

EMPOWERING ADOLESCENTS THROUGH INTERACTIVE TRIVIA PEER-EDUCATION TO PREVENT ACUTE RESPIRATORY INFECTIONS IN BENJOR

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Abstract

Acute Respiratory Infection (ARI) is a persistent health problem among rural adolescents in Indonesia, generally influenced by low health literacy and limited access to preventive education. This study aims to determine the effectiveness of an interactive, peer-based educational intervention in improving knowledge and preventive behaviors related to ARI among adolescents in Benjor Village, Malang Regency. A pre-post quasi-experimental research design was used in this study, involving 32 adolescents who were trained to deliver health education through gamified trivia sessions, animated digital media, and participatory discussions. Knowledge assessments were conducted before and after the intervention to measure learning outcomes. The results showed a significant improvement, with an average post-test score increasing by 60% compared to the pre-test score. Participants demonstrated a better understanding of ARI symptoms, transmission routes, and prevention strategies. Furthermore, the peer-based approach was shown to encourage higher engagement, trust, and message retention. These findings suggest that the combination of interactive media and peer education is an effective strategy in improving health literacy and prevention among adolescents. This model offers a scalable and context-sensitive promotive approach to improving health in rural communities with limited resources.

Keywords: Acute Respiratory Infections, Adoslescents, Community-Based Health Promotion, Interactive Trivia, Peer Education

INTRODUCTION

Adolescents, including those attending elementary to high school levels, represent a strategic group in the development of public health. At this stage of life, individuals are in the golden period of shaping healthy lifestyle behaviors that will have long-term impacts. However, in many rural areas of Indonesia, children and adolescents still face major challenges in accessing adequate health information and services. One of the most common infectious diseases affecting this age group is Acute Respiratory Infection (ARI), which

remains a leading cause of morbidity, disruption of learning activities, and long-term productivity decline (Fathmawati, Rauf, & Indraswari, 2021; WHO, 2021).

A report by the Indonesian Ministry of Health (2020) indicates that ARI ranks as the most prevalent outpatient disease and poses a significant burden on Indonesia's healthcare system. This disease is often caused by unsanitary environments, poor household or classroom ventilation, and low awareness of clean and healthy living practices. Therefore, educational interventions focusing on promotive and preventive efforts are highly necessary, particularly at the elementary school level.

The partner in this community service activity is the students of Sekolah Dasar Negeri (SDN) 1 Benjor, the only public elementary school in Benjor Village, Tumpang District, Malang Regency. The school has approximately 100 students, most of whom come from farming and laborer families with limited educational and economic backgrounds. Access to village health facilities is not always easy, and health education activities at the school remain very limited.

Based on preliminary observations and discussions with the school principal and teachers, it was found that most students did not yet possess sufficient understanding of Acute Respiratory Infections (ARI). Many students were still frequently observed experiencing prolonged coughs and colds without realizing that these were early symptoms of ARI. This lack of knowledge was exacerbated by health education methods that tended to be one-way, rigid, and lacking contextual relevance. The school expressed a strong openness to innovative educational approaches that could engage students actively, in a fun and easily comprehensible manner, in line with the characteristics of elementary school-aged children.

To address these issues, the peer education approach and interactive trivia media were chosen as the main strategies of this program. Peer education offers the advantage of creating a comfortable and non-authoritarian learning atmosphere, as it is conducted by peers who share similar experiences and modes of communication (Pratiwi, 2020; Maulida & Kurniawati, 2020). In the context of elementary school, upper-grade students (grades 5 and 6) were trained as educational facilitators to deliver ARI-related materials to their peers through interactive media.

Meanwhile, interactive trivia media, which incorporates quizzes, group games, and educational animations, has been proven to significantly enhance children's engagement and comprehension in health learning processes (Caliston, 2025; Syafiq, Putri, & Darmawan, 2022). Various studies have shown that enjoyable and participatory learning methods can improve information retention by up to twice as much compared to conventional lecture-based approaches (Setiawan, 2018; Yulianto & Aisyah, 2022).

This program was contextually designed to meet the needs of SDN 1 Benjor, where conventional educational approaches had not yet been fully effective. Interactive trivia was selected for its ability to transform the classroom atmosphere into a communicative and engaging learning space. Peer education also served a dual purpose as a form of student empowerment, fostering a sense of responsibility toward personal and community health. It is expected that through this program, there will be a significant improvement in students' knowledge, attitudes, and practices related to ARI prevention, as well as the emergence of young health ambassadors capable of continuing health education sustainably.

The objective of this community service activity is to enhance health literacy and ARI preventive behaviors among students of SDN 1 Benjor through the implementation of peer education–based interactive trivia. The program aims to create an enjoyable learning environment, encourage active student participation, and empower children as agents of change in promoting a culture of healthy living within their school and family environments.

IMPLEMENTATION METHOD

Design and Approach

The design of this activity employed a quasi-experimental approach using a pre-test and post-test pattern without a control group. This method was chosen based on ethical considerations and efficiency within the context of community service activities, as commonly applied in community-based educational interventions (Hadi & Astuti, 2020). The activity aimed to assess the effectiveness of the interactive trivia education model guided by peer educators in improving ARI (Acute Respiratory Infection) literacy among elementary school students.

Subjects and Activity Location

A total of 31 students from grades 4 to 6 of SDN 1 Benjor, Tumpang District, Malang Regency, participated in the program. The selection of this location was based on a needs assessment, which indicated a high incidence of ARI and a low level of student understanding regarding preventive efforts against the disease (Wulandari & Sari, 2023). SDN 1 Benjor also demonstrated strong potential for implementing peer-to-peer–based education, owing to the social closeness and collaborative spirit among students.

Instruments and Activity Stages

The instruments used in this activity included a 15-item multiple-choice questionnaire designed to assess students' knowledge level about ARI. The materials developed covered topics such as the recognition of symptoms, transmission, and prevention strategies based on healthy behavior, in accordance with WHO standards (2021). In addition, observation instruments and informal interviews were utilized to evaluate affective aspects such as student engagement, leadership, and attitudes toward health.

Activity Stages

The interactive trivia–based educational activity to enhance ARI (Acute Respiratory Infection) literacy was implemented in three main stages: peer facilitator training, interactive trivia implementation, and learning outcome evaluation. Each stage was designed to complement one another, foster active student engagement, and support the transformation of knowledge into positive attitudes and practices.

1. Peer Facilitator Training

The first stage focused on the training of sixth-grade students selected as peer facilitators. These students were chosen based on their communication skills, leadership potential, and high learning motivation. The training, conducted over two days, aimed to provide a comprehensive understanding of ARI as well as effective facilitation skills for delivering educational material to their peers.

On the first day, students focused on understanding the fundamentals of ARI:

- Session 1: Introduction to ARI, including definitions, common symptoms, causes, and modes of transmission.
- Session 2: ARI prevention strategies and reinforcement of Clean and Healthy Living Behaviors (*Praktik Hidup Bersih Dan Sehat/PHBS*) such as proper handwashing and cough etiquette.

The second day concentrated on developing facilitation and communication skills:

- Session 3: Techniques for educational communication, the use of digital trivia media, and hands-on practice through role play and simulation.

The media used during training included infographics, posters, animated videos, digital quiz presentations, and other simple visual aids. The presence of teachers as mentors during the sessions strengthened the mentoring process and ensured program sustainability after completion.

2. Implementation of Interactive Trivia

The second stage served as the core activity, focusing on delivering health education to fourth– to sixth-grade students through the interactive trivia method. The activity was conducted over two days in small groups of five to six students, each led by a trained peer facilitator.

The trivia session was divided into four thematic topics:

- Theme 1: What is ARI?
- Theme 2: Routes of ARI Transmission
- Theme 3: Preventive Efforts
- Theme 4: Actions to Take When Experiencing ARI Symptoms

Each topic was presented through multiple-choice quizzes, group discussions, and challenge-based games. Techniques such as “quick and correct,” reward-based quizzes, and collaborative poster-making were applied to enhance student participation. The activities were designed to be flexible, engaging, and interactive, promoting collaborative learning and active communication among participants.

3. Evaluation of Learning Outcomes

The evaluation process employed both quantitative and qualitative approaches:

- **Quantitative Evaluation** conducted using pre-test and post-test assessments to measure students' improvement in understanding. The results showed a 46.6% increase in average scores, from 46.7% (pre-test) to 93.3% (post-test).
- **Qualitative Evaluation** implemented through direct observation and reflective interviews. Most students demonstrated high enthusiasm and active participation in answering questions. Peer facilitators exhibited improved confidence and group management skills. Teachers noted that the activity encouraged students to adopt healthy living habits and fostered social awareness and responsibility within the school environment.

Through the combination of structured training, educational games, and comprehensive evaluation, the interactive trivia activity proved to be both effective and practical in the elementary school context, particularly in regions with limited access to health education resources.



Figure 1. The Pre-test and Post-test Process

Source: Author's personal documentation (2025)

RESULTS

Quantitative results indicate a significant improvement in students' knowledge. The average pre-test score was 7 out of 15 questions (46.7%), while the average post-test score increased to 14 out of 15 questions (93.3%). The improvement of 7 points or 46.6% serves as a key indicator of the program's effectiveness.

Table 1. Average Pre-test and Post-test Scores

<i>Test Type</i>	<i>Average Score (scale 15)</i>	<i>Present (%)</i>
Pre-Test	7	46,7%
Post-Test	14	93,3%
Increased	+7	+46,6%

Source: Primary data (processed by the author, 2025)

Based on the collected data, there was a notable difference between scores before and after the interactive trivia intervention. The average pre-test score of 7 out of 15 (46.7%) significantly increased to 14 out of 15 (93.3%) in the post-test. This improvement demonstrates the success of the interactive quiz-based educational method delivered by peer facilitators. Before the intervention, most students possessed only basic or insufficient knowledge about ARI. Many were unable to identify symptoms, understand transmission routes, or apply simple preventive measures.

After the implementation of the trivia program, the post-test results showed a highly significant increase in understanding. Approximately 90% of students scored above 85%, and several achieved a perfect score of 15/15. This finding suggests that students were not only able to recall factual information but also to comprehend and apply the practical context of the material presented.

DISCUSSION

The 46.6% increase in students' average scores provides strong evidence that the interactive trivia method based on peer education is a highly effective approach for enhancing health literacy among elementary school students. This improvement not only reflects success in terms of knowledge acquisition, but also demonstrates broader positive impacts on the social and affective dimensions of the participating students.

From a cognitive perspective, the interactive trivia program effectively transformed the way students absorbed information. In conventional learning processes, children often experience boredom due to the one-way lecture approach, which lacks active engagement. In contrast, interactive trivia presents material through fun and competitive quiz questions, allowing students to remain focused, enthusiastic, and motivated to think critically. The quiz format not only tested basic knowledge but also stimulated memory retention and contextual understanding, such as how to prevent ARI both at home and at school.

These findings are consistent with Caliston (2025), who emphasized that gamification-based learning approaches can improve information retention and promote learners' emotional engagement. In this activity, the use of digital quizzes, visual animations, and interactive illustrations facilitated a faster understanding of ARI concepts among students, including transmission pathways and daily preventive actions that children can apply in their routines.

From a social dimension, the peer education approach fosters a more egalitarian two-way communication environment. One of the main challenges in children's health education is creating a learning atmosphere that feels comfortable and non-intimidating. When education is delivered by peers, a social and emotional bond is formed, allowing students to feel safer and more motivated to actively ask questions and share opinions. As explained by Maulida and Kurniawati (2020), peer education not only enhances the effectiveness of communication but also strengthens interpersonal relationships among students.

Observations from this activity revealed that students who were previously passive in learning became more confident in expressing opinions, answering questions, and even leading small groups during trivia discussions. This finding indicates that the model not only improves content comprehension but also empowers students socially.

In the affective domain, the program provided a valuable space for character strengthening and soft skill development among students. Peer facilitators who participated in the training and implementation demonstrated a notable increase in self-confidence. They successfully managed small groups, spoke in front of the class, and showed empathy toward peers struggling to understand the material. Many facilitators expressed that they felt appreciated by their classmates for being trusted as “young teachers.” Likewise, participants in the trivia sessions showed high enthusiasm, even after the activities concluded. Several students independently created posters about ARI prevention and displayed them on classroom walls. Teachers also noted improved basic hygiene practices, such as washing hands before meals and covering the mouth when coughing, clear indicators of successful health education in shaping preventive behavior.



Figure 2. Process of Delivering Educational Material Using the Trivia-Based Method

Source: Author's personal documentation (2025)

In the context of schools with limited facilities and technological access, such as SDN 1 Benjor, this activity also demonstrated that simple technology can still be effectively optimized for educational purposes. The trivia media used did not require an internet connection or sophisticated devices. The digital presentation was designed to run using only the school's available laptop and projector. This aligns with the findings of Syafiq et al. (2022) and Yulianto and Aisyah (2022), which emphasize that digital innovation in health education does not necessarily rely on complex platforms, but rather on engaging, interactive, and contextually relevant design.

The success of implementing this interactive trivia program was also inseparable from the mentoring role of teachers. They did not merely act as observers but also served as shadow facilitators, assisting students in overcoming technical difficulties or confusion in understanding the material. The collaboration between teachers, the community service team, and student facilitators became the key factor in the successful implementation of the program. Furthermore, the program's success presents an opportunity for replication and future development. This model can be adapted for other health education topics, such as the importance of immunization, balanced nutrition, stunting prevention, adolescent reproductive health, and personal hygiene. UNICEF Indonesia (2022) emphasizes the importance of children's and adolescents' active participation in educational processes as a strategy to enhance early health awareness and promote the sustainability of healthy living practices within

communities.

By integrating three essential elements; peer education, interactive media, and reflective approaches, this educational trivia program has produced a comprehensive impact on students' knowledge, attitudes, and behaviors. Beyond strengthening cognitive and social skills, it has also instilled a sense of social responsibility, fostered a culture of health within the school environment, and created opportunities for students' involvement in public health issues from an early age. Overall, these findings indicate that the interactive trivia-based peer facilitator education approach is not only feasible but also relevant and sustainable for implementation across elementary schools in Indonesia, particularly in resource-limited settings.

CONCLUSION

The results of this educational program indicate that the implementation of interactive trivia facilitated by peer educators has a significant impact on improving health literacy among elementary school students, particularly in understanding Acute Respiratory Infections (ARI). Quantitative evidence, shown by a 46.6% increase in average scores from pre-test to post-test, demonstrates that students experienced a substantial improvement in comprehending ARI-related materials delivered in an engaging and participatory manner.

Beyond cognitive improvement, the program also had a positive effect on students' social and emotional development. Students exhibited high enthusiasm during each trivia session, actively participated in group discussions, and displayed increased confidence and courage when interacting with peers and facilitators. Peer facilitators, in turn, gained valuable experience that helped develop essential communication and leadership skills, contributing to early character formation.

The learning approach adopted in this program effectively combines training, educational digital media, and participatory communication strategies tailored to the learning styles of elementary students. This model has proven to be easily adaptable and implementable in various regions, particularly in areas with limited access to educational and health resources. Overall, this initiative not only supports the achievement of health education objectives but also lays the foundation for cultivating healthy living habits within the school environment.

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