



**EFFECTIVENESS OF ROLE-PLAYING METHOD IN IMPROVING
ELEMENTARY SCHOOL CHILDREN'S KNOWLEDGE ABOUT DHF
PREVENTION IN SOUTH BALIKPAPAN**

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ABSTRACT

Dengue fever (DHF) is a major public health problem in the tropics, including Indonesia, impacting the health of children. The disease can cause serious complications if not treated promptly. Effective prevention requires good knowledge of healthy behaviours, especially in environmental management to prevent the proliferation of *Aedes aegypti* as the main vector of the virus. However, many children still do not understand the importance of dengue prevention. Therefore, improving their knowledge is very important in an effort to overcome this problem. This study aims to analyse the effectiveness of interactive learning methods, particularly role-playing, in improving children's knowledge about dengue prevention. The research design used is Quasi-Experiment with pre-test and post-test, involving 27 students of SD Negeri 002 South Balikpapan in 2024. The instrument used was a questionnaire which was prepared based on the indicators of DHF prevention. The results showed a significant effect of interactive learning method on improving children's knowledge about dengue prevention, with a significance level of 0.000 ($p < 0.05$). This study provides important implications in health education, especially in efforts to improve children's knowledge through interactive and fun learning methods.

Keywords: dengue hemorrhagic fever; frequencies statistical test; primary school children; role play; t-test

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INTRODUCTION

The environment is a crucial factor affecting public health, especially in tropical regions like Indonesia. Poor environmental conditions, along with unhygienic behaviour, can increase the risk of spreading infectious diseases. Research by Avilia et al. (2014) showed that low public knowledge about the importance of environmental hygiene often leads to poor sanitation behaviour. Arsyad et al. (2020) added that the lack of community participation in maintaining environmental hygiene contributes to the increased risk of infectious diseases, including Dengue Fever (DHF), Acute Respiratory Infections (ARI), diarrhoea, and malaria. DHF is a disease caused by the Dengue virus and transmitted by *Aedes aegypti* and *Aedes albopictus* mosquitoes. The environment influences the spread of mosquitoes as vectors of the disease, with factors such as temperature and humidity affecting mosquito life cycles and populations (Sari et al., 2017). The World Health Organisation (WHO, 2023) reports that global dengue cases have risen sharply in the past two decades, with a peak in 2019. Despite a decline during the COVID-19 pandemic, dengue cases are on the rise again in 2023 with more than 5 million cases and 5,000 deaths.

In Indonesia, DHF is an endemic disease with an increasing trend every year. Data from the Ministry of Health (2024) shows that in June 2024, there were 119,709 cases of DHF, with the 5-14 age group being the most vulnerable. In East Kalimantan, there were 5,841 dengue

cases in 2022, with South Balikpapan recording the highest prevalence. This condition emphasises the need to increase public knowledge and participation in dengue prevention. DHF prevention in Indonesia focuses on Mosquito Nest Eradication (MNE) with the 3M Plus approach (Menguras, Menutup, Mengubur), the use of larvicides, and monitoring of larvae (Roziqin et al., 2020). The success of these efforts relies heavily on community participation. Sukesni et al. (2018) noted that community empowerment to improve health is a process that allows individuals and groups to participate in health-related decision-making. Health education in schools is one of the effective strategies to increase children's knowledge about dengue prevention (Nasution et al., 2018).

Children aged 5-14 years are vulnerable to DHF due to lack of knowledge about prevention. Data from the Indonesian Ministry of Health (2021) shows that this age group accounts for a significant percentage of DHF cases. To overcome this problem, interactive learning methods such as role playing can be used. According to Edgar Dale (2011), methods that involve more senses such as role playing are more effective in improving memory. Simanjuntak (2021a) adds that information conveyed through role playing is more easily remembered by students. This study aims to evaluate the effectiveness of the role-playing method in improving primary school students' knowledge on dengue prevention. The study also aimed to understand the extent to which this method can improve knowledge as well as information retention in children. The results obtained are expected to contribute to the development of more interactive and effective health education strategies, and support sustainable dengue prevention efforts in the future.

METHOD

This research method uses quasi-experiment design with pre-test and post-test approach to assess the effectiveness of role-playing method in improving children's knowledge about Dengue Haemorrhagic Fever (DHF) prevention. This study was conducted in February 2024 at SD Negeri Balikpapan Selatan involving 27 fifth grade students. Inclusion criteria included children aged 7 to 12 years who were enrolled in school and able to read and write. Children who were absent or experiencing health deterioration during the study were excluded from the study. The research instrument consisted of a questionnaire containing 40 questions on dengue prevention. Scoring of the questionnaire was determined as follows: 2 points for correct answers, 1 point for incorrect answers, and 0 points for don't know answers. Of the 40 questionnaire questions, only 37 questions were valid, with a reliability value of $0.945 > r$ table (0.381) at a significance level of 5%.

Thus, the instruments used in this study have been tested for validity and reliability, so they can be used to effectively evaluate children's knowledge on dengue prevention. After the pre-test, the children will receive a short video and PowerPoint lecture on dengue prevention. Next, they will read and perform a role-play based on a script that has been developed. The role-play activity aimed to deepen their understanding of dengue prevention through direct interaction and practical experience. Data were collected in Microsoft Excel and analysed using univariate statistical tests (frequency) to describe the distribution of data. In addition, paired t-test was used to compare pre-test and post-test scores and evaluate the impact of the intervention. This study has also received an ethical approval letter issued by KPEK UMS on 1 April 2024 with number: No. 278/KEPK-FIK/IV/2024. With this approval, the research can be carried out in accordance with applicable ethical guidelines.

RESULTS

Based on table 1 below, it is known that there are more male students than female students, namely 14 people (51.85%) compared to 13 people (48.15%). The characteristics of the respondents are described in the following table:

Table 1.

Ages	11 Years	10	37,04	
	12 Years		15	62,96
Total		27	100	
Genders	Male		14	51,85
	Female		13	48,15

Based on table 2 below, before the application of the role-playing method, 6 students (22.22%) were in the moderate category, while 21 students (77.78%) were in the high category. The average score obtained was 57.96, which is in the interval 54-80, indicating a high level of knowledge. This indicates that most students already had good knowledge about Dengue Fever prevention before the intervention.

Table 2.

Data on students' knowledge level before and after the application of role play method.

Level of Knowledge	Category	Pre-test		Post-test		P-value
		f	%	f	%	
54 – 80	High	21	77,78	26	96,30	0,000
27 – 53	Fair	6	22,22	1	3,70	
0 – 26	Low	-	-	-	-	
Sum		27	100%	27	100%	
Mean		57,96		71,07		
Standar Deviation		8,631		5,987		
Median		39		50		
Minimum		75		76		
Maximum		58		73		

After the application of the role-playing method, the level of knowledge of class V students has increased. This can be seen from the assessment results which show that 26 students (92.86%) are in the high category, while 1 student (3.70%) is in the moderate category. The average score obtained was 71.07, which is included in the interval 54-80, indicating a high level of knowledge. This shows that the application of the role-playing method significantly improved the knowledge of grade V students about the prevention of dengue fever, with the majority of students showing high knowledge after the intervention. Paired t-test resulted in a p-value of $0.000 < 0.05$. Statistically, this p-value indicates a significant relationship between the variables tested. Based on the results of this study, it can be concluded that the role-playing method is effective in increasing primary school children's knowledge about Dengue Fever (DHF) prevention.

DISCUSSION

Based on the results of the study, there is a difference in the number of students, which shows that the proportion of male students is slightly greater than female students in the sample studied. The results of this study are in line with research conducted by (Supiyati et al., 2024) which showed that although there was a slight difference in the number of students between males and females, this difference was not large enough to significantly affect the results of the study. Therefore, factors such as curriculum and teaching quality play more of a role in determining students' mathematics achievement than differences in school status or gender. Referring to the next research result, there was a difference in the percentage in the high and moderate categories during the pre-test and post-test. This change indicates that the role-

playing method is effective in increasing students' knowledge of Dengue Fever (DHF) prevention. This finding confirms that interactive methods such as role-playing can increase understanding and reduce knowledge gaps among students. This is in line with research showing that the effectiveness of interactive, immersive learning methods can significantly increase students' learning outcomes and improve their understanding of the subject matter (Syahfitri et al., 2023). This is also in line with a previous study that showed that educational activities were effective in increasing the knowledge and insights of SD Inpres Watujara students regarding dengue prevention, as well as strengthening their role in tackling the spread of the disease. The right education process was proven to have a positive impact, with a significant increase in student knowledge, from 38.45% in the pre-test to 91.30% in the post-test, with an increase of 52.65% (Tokan et al., 2022).

The results of the subsequent study showed that the role-playing method was effective in increasing students' knowledge of Dengue Fever (DHF) prevention and equalising their level of understanding, as seen from the increase in mean score and decrease in standard deviation. These findings are consistent with previous research by (Ritonga et al., 2024), which showed that active learning methods can have a significant positive impact on student development. This study showed that the role-playing method significantly improved primary school children's knowledge about Dengue Fever prevention. This finding is in line with that conducted by (Julianti et al., 2021), which states that the combination of roleplay and audiovisual media (video) is effective in health education. Role-play therapy given to children can add insight into the prevention of Dengue Fever such as draining the bathtub once a week, burying used items, closing water reservoirs, sleeping using mosquito nets, so that children can make efforts to prevent Dengue Fever correctly (Yakin et al., 2019). This interactive method is more effective than conventional methods such as animated videos and powerpoint materials. However, research (Simanjuntak, 2021) states that the role-playing method is less effective than the game method in improving mothers' behaviour about Dengue Fever. This is due to several factors that can affect the role-playing method, including the learning environment, age, and involvement of participants, as well as the quality of implementation.

CONCLUSION

Based on the results of the research and discussion on the effectiveness of role-playing method in improving primary school children's knowledge on dengue fever prevention in South Balikpapan, it can be concluded that the role-playing method is proven to be effective in improving primary school children's knowledge on dengue fever prevention. The application of this method not only helps children understand the information in a more interactive and fun way, but also improves their knowledge retention in the long term. Through actively engaging children in relevant simulated situations, the role-play method facilitates a more in-depth and applicable understanding of dengue prevention measures, which in turn can contribute to reducing the risk of the disease spreading at their age.

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