s Knowledge of Sexual Violence

Pengetahuan	N	Prevention		
		Mean Difference	P	Std. Deviation
<i>Pre-Test</i>	42			9.541
<i>Post-Test</i>	42	-37.548	0.001	9.034

Table 3 shows the mean difference value, indicating a difference in the average level of children's knowledge regarding efforts to prevent sexual violence before and after the intervention was administered. These results illustrate an increase in scores from the pretest to the posttest.

Furthermore, the significance value obtained was 0.001 ( $p < 0.05$ ), which indicates that the alternative hypothesis ( $H_a$ ) was accepted. Therefore, it can be concluded that the intervention in the form of health education using e-comic media had a significant effect on improving children's knowledge regarding the prevention of sexual violence at SDN Joglo 08 Pagi.

## DISCUSSION

Respondents' knowledge based on the results of this study before the intervention in the form of health education using e-comic media showed a mean score of 46.88, with the lowest score of 24 and the highest score of 65. After the health education intervention was provided, the mean score increased to 84.43, with the lowest score of 65 and the highest score of 100. Statistically, this increase in knowledge indicates that children's knowledge improved after receiving health education using e-comic media regarding efforts to prevent sexual violence.

These findings are consistent with the study conducted entitled *The Effect of Health Education Using the Active, Creative, Effective, and Joyful Method on Efforts to Prevent Sexual Violence in Children*. The study revealed that prior to the intervention, the average level of students' knowledge regarding the prevention of sexual violence was relatively low at 75%. However, after receiving health education using this method, the average score increased to 78.6%, which was categorized as a good level of knowledge in prevention efforts (13).

These findings are also supported by the study conducted *Sexual Health Education on Knowledge of Sexual Violence among School-Age Children*. The study demonstrated a significant increase in children's knowledge levels before and after receiving sexual health education. Before the intervention, the average knowledge score of the children was 18.36, and after receiving the education, the score increased to 25.53 (14).

Based on the results of respondents' knowledge in this study and the findings of previous research mentioned above, it can be concluded that the hypothesis is accepted because there is an increase in the mean score before and after the intervention. This increase indicates that health education plays an important role in expanding respondents' insight and knowledge. These findings are also consistent which states that an individual can be considered to understand something when they have comprehension of the material learned and are able to explain and interpret it correctly (15). Therefore, it can be concluded that the health education provided in this study was well received and understood by the respondents.

Knowledge is the result of sensory processes obtained through an individual's life experiences. Experience plays an important role in shaping and influencing knowledge levels. Negative experiences are generally avoided or forgotten by individuals, whereas positive experiences tend to leave emotional and psychological impressions and are able to form positive attitudes in individuals. Based on this concept, the researchers introduced an innovation in health education for children through the use of e-comic media as a learning tool.

This innovation proved to have a positive impact, as reflected in the statistical test results. The data showed that health education delivered through e-comic media had a significant effect. This was supported by the mean difference value of -37.548 and a significance value of 0.001 ( $p < 0.05$ ). These findings indicate that the use of e-comics as an educational medium has a significant influence on improving children's knowledge regarding efforts to prevent sexual violence.

This study is also supported entitled *The Effectiveness of Educational Comics in Preventing Violence among Elementary School Students at SDN Penggilingan 09 Pagi, East Jakarta*. The results of that study showed a difference in the average knowledge score among 33 respondents before and after the intervention. Before the educational intervention, the average knowledge score of the participants was 62.72. After receiving the intervention in the form of educational comics, the average score increased to 85.81, indicating a significant improvement in understanding (16).

Respondents' knowledge regarding the prevention of sexual violence in children increased because the e-comic media used in this study had several advantages, particularly its engaging content. Learning media that incorporate attractive illustrations, communicative visuals, and bright colour can capture children's attention. In addition, simple layout arrangements and typography are necessary to ensure that children can easily understand the story being conveyed. Appropriate font styles and typographic settings also play an important role in ensuring readability and comprehension for children. These elements contribute to creating a positive learning atmosphere, increasing motivation, facilitating understanding of the reading material, and stimulating students' creativity during reading activities (17).

Furthermore, the use of appropriate and engaging learning materials in e-comics significantly influences students' learning motivation and academic outcomes. Well-designed and engaging materials can increase students' active participation in the learning process and strengthen their ability to retain information. When learning materials are aligned with students' cognitive development and interests, comprehension and memory retention become easier to achieve. The presentation of material through diverse visual media can create a more enjoyable and effective learning environment. Therefore, e-comic media can be considered a tool that facilitates students in understanding learning content and the messages being conveyed (18).

This conclusion is supported by the literature review, the study examined the effectiveness of comics compared with other health promotion media and found that comic-based health promotion methods were more effective than books. Furthermore, another study comparing comic-based education with lecture methods found that the group exposed to comic media achieved higher knowledge scores than the group receiving education through lectures (18).

The improvement in respondents' knowledge is not only influenced by the selection of appropriate media but is also supported by scientific explanations, such as Mayer's Cognitive Theory of Multimedia Learning. E-comics used in this study are strongly supported by Mayer's theory, particularly in accordance with the principles of multimedia because e-comics that are compiled combine audio and visual elements so that they will be more effective in increasing understanding. This e-comics also conforms to the coherent principle of Mayer's theory because this media contains elements of information and images that support the content of the material and the language is concise, clear, and focused. This theory states that learners who receive instruction through a combination of text and visual elements (such as leaflets, illustrated storybooks, or comics) can produce up to 89% more creative solutions in transfer tests compared with those who receive text-based learning alone. In general, students tend to be more interested in reading materials that include colour full and visually engaging illustrations, whether in the form of cartoons or realistic images. Media such as comics are proven to stimulate students' imagination while helping them understand reading content more easily (19).

Additional support for this concept is provided by the research conducted by Hutton et al, which demonstrated that the use of illustrated media such as pictures in storybooks can help children better understand and connect information. Visual illustrations can also reduce cognitive load in the brain areas responsible for language processing while enhancing children's visual processing and imagination (20).

In addition to the use of innovative and effective media, several supporting factors may also contribute to the improvement of children's knowledge. One of these factors relates to the research setting. The researchers collaborated with the school to conduct health education sessions before regular class hours and received direct assistance from classroom teachers, allowing the research activities to proceed in a conducive environment. Additional support, such as the provision of technological facilities by the school, also greatly facilitated the implementation of the study, ensuring that the presentation of the media and research materials could be delivered effectively. A conducive learning environment plays an important role in the learning process. A comfortable and well-organized classroom atmosphere helps students focus and absorb information more effectively (21).

E-comics or electronic versions of comics. In the current era of Industry 4.0, the use of electronic devices has brought about changes and influenced various aspects of human life, including education. This is due to the advantages, efficacy, and unique appeal offered by electronic devices. Use of e-comic media represents one effective and innovative approach that can be implemented by midwives to improve children's knowledge. Through engaging learning media, children become more interested in the educational material presented and are ultimately better equipped to protect themselves and prevent sexual violence after receiving such education (22). The application of e-comics as a learning medium in education has its own advantages, such as easy, repeated access, allowing students to study the material anywhere and anytime (2,17). The e-comics used in this study are easily accessible through shared links; they require no installation; simply click on them, and respondents can view and read.

## **CONCLUSION**

The conclusion of this study is that health education delivered through e-comic media has a significant effect on increasing the average knowledge scores of students regarding efforts to prevent sexual violence. It is recommended that future researchers conduct studies with a larger scope and sample size, employ different methodological approaches, develop more creative and innovative research media, and include additional variables in order to obtain broader and more comprehensive research findings.

As healthcare professionals, midwives have an important role in providing health education as part of promotive and preventive health efforts. Midwives are expected to develop innovative and appropriate strategies when delivering health education. This study only measured respondents' knowledge before and after the intervention, and there was no control group. Further research could expand on this by measuring the influence of respondent characteristics or comparing the effects of two media applied to two different groups.

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