

The Effect of First Aid Education via Audio-Visual Media on Adolescents' Knowledge Levels

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ABSTRACT

Introduction: Adolescents, as active participants in social and academic life, need adequate first-aid knowledge. One effective educational method is through audio-visual media, which can enhance learners' understanding and retention.

Objective: This study aims to analyze the effect of providing first aid education through audiovisual media on adolescents' knowledge levels.

Methods: This study employed a quasi-experimental, pretest-posttest, nonequivalent control group design. The sample consisted of 37 adolescents selected via simple random sampling. Data collection was conducted through questionnaires administered before and after the educational intervention to measure the adolescents' knowledge levels.

Result: The analysis showed a significant increase in adolescents' knowledge levels after receiving education through audiovisual media. The mean knowledge level before the intervention was 11.97 ± 1.818 , which increased to 29.05 ± 2.981 after the intervention. The Wilcoxon test showed a Z value of -5.308 ($p < 0.001$), indicating a significant difference between the pre- and post-educational session scores. This increase indicates that audiovisual media are effective in delivering first-aid information to adolescents. Factors such as learning interest and prior experience also contributed to improved understanding.

Conclusion: The results of this study indicate that first-aid education using audiovisual media significantly increases adolescents' knowledge levels. Therefore, this method can be used as an alternative in health education programs, particularly to enhance adolescents' preparedness to face emergencies.

Keywords: Education; Audiovisual Media; First Aid; Knowledge Level; Adolescents

Introduction

First aid is the temporary assistance and care provided to accident victims before receiving more comprehensive medical care from a doctor or other health professional. Such assistance is not a complete medical treatment or management, but merely temporary aid performed by a First Aid provider (medical personnel or laypersons) who first witnesses the victim. Meanwhile, a first responder is the person who first finds the victim and provides first aid. A first responder is obligated to assist quickly and precisely using the facilities and infrastructure available at the scene. Therefore, as a first responder, one must possess strong knowledge, skills, and experience in rescue. Correct implementation of First Aid measures will reduce disability and even death (Imardiani, 2020).

According to the World Health Organization (WHO), accidents continue to be the leading cause of death and disability among adolescents. Four major causes include motor vehicle accidents (30%), unintentional injuries (15%), homicide (15%), and suicide (12%), accounting for approximately 72% of all deaths among adolescents between the ages of 10 and 24. Furthermore, between the ages of 10 and 17, more than 1 million major sports-related injuries occur in schools annually (Widiastuti & Adiputra, 2022).

The Ministry of Health (Kemenkes) states that adolescence is a period of rapid physical, psychological, and intellectual growth and development. A strong sense of curiosity marks it, a tendency to take risks without careful consideration, and a fondness for adventure. This high curiosity is a developmental characteristic of adolescents, during which they tend to be exploratory, seek answers to various questions, and desire to try new things (Azahra, 2023). This high level of curiosity can be a vital asset in effectively introducing First Aid education. By utilizing adolescents' curiosity and an interactive approach, First Aid education can become an enjoyable yet useful learning experience for them. This not only enhances their skills but also builds awareness of the importance of helping others in emergencies.

Providing First Aid education to vocational high school (SMK) adolescents is highly required because they are frequently in situations without direct supervision from adults or medical personnel. With adequate education, adolescents can act as first aiders, providing emergency assistance until professional medical personnel arrive. In addition, First Aid education supports the healthy school program and creates a safer environment for the entire school community. However, the effectiveness of First Aid education in increasing adolescents' knowledge levels has not been fully explored, particularly among high school-aged adolescents. This is evidenced by the results of a preliminary study conducted by the researcher, which showed that 5 out of 10 adolescents at SMK Khoiriyah Sumobito admitted they did not understand what First Aid is or how to handle accident victims properly. Therefore, this study aims to measure the effect of providing First Aid education through videos and leaflets on the knowledge levels of high school adolescents, while evaluating the extent to which this education can help them become better prepared to face emergencies. This research is expected to contribute to the development of more effective First Aid educational programs in schools, thereby improving the safety and health quality of adolescents and creating an environment that is more responsive to emergency conditions.

Method

Research Design

This study used a quantitative research method to determine whether the independent variable (providing first aid education through audiovisual media) affects the dependent variable (knowledge level). This study employed a quasi-experimental design. A quasi-experiment is a research method that closely resembles a true experiment. This study aims to directly test the effect of one variable on another and test hypotheses regarding cause-and-effect relationships. The experimental research method used is the Pretest-Posttest Nonequivalent Control Group Design, which administers a pretest before the treatment and a posttest after the treatment to each group

Research Setting and Time

The study was conducted at SMK Khoiriyah in Sumobito Village, and the research was conducted in February 2025.

Population and Sample

The population for this research consisted of 156 adolescents at SMK Khoiriyah Sumobito. The sample size was determined using the LEMESHOW formula, yielding a sample of 37 students.

Data Collection Methods

The researcher first requested permission from the principal of SMK Khoiriyah to conduct the study. After obtaining permission, the researcher conducted a preliminary study to collect data (population size and site survey) and then administered the questionnaire. Following this, first aid education was delivered through audiovisual media. After the education session, respondents' knowledge levels were reassessed using the questionnaire.

Research Instruments

The research instrument for first aid education among adolescents at SMK Khoiriyah Sumobito utilized a Lesson Plan (SAP) on the theme of First Aid education, which covered the definition of First Aid, the goals of First Aid, victim assessment, how to call for help, and correct first aid techniques, documentation, or other relevant instruments.

Data Analysis

The research instrument for measuring knowledge was a questionnaire. The questionnaire in this study consisted of 35 questionnaire items utilizing the Guttman scale. The knowledge instrument in this study used two alternative answers: a correct response was scored 1, and an incorrect response was scored 0.

Ethical Considerations

An ethical clearance application was submitted, stating that the research activities were conducted in accordance with mutually agreed procedures and in compliance with ethical principles, thereby making the study suitable for implementation.

Results

Table 1. Frequency distribution of respondents' gender

Gender	Experimental Group		Control Group	
	f	%	f	%
Male	11	29.7	18	48.6
Female	26	70.3	19	51.4
Total	37	100	37	100

The research findings in Table 1 indicate that the characteristics of the respondents based on gender in the experimental group were predominantly female adolescents, with a percentage of 70.3%. Similarly, in the control group, the majority of the respondents were also female, accounting for 51.4%.

Knowledge Levels	Pre Test (Experimental Group)		Pre Test (Control Group)	
	f	%	f	%
High	-	-	-	-
Moderate	15	40.5	22	59.5
Low	22	59.5	15	40.5
Total	37	100	37	100

Knowledge Levels	Post Test (Experimental Group)		Post Test (Control Group)	
	f	%	f	%
High	37	100	15	40.5
Moderate	-	-	21	56.8
Low	-	-	1	2.7
Total	37	100	37	100

	Pre-Test			Post-Test		
	N	Mean	Std. Dev	N	Mean	Std. Dev
Eksperimental Group	37	42.28	1.181	37	32.72	3.429
Control Group	37	53.12	2.981	37	21.88	4.160
	P = 0.000 $\alpha = 0.05$			P = 0.054 $\alpha = 0.05$		

indicating that there was no statistically significant difference between the experimental and control groups at the pre-test stage. In other words, the baseline knowledge levels of the two groups did not differ significantly. This is crucial as it demonstrates that both groups started from an equivalent baseline condition; thus, any difference in post-treatment outcomes can be attributed to the intervention (education) provided to the experimental group, rather than other confounding factors. Conversely, the post-test results revealed a p-value of 0.000 ($p < 0.05$), indicating a highly statistically significant difference between the experimental and control groups. The mean rank of the experimental group was substantially higher than that of the control group (53.12 vs. 21.88), indicating that the knowledge level of the participants in the experimental group increased exponentially following the educational intervention. Both logically and statistically, this improvement can be directly linked to the effectiveness of the delivered first aid education, given that the control group did not receive a similar treatment and failed to show a comparable increase.

Discussion

Adolescents' knowledge level about first aid before being given first aid education at SMK Khoiriyah Sumobito

Before the educational intervention, the knowledge level of adolescents in the experimental group was categorized as low. The majority of respondents were in the low-knowledge category (59.5%), while nearly half were in the moderate-knowledge category (40.5%). None of the respondents had a high level of knowledge before the intervention.

A similar pattern was observed in the control group, where the majority of respondents fell into the moderate category (59.5%) and nearly half into the low knowledge category (40.5%); none reached the high category. These results indicate that before the education was delivered, most adolescents did not have a proper understanding of first aid.

Factors such as prior experience and personal interest can influence their baseline knowledge level. Adolescents who have witnessed or experienced emergencies firsthand may possess only limited knowledge; without systematic education, their understanding remains limited. Furthermore, adolescents with low interest in health or safety topics tend to seek little information about first aid.

Previous studies by Nugroho et al. (2020) and Lestari (2021) also found that adolescents' baseline knowledge regarding first aid is generally low, particularly if they lack direct experience or have not received prior education. Therefore, educational interventions are a crucial step in increasing their awareness and skills in managing emergencies.

Adolescents' knowledge level about first aid after being given first aid education at SMK Khoiriyah Sumobito

Based on the research findings, before the educational intervention, adolescents in the experimental group had low knowledge levels. The majority of respondents had low

knowledge (59.5%), while nearly half had moderate knowledge (40.5%). No respondent had a high level of knowledge before the intervention.

A similar baseline was observed in the control group, where the majority of respondents were in the moderate category (59.5%) and nearly half in the low knowledge category (40.5%), with none reaching the high category. However, after the educational intervention, the experimental group showed a significant increase in knowledge. All respondents who previously had a low knowledge level successfully shifted into the high category, reaching 100%.

Conversely, in the control group which did not receive the audio-visual education—the majority of respondents remained in the moderate category (56.8%), nearly half reached the high category (40.5%), and a small minority fell into the low category (2.7%). These outcomes indicate that first aid education is highly effective in increasing adolescents' knowledge. Nevertheless, this effectiveness can also be influenced by individual interest levels. Adolescents with a high interest in first aid tend to be more enthusiastic about receiving information, grasp the material more easily, and feel more motivated to retain and apply what they have learned. On the other hand, those who lack interest might only absorb information passively, resulting in less optimal knowledge gains than those who are genuinely interested.

Consequently, to optimize educational effectiveness, engaging delivery methods tailored to adolescents' interests are required, such as hands-on simulations, interactive videos, or practice-based training. Through these methods, education not only enhances knowledge but also fosters a greater interest in first aid, making adolescents better prepared and more confident when facing emergencies. This study aligns with previous research, such as Sari & Widyastuti (2020) and Putri et al. (2021), which find that engaging, experience-based education can improve adolescents' understanding more effectively than passive learning methods.

Analysis of the effect of first aid education on adolescents' knowledge levels at SMK Khoiriyah Sumobito

The Mann-Whitney U test was used to assess differences in knowledge levels between the experimental and control groups, both before and after the first aid educational intervention. This test was utilized because the data were non-parametric and the two groups were independent. The pre-test analysis revealed that the experimental group had a mean rank of 42.28, while the control group had a mean rank of 32.72, with a p-value of 0.054. Because $p > 0.05$, there was no significant difference between the two groups before the treatment. This indicates that both groups had a relatively equal baseline knowledge level, suggesting that the post-test results accurately reflect the intervention's direct effect. This finding aligns with the principles of good experimental control, which state that compared groups must possess equivalent baseline abilities (Notoatmodjo, 2012) so that post-intervention differences are genuinely caused by the administered treatment rather than confounding baseline factors. After the educational intervention was delivered, the experimental group's mean rank increased to 53.12, while the control group remained much

lower at 21.88. The Mann-Whitney test yielded a p-value of 0.000, indicating a highly significant difference between the two groups. This proves that first aid education has a real, measurable effect on students' knowledge. This study is consistent with Fitriana's (2020) findings, which reported that delivering education via interactive media significantly increases high school students' knowledge of minor injury management. Similarly, a study by Sari and Wulandari (2019) noted that first aid training successfully enhances students' knowledge and preparedness in emergencies. Theoretically, these findings can be explained by Skinner's Behaviorism theory, which posits that behavioral changes (including knowledge) can occur through the provision of stimuli and reinforcement. In this context, education functions as a stimulus that triggers the formation of new knowledge through the learning process. Furthermore, Vygotsky's constructivist theory is also relevant, suggesting that contextual and interactive learning allows students to build understanding through direct experiences, such as discussions, simulations, and real-world problem-solving. The educational approach applied in this study incorporates these elements. The researcher assesses that school-based health education, particularly regarding first aid, is highly essential and effective in increasing adolescents' preparedness and knowledge. The significant increase observed in the experimental group indicates that targeted, interactive, and age-appropriate education can enhance awareness and understanding of risks and emergency response measures.

Conclusion

The baseline knowledge level in the experimental group indicated that most adolescents had low knowledge. In contrast, the control group showed that most adolescents had a moderate knowledge level. There was a significant increase in knowledge levels after the educational intervention; in the experimental group, 100% of respondents demonstrated a high level of knowledge. Meanwhile, in the control group, the majority continued to demonstrate a moderate level of knowledge. The post-test Mann-Whitney U test revealed a highly significant difference between the experimental and control groups ($p = 0.000$; $p < 0.05$), with the experimental group (53.12) having a much higher mean rank than the control group (21.88). This reinforces the conclusion that education plays a vital role in increasing students' knowledge about first aid.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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Author Contributions

SH: contributed to conceptualization, methodology guidance, data collection, formal analysis, and writing-original draft. K1, SW, K2: contributed to data processing, supervision, validation, and manuscript review. All authors approved the final manuscript.

Data Availability Statement

The authors declare no conflict of interest with respect to the research, authorship, and/or publication of this article.

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