



## THE EFFECT OF DIARRHEA BOARD GAME (DIBOGE) ON STUDENTS' KNOWLEDGE AND ATTITUDES ABOUT DIARRHEA AT SDN 79 BENGKULU CITY

Selvia Anggraini Putri<sup>1</sup>, Rini Patroni<sup>1\*</sup>, Efrizon Hariadi<sup>1</sup>

*Department of Health Promotion, Poltekkes Kemenkes Bengkulu, Bengkulu, Indonesia*

*\*Corresponding author: [rinipatroni@poltekkesbengkulu.ac.id](mailto:rinipatroni@poltekkesbengkulu.ac.id)*

### Abstract

In developing countries, diarrhea is a major cause of child mortality. Worldwide, there are 2.5 billion cases of diarrhea in children of elementary school age every year. Factors that cause diarrhea are influenced by the level of knowledge about the dangers of diarrhea, attitudes towards the threat of diarrhea, inadequate provision of clean water, water contaminated by feces, inadequate sanitation facilities, inadequate food places and hygiene. This study aims to determine the effect of the Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79, Bengkulu City. This study is a quantitative study using the Action Research method and Pre-Experimental Design (Pre-test and post-test group design). The sample in this study were 38 respondents of grade III students of SDN 79, Bengkulu City, sampling using the simple random sampling technique analyzed using the Wilcoxon test. The results of the analysis of the average knowledge before the intervention were 40.00 after the intervention increased to 87.89. The average attitude before the intervention was 23.66 after the intervention increased to 36.13. The results of the *p* value = 0.000 (<0.05) which shows that there is an effect of DIBOGE on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City. DIBOGE media can be used as a learning reference to provide health promotion about diarrhea in elementary school children to improve children's knowledge and attitudes about diarrhea.

Presented at the 5<sup>th</sup>  
Bengkulu International  
Conference on Health  
(B- ICON),  
Bengkulu-Indonesia,  
October 28-29<sup>th</sup>, 2025

Published:  
December 31<sup>st</sup>, 2025  
Copyright © 2025 by  
authors.  
e-ISSN: 2986-027X

**Keywords:** Knowledge, Attitude, Diarrhea, Diarrhea Board Game (DIBOGE)

## INTRODUCTION

World Health Organization (WHO) in 2024, worldwide diarrhea will still be a major problem with around 1.7 billion cases occurring each year, with a yearly death rate of 50,851 among children ages 5 to 9. Diarrhea is also a major source of illness and death in almost every geographic area around the world and can affect all age groups. Diarrhea a major factor causing malnutrition and childhood mortality. Diarrhea has been on the rise for decades. This diarrheal disease is endemic, meaning that it can spread continuously or in the form of an epidemic.

Sanitation is an effort to maintain environmental cleanliness by managing waste and managing liquid waste properly. Poor environmental sanitation conditions can have a very broad effect and not only affect

physical health but also psychosocial aspects related to comfort. Sanitation in schools is very important because the majority of children's time is spent in the school environment.

Diarrhea can last for days and can cause dehydration due to loss of fluids and salts needed to survive. Thus, providing health promotion materials is effective in increasing students' knowledge about diarrhea prevention efforts. School-age children are the right target for health promotion since they are going through a phase of development and growth., so they are more receptive to change and disseminate information to vulnerable community groups. Therefore, the use of game media as a learning tool can facilitate the delivery of material, because games really attract children's attention.

Diarrhea board games can serve as a substitute kind of instructional media about diarrhea in an interesting, interactive, fun way and can build children's curiosity, competitiveness and social spirit. Methods in health promotion such as diarrhea board games are modified versions of the Majo Junior game. The Majo Junior game is a medium that helps us understand various forms of corruption and the role of society in eradicating it in a simple way.

Study Avissa (2023) illustrates that the Index Card Match media has been adjusted to the needs of respondents, so that it is effective in educating fourth grade students at SDN 25 Koto Panjang regarding the importance of preventing diarrhea.<sup>10</sup> Based on this, the researcher conducted research on the problems that have been described regarding the effect of Diarrhea Board Game (DIBOGE) media on students' knowledge and attitudes about diarrhea at SDN 79, Bengkulu City.

## **MATERIALS AND METHODS**

This study is quantitative in nature, and the methodology employed is Action Research and Pre-Eksperimental Design (group design pre and pos test). In this research, one measurement will be carried out in advance (Pre-test) then intervention will be given once for 1 week, after that, A post-test, or remeasurement, was conducted to ascertain the degree of students' knowledge and attitudes towards diarrhea.

The method of sampling that is employed is Simple Random Sampling, which involves taking samples using the spin application, where the attendance numbers of each class are entered into the spin application. Then, the attendance numbers are spun, and the number that comes out will be the sample. Therefore, the number of samples in this study is 38 students.

This study will use a questionnaire instrument in the form of a multiple choice question sheet and a structured checklist sheet used as a data collection tool as well as a measuring tool to achieve the research objectives, then a validity test is carried out in this study, validity is calculated using computer software. The validity of the questionnaire in this study was carried out at SDN 41 Bengkulu City. Reliability test after all questions are valid, the analysis is continued with a reliability test. The validity test results of 10 questionnaires on knowledge and attitudes have correlation values that exceed the table  $r$  (0.514), and the reliability test results of 10 questionnaires on knowledge and attitudes have reliability values that exceed the table  $r$  (0.6).

Univariate data analysis is used to see the description of respondents' knowledge and attitudes before and after intervention using computerized techniques. Bivariate data analysis was conducted to test the effect of Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City. First, the Shapiro Wilk statistical test was used to perform a normalcy test. After testing, the data was found to be abnormally distributed, then the Wilcoxon test was used. The study's ethical approval letter was obtained from the ethics committee of the Bengkulu Health Polytechnic No.KEPK.BKL/115/02/2025.

Researchers protect the rights of respondents to make their own decisions, there is no coercion to participate in this study. Ethical issues that must be considered are consent forms, anonymity, and confidentiality.

## RESULTS AND DISCUSSION

Researchers have created a game called Diarrhea Board Game (DIBOGE) containing the definition of diarrhea, etiology of diarrhea, risk factors for diarrhea, symptoms of diarrhea and the impact of diarrhea. Researchers have conducted a media validation test to media experts from the University of Bengkulu (Delfan Eko Putra, M.I.Kom) with suggestions that it is worthy of being tested in the field with improvements that follow the suggestions.



Board DIBOGE



Figure 1. Diarrhea Board Game (DIBOGE).

Table 1. Average Student Knowledge Before and After Intervention

| Knowledge | N  | Mean $\pm$ SD      | Min-Max |
|-----------|----|--------------------|---------|
| Before    | 38 | 40.00 $\pm$ 10.654 | 20-60   |
| After     | 38 | 87.89 $\pm$ 9.052  | 70-100  |

Table 1. demonstrates that the mean score of students' knowledge after the Diarrhea Board Game (DIBOGE) intervention increased, namely from 40.00 (poor) to 87.89 (good).

Table 2. Frequency Distribution of Students' Knowledge Before and After Intervention.

| No | Diarrhea Knowledge Question Items  | Treatment Group |             |           |             |
|----|--|-----------------|-------------|-----------|-------------|
|    |  | Before (%)      |             | After (%) |             |
|    |  | Wrong           | Right       | Wrong     | Right       |
| 1  | What is meant by diarrhea?   | 65.8            | 34.2        | 18.4      | 81.6        |
| 2  | The following are sources of diarrhea transmission, namely?                | 73.7            | <b>26.3</b> | 18.4      | <b>81.6</b> |
| 3  | Factors that can increase the incidence of diarrhea are?                   | 44.7            | 55.3        | 7.9       | 92.1        |
| 4  | What are the initial steps to take when you have diarrhea?                 | 60.5            | 39.5        | 5.3       | 94.7        |
| 5  | What are the dangers that can occur if diarrhea is not treated quickly?    | 63.2            | 36.8        | 18.4      | 81.6        |
| 6  | Early prevention of dehydration can be done by providing?                  | 57.9            | 42.1        | 13.2      | 86.8        |
| 7  | Insects that carry and spread diarrheal diseases are?                      | 73.7            | <b>26.3</b> | 7.9       | <b>92.1</b> |
| 8  | What can cause food to become unhygienic?                                  | 73.7            | 26.3        | 21.1      | 78.9        |
| 9  | Here are some ways to maintain personal hygiene to avoid diarrhea, namely? | 39.5            | 60.5        | 0.0       | 100.0       |
| 10 | The characteristics of people who are dehydrated due to diarrhea are?      | 47.4            | 52.6        | 10.5      | 89.5        |

Table 2. findings indicate that out of 10 knowledge questions before the DIBOGE intervention, the least answered correctly on question 2 (The following are sources of diarrhea transmission, namely) given a value of 26.3%, following the intervention, the value increased to 81.6%. Then the least answered correctly on question 7 (Insects that carry and spread diarrhea are) before the intervention the value was 26.3%, after the intervention the value increased to 92.1%.

Table 3. Average Student Attitudes Before and After Intervention

| Attitude | N  | Mean+SD       | Min-Max |
|----------|----|---------------|---------|
| Before   | 38 | 23.66 ± 1.681 | 19-26   |
| After    | 38 | 36.13 ± 1.597 | 33-40   |

Table 3. demonstrates that the mean score of pupils' attitudes after the Diarrhea Board Game (DIBOGE) intervention was carried out increased, namely from 23.66 (negative) to 36.13 (positive).

Table 4. Frequency Distribution of Student Attitudes Before and After Intervention

| No | Attitude Questions  | Before (%) |      |      |      | After (%) |      |      |      |
|----|---|------------|------|------|------|-----------|------|------|------|
|    |   | SS         | S    | TS   | STS  | SS        | S    | TS   | STS  |
| 1  | Diarrhea is a condition in which a person defecates more frequently and the feces are more liquid than usual, occurring at least 3 times a day in 24 hours. | 26.3       | 52.6 | 10.5 | 10.5 | 31.6      | 68.4 | 0.0  | 0.0  |
| 2  | If you are dehydrated, immediately drink water to replenish your body's fluids.   | 13.2       | 42.1 | 31.6 | 13.2 | 47.4      | 50.0 | 2.6  | 0.0  |
| 3  | Not washing hands with soap before eating, after playing and after defecating, after throwing out the trash.  | 26.3       | 28.9 | 34.2 | 10.5 | 0.0       | 0.0  | 42.1 | 57.9 |
| 4  | Don't drink water when your body is weak, your face is pale and your lips are dry.  | 26.3       | 28.9 | 34.2 | 10.5 | 0.0       | 0.0  | 42.1 | 57.9 |
| 5  | Cleaning fingernails regularly as a way of maintaining personal hygiene to prevent diarrhea.  | 18.4       | 50.0 | 23.7 | 7.9  | 65.8      | 34.2 | 0.0  | 0.0  |
| 6  | Dirt (feces), dirty environment, not washing hands before and after eating, stale and dirty food are sources of diarrhea transmission.                      | 7.9        | 44.7 | 28.9 | 18.4 | 47.4      | 52.6 | 0.0  | 0.0  |
| 7  | Giving oralit as first aid to people with diarrhea.   | 28.9       | 18.4 | 39.5 | 13.2 | 76.3      | 23.7 | 0.0  | 0.0  |
| 8  | Sufferers should not eat when they have diarrhea.   | 39.5       | 34.2 | 15.8 | 10.5 | 0.0       | 0.0  | 50.0 | 50.0 |
| 9  | Eating food that has been infested with flies.  | 47.4       | 42.1 | 10.5 | 0.0  | 0.0       | 0.0  | 34.2 | 65.8 |
| 10 | Awareness of the importance of environmental factors in health must be increased.   | 13.2       | 15.8 | 42.1 | 28.9 | 73.7      | 26.3 | 0.0  | 0.0  |

The results of table 4. show 10 attitude questions before being given intervention using DIBOGE, it is known that positive attitudes are still low in question item 10 (Awareness of the importance of environmental factors in health must be increased) obtained a value of 13.2%. Negative questions in item 4 (Not drinking water when the body is weak, the face is pale and the lips are dry) obtained a value of 26.3%. Following intervention with the use of DIBOGE, The proportion of students with negative sentiments increased towards positive and negative statements.

Table 5. The Effect of DIBOGE on Students' Knowledge and Attitudes about Diarrhea at SD Negeri 79 Bengkulu City

| Variable  | N  | Before | After | $\Delta$ Mean | <i>P = Value</i> |
|-----------|----|--------|-------|---------------|------------------|
|           |    | Mean   |       |               |                  |
| Knowledge | 38 | 40.00  | 87.89 | 47.89         | 0.000            |
| Attitude  | 38 | 23.66  | 36.13 | 12.47         | 0.000            |

Table 5. indicates that it is known that the influence of DIBOGE media obtained a mean difference in knowledge of 47.89 and a mean difference in attitude of 12.47. The p-value result =  $0.000 \leq 0.05$  using a 95% degree of confidence. This demonstrates that there is an influence of Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City.

#### *Diare Board Game (DIBOGE)*

Researchers have created a game called Diarrhea Board Game (DIBOGE) containing the definition of diarrhea, etiology of diarrhea, risk factors for diarrhea, symptoms of diarrhea and the impact of diarrhea. This game was created with the intention of enhancing students' knowledge and attitudes about diarrhea. This game consists of several components, namely the DIBOGE board containing the 5 pillars of STBM (BABS, CTPS, PAMMRT, PSRT and PALDRT), red cards (containing situations), white cards (containing questions) and answer key books. In line with research Ibn & Bogor, (2024) shows that the use of the "Majo" game media has a significant effect on increasing students' anti-corruption knowledge, with a correlation coefficient value indicating a fairly strong to moderate relationship. This shows that DIBOGE can be well received and easily remembered by respondents, so that it can increase respondents' understanding of diarrhea.

Board game media is a type of game that contains educational elements and is interactive and effective. In addition, board games are conventional games that are still in great demand because they offer a variety of variations. The variety of genres available makes board games a game that is suitable for play by various age groups.

#### *Knowledge Before and After the Diare Board Game (DIBOGE) Intervention*

Students' knowledge scores improved after being given intervention through DIBOGE. This research is in accordance with the study by Syakila et al. (2021) it claims that the outcomes of the research showed that the average knowledge before counseling was carried out it was classified as less good, and after counseling it was classified as good. it improved to a good category. Thus, health promotion is considered successful in improving students' understanding related to efforts to prevent diarrhea. Knowledge is the result of the process of recognition, which is obtained after a person applies sensory perception to an object. This sensory process takes place through five senses, specifically touch, taste, smell, hearing, and sight. Humans rely mostly on their senses of sight and hearing to process information.

#### *Attitude Before and After the Diare Board Game (DIBOGE) Intervention*

This study obtained an average attitude score before the intervention was given, which was 23.66

(negative), and after the intervention, the attitude score increased to 36.13 (positive). This indicates that DIBOGE is well accepted and easy for respondents to remember, thus enhancing the respondents' understanding of diarrhea. This study aligns with the findings of Nuranisah & Kurniasari (2020) which shows a rise in the attitudes of fourth-grade students at SDN 003 Palaran regarding diarrhea prevention between the pre-test and post-test results. Considering the data analysis results before the intervention, there were students categorized as having a poor attitude, which then decreased at the post-test. Meanwhile, the number of students with a good attitude category increased at the post-test, indicating a significant improvement.

According to Nursalam & Efendi (2018), as cited by Nugraha et al. (2023), one of the events that shapes a person's attitude is through social communication, which is the information received by individuals. Using the right media to deliver health education can raise awareness and understanding of respondents regarding the steps to prevent diarrhea. This positive impact is then reflected in the change of attitude among school-aged students in the efforts to prevent diarrhea.

#### *The Influence of Diare Board Game (DIBOGE) on Knowledge and Attitude*

The effect of the Diarrhea Board Game (DIBOGE) showed a mean knowledge difference of 47.89 and a mean attitude difference of 12.47. The findings of the data test on knowledge and attitude utilizing the Wilcoxon test obtained a  $p$ -value =  $0.000 \leq 0.05$ , thus  $H_0$  is rejected at a 95% confidence level, which means there is an effect of the Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City.

L. Mufida et al. (2021) stated in their research that card game methods are an effective medium to be used in health education. The study's findings show that the health education approach through card-telling has an impact on enhancing understanding, dispositions, and combined actions in efforts to prevent diarrhea in school-aged children. Children in school require engaging, creative, and efficient teaching strategies.

## **CONCLUSION**

The effect of Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City, The creation of the Diarrhea Board Game (DIBOGE) which can be used for the education. The students of SDN 79 Bengkulu City had average knowledge that was lacking before the intervention with the DIBOGE game, and after the intervention, their knowledge improved. The students of SDN 79 Bengkulu City had a negative attitude before the intervention with the DIBOGE game, and after being given the intervention, their attitude became positive. Students of SDN 79 Bengkulu City after being subjected to DIBOGE regarding students' knowledge and attitudes about diarrhea. There is an influence of the Diarrhea Board Game (DIBOGE) on students' knowledge and attitudes about diarrhea at SDN 79 Bengkulu City.

## ACKNOWLEDGEMENTS

This research is supported by the Bengkulu Health Polytechnic of the Ministry of Health. I would like to thank you for supporting this research.

## DECLARATION OF INTEREST STATEMENT

This does not present any conflicts of interest study.

## REFERENCES

Handayani L, Masyarakat FK, Oleo UH. Edukasi Kesehatan Penyakit Diare Secara Door to Door di Kelurahan Tondonggeu Kec. Abeli, Kota Kendari. 2024;2:116–23. Available from: <http://jurnal.stikesbanyuwangi.ac.id/index.php/judimas/home>

Saide R, Nawangwulan K, Yusfik Y, Suryana Jamin N. Sahabat Sosial Jurnal Pengabdian Masyarakat Konseling SD Negeri dalam Rangka Pencegahan Diare pada Anak untuk Hidup Sehat dan Bahagia di Kabupaten Maros. Sahabat Sos J Pengabdi Masy [Internet]. 2024;2(2):2964–9196. Available from: <https://doi.org/10.59585/sosisabdimas.v2i2.309>

Ramadhan DW, Hazanah S, Ardyanti D, Kemenkes P, Timur K, Kesehatan JP. Pengaruh Pendidikan Kesehatan Media Video Animasi Terhadap Pengetahuan Dan Sikap Dalam Pencegahan Diare Pada Siswa Sekolah Dasar 002 Sungai Pinang. 2024;5(2019):11535–43.

Kemenkes. Profil Kesehatan. 2023. 100 p.

Annis AF, Qur'aniati N. Edukasi PHBS dalam Upaya Pencegahan Diare pada Anak Sekolah di Desa Dander Kecamatan Dander Kabupaten Bojonegoro. J Community Engagem Heal [Internet]. 2023 Mar 27;6(1 SE-Articles):146–53. Available from: <https://jceh.org/index.php/JCEH/article/view/450>

Algarini O, Bannepadang C, Silamba J. Pengaruh Penyuluhan Melalui Media Audio Visual Terhadap Kemampuan Cuci Tangan Pakai Sabun Pada Siswa Kelas Iv Sdn 1 Bangkelekila' Kabupaten Toraja Utara Tahun 2021. J Ilm Kesehat Promot [Internet]. 2021 Dec 30;6(1 SE-Artikel):37–49. Available from: <https://journal.stikesstanatoraja.ac.id/jikp/article/view/55>

Nuranisah S, Kurniasari L. Pengaruh Media Permainan Ular Tangga Tentang CTPS terhadap Pengetahuan dan Sikap dalam Upaya Pencegahan Diare ( Studi Pada Siswa Kelas 4 SDN 003 Palaran Kota Samarinda ). Borneo Student Res [Internet]. 2020;1(2):1204–9. Available from: <https://journals.umkt.ac.id/index.php/bsr/article/view/431>

Hutami AR, Dewi NM, Setiawan NR, Putri NAP, Kaswindarti S. Penerapan Permainan Molegi (Monopoli Puzzle Kesehatan Gigi) Sebagai Media Edukasi Kesehatan Gigi Dan Mulut Siswa Sd Negeri 1 Bumi. J Pemberdaya Masy Univ Al Azhar Indones. 2019;1(2):72.

Dwiyatmi SH, Alfret AP, Darmawan ES, Anindita HD, Putri DA. Training of Trainers ( ToT ) Calon Para Legal dan Pendidikan Anti Korupsi Dasar Hukum tentang paralegal adalah Peraturan Menteri Hukum dan Hak Asasi. 2024;04(April):227–42.

Avissa C, Zicof E, Amos J, Nadira NA. Efektivitas Media Index Card Match Terhadap Perubahan Pengetahuan dan Sikap Siswa Kelas IV Tentang Diare di SDN 25 Koto Panjang Effectiveness of Index Card Match ( ICM ) Media to Increase Knowledge and Attitude of Class 4 th Graders About

Diarrhea at SDN. 2023;1(1):45–53. Available from: <https://jurnal.poltekkespadang.ac.id/ojs/index.php/promkes/article/view/1255>

Monica DZ, Ahyanti M, & Prianto N. Hubungan Penerapan 5 Pilar sanitasi Total Berbasis masyarakat ( STBM ) dan Kejadian Diare di Desa Taman Baru. J Kesehat Lingkung Ruwa jurai [Internet]. 2020;14(2):71–7. Available from: <https://doi.org/10.26630/rj.v14i2.2183>

Ibn U, Bogor K. Pengaruh Media Permainan “Majo” Terhadap Pengetahuan Antikorupsi Dalam Pendidikan Pancasila Dan Kewarganegaraan (Studi Quasi Eksperimental Pada Kelas XII IPS SMA Negeri 2 Majalaya Kabupaten Bandung). 2024;2(1):216–22.

Mufida A, Abidin R, Muhamad. Perancangan Board Game Sebagai Media Pembelajaran Bahasa Inggris Anak Usia 6-10 Tahun. J Barik [Internet]. 2021;2(3):44–59. Available from: <https://ejournal.unesa.ac.id/index.php/JDKV/%0Ahttps://ejournal.unesa.ac.id/index.php/JDKV/article/view/42217/36298>

Syakila M, Sumartini NP, Purwana ER, Sundayani L. Pengaruh Pendidikan Kesehatan Dengan Media Video Terhadap Pengetahuan Anak Dalam Mencegah Diare. J Midwifery Updat. 2021;3(2):116.

Nugraha A, Setiawan A, Kusmana T, Badrudin U, Ilmu F, Universitas K, et al. Pengaruh Pendidikan Kesehatan Media Video Sikap Anak Tentang Pencegahan Diare Kelas V. :163–72.

Mufida L, Yunitasari E, Ulfiana E. Health Education of Clean and Healthy Lifestyle using Card Telling Methods towards Diarrhea Prevention Among Children in Elementary School. Pediomaternal Nurs J. 2021;7(1):8.