

THE EFFECT OF HEALTH EDUCATION USING QUARTET FLASHCARD MEDIA ON ELEMENTARY SCHOOL CHILDREN'S KNOWLEDGE OF DIARRHEA PREVENTION IN TASIKMALAYA

Tasya Dwi Yanti^{1*}, Miftahul Falah², Yuyun Solihatin³, Zainal Muttaqin⁴

^{1,2,3,4}Faculty of Health Sciences, Muhammadiyah University of Tasikmalaya, Tasikmalaya, Indonesia

ABSTRAK

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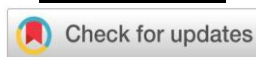
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Abstract:

Diarrhea remains one of the leading causes of morbidity and mortality among children, particularly in developing countries. Poor hygiene awareness and limited knowledge about prevention are major contributing factors. Health education using interactive media, such as the Quartet Card, can enhance children's understanding of diarrhea prevention. This study aimed to assess the effectiveness of health education using the Quartet Card in improving elementary school students' knowledge of diarrhea prevention. This study employed a pre-experimental design using a one-group pretest-posttest approach to evaluate the effectiveness of the intervention. The sample consisted of 55 students from SDN 7 Singaparna, Tasikmalaya Regency, selected through total sampling. The Wilcoxon Signed Rank Test results showed a p-value of 0.000 ($p < 0.05$), indicating a significant improvement in students' knowledge after the intervention. Therefore, health education using Quartet Card media has been proven effective in enhancing students' knowledge of diarrhea prevention. This educational tool presents information in a visually engaging format through card-based games that promote active participation, discussion, and repetition. Such an approach creates a fun and interactive learning experience, making it easier for students to comprehend and retain information related to clean and healthy living behaviors.

Abstrak:

Diare merupakan penyebab utama morbiditas dan mortalitas pada anak, terutama di negara berkembang. Rendahnya kesadaran akan kebersihan serta kurangnya pengetahuan tentang pencegahan menjadi faktor utama. Pendidikan kesehatan berbasis media interaktif seperti Quartet Card dapat meningkatkan pemahaman anak tentang pencegahan diare. Penelitian ini bertujuan untuk menganalisis pengaruh pendidikan kesehatan menggunakan Quartet Card terhadap tingkat pengetahuan siswa sekolah dasar. Desain penelitian yang digunakan adalah pre-experimental dengan pendekatan one group pretest-posttest, karena penelitian ini tidak melibatkan kelompok pembandingan (kontrol). Sampel terdiri dari 55 siswa SDN 7 Singaparna, Kabupaten Tasikmalaya, yang dipilih dengan teknik total sampling. Hasil analisis menggunakan Wilcoxon Signed Rank Test menunjukkan nilai $p = 0,000$ ($p < 0,05$), yang mengindikasikan adanya peningkatan signifikan dalam tingkat pengetahuan siswa setelah intervensi. Dengan demikian, pendidikan kesehatan menggunakan media Quartet Card terbukti efektif dalam meningkatkan pengetahuan siswa mengenai pencegahan diare, karena media ini menyajikan informasi secara visual dan menarik dalam bentuk permainan kartu yang mendorong partisipasi aktif, diskusi, serta pengulangan materi secara menyenangkan, sehingga memudahkan siswa dalam memahami dan mengingat informasi terkait perilaku hidup bersih dan sehat.



*Corresponding Author:

Miftahul Falah,
Faculty of Health Sciences,
Muhammadiyah University of Tasikmalaya,
Tasikmalaya, Indonesia.
Email: miftahul@umtas.ac.id

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INTRODUCTION

Diarrhea remains a critical global health concern, particularly in developing countries, where it significantly contributes to morbidity and mortality among children [1]. Diarrheal fatigue remains a major public health challenge in many developing countries, including Indonesia, where major outbreaks often occur and can result in significant mortality [2]. According to the World Health Organization (WHO), diarrhea accounts for approximately 1.7 billion cases annually and causes the deaths of around 443,832 children under five years old and an additional 50,851 children aged 5 to 9 years each year. This condition is strongly associated with inadequate sanitation, limited access to clean water, and low awareness of personal and environmental hygiene [3]. The high burden of diarrhea underscores the urgent need for effective preventive strategies, particularly among vulnerable populations.

In Indonesia, diarrhea remains a major public health issue with a rising prevalence. According to the Basic Health Research (Riskesdas) in 2018, the national prevalence of diarrhea increased from 3.5% in 2013 to 8.0% in 2018, illustrating persistent challenges in diarrheal disease control efforts [4]. Furthermore, data from the Ministry of Health of the Republic of Indonesia in 2023 indicate that West Java Province reported a diarrhea prevalence of 7.4%, placing it among the provinces with relatively high incidence rates [5]. This information underscores the need for region-specific and community-based interventions to address ongoing diarrheal disease challenges in Indonesia.

Tasikmalaya Regency also faces significant challenges related to diarrhea prevalence. Data from the West Java Health Office (2023) reveal a decline in diarrhea cases from 20,188 in 2019 to 14,536 in 2023. However, the Singaparna Health Center's jurisdiction has experienced an increasing trend in diarrhea cases, particularly among elementary school children [5]. This rise in cases

suggests that current preventive efforts may be insufficient and highlights the need for targeted, school-based interventions.

School-aged children may have limited awareness of proper hygiene practices, which contributes to their risk of contracting diarrhea. A study by Romlah et al. in 2020 demonstrated that health education using video media can significantly improve children's knowledge and attitudes regarding diarrhea prevention [6]. Common risk behaviors include not washing hands before eating, exposure to unclean school environments, and unhealthy dietary habits. Previous studies have shown that a lack of awareness regarding hygiene significantly contributes to the transmission of diarrheal diseases [7]. Therefore, implementing effective health education strategies is crucial to increasing children's awareness and promoting sustainable clean and healthy living behaviors [8].

One innovative educational approach that has demonstrated potential in improving children's knowledge of diarrhea prevention is the use of Quartet Card media [9]. This visual-based interactive learning tool has been shown to enhance children's engagement and facilitate better comprehension of health-related information [10]. Several studies indicate that educational media incorporating games and visual aids are more effective in enhancing children's retention and understanding of health topics compared to traditional lecture-based methods [11]. The use of Quartet Card media could provide a more engaging and effective approach to educating school-aged children on the importance of diarrhea prevention.

Given the significant impact of diarrhea among elementary school children, this study aims to evaluate the effectiveness of health education using Quartet Card media in improving students' knowledge of diarrhea prevention. This research is expected to contribute to the development of more effective and innovative health education strategies, ultimately supporting

efforts to reduce the incidence of diarrhea among school-aged children. Additionally, findings from this study may serve as a reference for policymakers and educators in designing more engaging and impactful health promotion programs.

RESEARCH METHOD

This study using a pre-experimental method with a one-group pretest–posttest design, which lacks a comparison group. This design, often referred to as a pre-experimental design, is suitable for preliminary evaluation of intervention effectiveness. The research is conducted at SDN 7 Singaparna, Tasikmalaya Regency, in February 2025. The sample consists of 55 students from grades IV, V, and VI, selected using the total sampling method, which means that the entire population is included as the sample. Thus, the number of samples is equal to the total population studied [12].

The instrument used in this study is a questionnaire consisting of 23 questions designed using the Guttman scale to assess students' knowledge levels before and after the intervention. Validity testing was conducted using the Pearson correlation test, with correlation values ranging from 0.447 to 0.741. Meanwhile, reliability testing was carried out using the Cronbach's Alpha method, yielding a value of 0.923, indicating that the instrument has a high level of validity and reliability.

Research procedure were include:

1. Pretest: Before the intervention, students are given a questionnaire to assess their initial knowledge of diarrhea prevention.
2. Intervention: Health education is provided using the Quartet Card media, an interactive visual learning tool designed to engage children.
3. Posttest: After the intervention, the same questionnaire is administered again to measure the improvement in students' knowledge.

The collected data is analyzed using the Wilcoxon Signed Rank Test to

determine differences in knowledge levels before and after the intervention. Statistical results are considered significant if $p < 0.05$.

RESULT AND ANALYSIS

The research results on the effect of health education using the Quartet Card media on the level of knowledge about diarrhea prevention among fourth, fifth, and sixth-grade students at SDN 7 Singaparna are as follows:

**Table 1 .
Frequency Distribution of Respondents
Based on Age and Gender Characteristics at
SDN 7 Singaparna, Tasikmalaya Regency
2025**

Characteristics	n	%
Age		
9	4	7.3
10	13	23.6
11	17	30.9
12	20	36.4
13	1	1.8
Gender		
Male	32	58.2
Female	23	41.8
Total	55	100

Based on Table 1, it can be seen that respondents aged 9 years consist of 4 people (7.3%), respondents aged 10 years consist of 13 people (23.6%), respondents aged 11 years consist of 17 people (30.9%), respondents aged 12 years consist of 20 people (36.4%), and respondents aged 13 years consist of 1 person (1.8%). Regarding gender, the majority of respondents are male, with 32 people (58.2%), while female respondents total 23 people (41.8%).

**Table 2.
Students' Knowledge Scores Before and
After Health Education Using Quartet Card
Media at SDN 7 Singaparna, Tasikmalaya
Regency, 2025**

Statistik	Pretest	Posttest
Total sample	55	55
Mean	16,25	19,15
Median	16,00	19,00
Minimum	8	11
Maximum	22	23
Sdt.Deviation	3,777	3,129

Based on Table 2, the results indicate that prior to receiving health education using Quartet Card media on diarrhea prevention, respondents' knowledge scores ranged from a minimum of 8 to a maximum of 22 points. The mean knowledge score was 16.25, with a standard deviation of 3.777. Following the health education intervention using Quartet Card media, respondents' knowledge scores showed an increase, ranging from a minimum of 11 to a maximum of 23 points. The mean knowledge score improved to 19.15, with a standard deviation of 3.129. These findings suggest that the implementation of Quartet Card media may contribute to enhancing students' understanding of diarrhea prevention, as evidenced by the significant increase in post-intervention knowledge scores.

Table 3.
The Effect of Health Education Using Quartet Card Media on Diarrhea Prevention

	posttest – pretest
Z	-6.493 ^b
Asymp. Sig. (2-tailed)	.000

Based on Table 3, the Wilcoxon Signed Rank Test results indicate a Z-value of -6.493 with a p-value (Asymp. Sig 2-tailed) of 0.000, which is below the predetermined significance level of 0.05. This finding leads to the rejection of the null hypothesis (H_0) and the acceptance of the alternative hypothesis (H_a), demonstrating a statistically significant improvement in students' knowledge levels following the health education intervention using Quartet Card media on diarrhea prevention.

DISCUSSION

The findings of this study indicate a significant improvement in students' knowledge levels after receiving health education using Quartet Card media. The mean pretest score was 16.25, which

increased to 19.15 in the posttest. The Wilcoxon Signed Rank Test results showed a Z-value of -6.493 with a p-value of 0.000 ($p < 0.05$), confirming that health education using Quartet Card media has a statistically significant impact on students' knowledge of diarrhea prevention.

This improvement can be explained through game-based learning theory, which emphasizes engagement and enjoyment as key elements in the learning process. A positive and enjoyable learning environment has been shown to foster positive suggestions that contribute to better learning outcomes, as proposed in Lozanov's Suggestopedia theory. As an interactive educational tool, the Quartet Card facilitates deeper comprehension, enhances students' motivation, and encourages active peer discussions [13].

In addition to the game-based learning theory, students' knowledge changes can also be associated with cognitive theory, which explains that a person's knowledge develops through the process of perceiving an object. Accordingly, the knowledge change observed in students after receiving health education using the Quartet Card media can be explained through this theory [14]. Furthermore, the knowledge acquired is not merely passive information but serves as a fundamental basis for shaping an individual's behavior. Therefore, increasing knowledge through educational methods such as the Quartet Card is expected to contribute to behavioral changes in students regarding diarrhea prevention [15].

Beyond the effectiveness of health education methods, the sustainability of education also plays a crucial role in shaping better behavior. Health education designed with an interactive approach has been proven to enhance knowledge and behavior among individuals, groups, and society as a whole [16]. This finding suggests that selecting the appropriate educational method, such as game-based learning through the Quartet Card, can be a more effective strategy compared to

conventional lecture methods. However, the effectiveness of a health education method does not solely depend on the approach used but also on how well its sustainability is supported by public policies.

In this regard, health promotion aims not only to improve knowledge but also to transform individual and environmental behaviors on a broader scale. This transformation requires support from various stakeholders, including public policies that facilitate the adoption of healthy living practices within school environments [17]. Therefore, the implementation of health education using the Quartet Card should be integrated into broader school policies, such as school hygiene programs and improved access to clean water.

These findings align with previous studies that reported a significant improvement in students' knowledge levels after receiving health education using Quartet Card media [18]. Furthermore, a modified Quartet Card intervention has been shown to have a statistically significant impact on students' understanding, application, analysis, synthesis, and evaluation, with a p -value of 0.000 ($p < 0.05$) [11]. Additionally, the method has been found effective in increasing students' awareness of healthy snack consumption, which is an essential aspect of diarrhea prevention [19].

Health education plays a strategic role in increasing public awareness, particularly among children, regarding disease prevention. Game-based educational methods, such as the Quartet Card, have been proven to be more effective than conventional approaches. The Quartet Card significantly enhances students' motivation to learn [20], while game-based learning methods have been found to be more effective than lecture-based approaches in improving students' comprehension of health-related topics [10].

As an educational tool, the Quartet Card offers several advantages, particularly in increasing students' interest in learning and facilitating their understanding of health-related content. Compared to other health education media, visual learning materials such as illustrated cards provide a more concrete and realistic representation than verbal explanations alone. Moreover, time and space constraints in health education can be addressed by using images that depict real-world objects, reducing the need to take students outside the classroom or present actual objects, which may not always be available [16].

Furthermore, game-based interactive learning methods, such as the Quartet Card, have been shown to significantly increase students' enthusiasm for health education [11]. Similarly, visual and interactive media have been demonstrated to enhance information retention among elementary school students [14].

However, while knowledge improvement is evident, behavioral change requires further intervention. Poor hygiene habits and limited access to clean water in schools remain significant barriers to the adoption of healthy behaviors. Children in environments with inadequate access to clean water are more vulnerable to diarrheal infections [21]. Therefore, health education initiatives should be integrated with infrastructure improvements and involve teachers and parents to ensure the sustainability of clean and healthy living practices within school environments.

Overall, the findings of this study support the hypothesis that the use of Quartet Card media significantly enhances students' knowledge of diarrhea prevention. It is recommended that this method be widely implemented in school-based health education programs to help reduce the incidence of diarrheal diseases among children.

CONCLUSION

Health education using Quartet Card media has been proven effective in enhancing students' knowledge of diarrhea prevention.

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