

The Relationship Between Knowledge and Behavior in Preventing Acute Respiratory Infection (ARI) Among Students of SDN 017 Sekejati, Bandung City

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Abstract

Acute Respiratory Infection (ARI) is a major contributor to morbidity and mortality among children, particularly in developing countries such as Indonesia. Children are considered a vulnerable group, thus requiring a good understanding of how to prevent ARI. This study aimed to identify the relationship between knowledge level and preventive behavior toward ARI among students at SDN 017 Sekejati, Bandung City. The study employed a cross-sectional design with a total of 191 students from grades III to VI as respondents. Data were collected using a questionnaire and analyzed using the Chi-Square test and Cramér's V. The Chi-Square test revealed a significant relationship between knowledge and ARI prevention behavior ($\chi^2 = 17.560$; $p < 0.001$), with a Cramér's V value of 0.3676, indicating a strong association. The findings conclude that the higher the students' knowledge, the better their preventive actions against ARI. Continuous educational interventions are needed to enhance the effectiveness of health promotion efforts in elementary schools.

Keywords: *School-Aged Children, Acute Respiratory Infection, Prevention, Knowledge, Behavior.*



A. INTRODUCTION

Acute Respiratory Infection (ARI), especially pneumonia, is one of the leading causes of health problems and the highest mortality rate among children under five years old worldwide, particularly in developing countries like Indonesia. According to WHO reports, pneumonia caused over 740,180 deaths of children under five in 2019, accounting for 14% of total deaths in this age group (WHO, 2022). UNICEF also reports that every 43 seconds a child loses their life due to pneumonia, with more than 700,000 deaths annually. This confirms that ARI is a serious public health issue requiring continuous intervention (UNICEF, 2024). Furthermore, ARI contributes to about 16% of total child deaths, nearly one million deaths annually, emphasizing that ARI poses a significant burden and needs serious attention (Fenta et al., 2024).

In Indonesia, ARI is one of the major health problems, especially among primary school children. ARI is an infectious disease affecting the respiratory tract lasting less than 14 days. Symptoms vary from mild signs such as cough, cold, and fever to more severe symptoms like shortness of breath (Ridwan et al., 2021). According to the 2022 Indonesian Health Profile Data, ARI remains the leading cause of visits to primary healthcare services, particularly among the 5–14 years age group (Ministry of Health RI, 2023). The high number of cases and deaths caused by this

disease indicates the need for improved prevention and treatment measures (Santha Remicha, 2025).

Children at the basic education stage are a highly vulnerable group to ARI, not only due to their immature immune system but also because their clean and healthy living habits are not yet fully developed, leading to an increased incidence of this disease in this group (Yulia et al., 2025). The prevalence of disease in school environments can be influenced by students' health behaviors, the school environment, school culture, and the available facilities and infrastructure. Students' health behavior can be affected by the health information sources they receive, which are influenced by the cultures present at home and school. The school environment also considers whether the school is located near sources of disease. The availability of health facilities and infrastructure at school also affects students' health behavior (Agustin, 2019).

Behavior in preventing ARI by washing hands with soap, practicing cough etiquette, wearing masks when feeling sick, and keeping distance from sick friends highly depends on the child's understanding of the disease. Infection prevention can be achieved through clean and healthy lifestyle behaviors. Behavior arises as a response to external stimuli, reflecting a person's role in determining actions in health matters. In health, health behavior refers to how someone reacts to factors related to pain and illness, healthcare services, nutritional intake, and the surrounding environment. These actions result from interconnected thinking processes, emotions, and physical activities, and if any of these are disturbed, overall behavior will be affected (Adliyani, 2015).

This study aims to identify the relationship between knowledge and behavior in preventing Acute Respiratory Infection (ARI) among students of SDN 017 Sekejati, Bandung City, considering that although the general environment of SDN 017 Sekejati is relatively clean and has handwashing facilities with soap, the implementation of ARI prevention behavior has not been optimal. Education about disease transmission prevention has been provided by the local health center through the School Children Immunization Month (BIAS) program, but there has been no follow-up in the form of evaluating students' knowledge after the counseling, so the effectiveness of the education given is unknown.

Based on these problems and phenomena, this study is expected to provide an overview of students' knowledge and behavior levels, which can later serve as a basis for developing educational interventions to prevent ARI incidents in the school environment.

B. METHOD

This research was conducted at Sekolah Dasar Negeri (SDN) 017 Sekejati, Bandung City, and has received ethical approval from the Research Ethics Committee of Padjadjaran University, Bandung, No: 762/UN6.KEP/EC/2023, dated June 15, 2023. The study design used was cross-sectional, with a population consisting of students from grades III, IV, V, and VI at SDN 017 Sekejati Bandung, totaling 191 students. The

sampling technique employed was stratified total sampling, consisting of 57 students in grade 3, 47 students in grade 4, 39 students in grade 5, and 48 students in grade 6.

The instrument used in this study was a questionnaire adapted from Klar's research (Klar et al., 2022). The questionnaire consists of three parts: the first part covers respondent characteristics; the second part contains questions regarding knowledge related to behaviors that cause ISPA; and the third part includes questions about behaviors that may cause ISPA. Validity and reliability tests of the questionnaire were conducted, resulting in validity scores ranging from 0.38 to 0.64, which are considered valid. The reliability test yielded a Cronbach's Alpha of 0.809 for the knowledge questionnaire and 0.769 for the behavior questionnaire, indicating that all items in the variables are reliable. The questionnaire was provided in printed written form.

Data processing and analysis were performed using IBM SPSS (Statistical Package for the Social Sciences) version 26.0. The data analysis included: (1) univariate analysis to describe the characteristics, knowledge, and behavior of the respondents; (2) bivariate analysis to examine the relationship between knowledge and respondents' behavior regarding ISPA prevention using the Chi-Square test, where a p-value <0.05 was considered significant; and (3) to measure the strength of the relationship between the two variables, the Cramer's V statistical test was used.

C. RESULTS AND DISCUSSION

After conducting the study on 191 active student respondents at SDN 017 Sekejati, Bandung City, the following overview of respondent characteristics, knowledge levels, and ISPA prevention behaviors was obtained (Table 1):

Table 1: Respondent Characteristics, Knowledge Levels, and Prevention Behaviors of Acute Respiratory Infection (ISPA) Among Students of SDN 017 Sekejati, Bandung City (n=191)

Variable	Level of Knowledge						Behavior			
	Good		Fair		Poor		Good		Bad	
	f	%	f	%	f	%	f	%	f	%
Respondent Characteristics										
Gender										
- Male (n = 92)	24	12,6	57	29,8	11	5,8	49	25,7	43	22,5
- Female (n = 99)	22	11,5	65	34,0	12	6,2	95	49,7	4	2,1
Total	46	24,1	122	63,9	23	12,0	144	75,4	47	24,6
Grade Class										
- Grade III (n = 57)	1	0,5	42	22,0	14	7,4	31	16,2	26	13,6
- Grade IV (n = 47)	11	5,8	34	17,8	2	1,0	34	17,8	13	6,8
- Grade V (n = 39)	20	10,5	14	7,4	5	2,6	33	17,3	6	3,1
- Grade VI (n = 48)	14	7,4	32	16,7	2	1,0	46	24,1	2	1,0
Total	46	24,1	122	63,9	23	12,0	144	75,4	47	24,6

Based on the research results, it was found that the majority of respondents (51.8%) were female, while nearly half (48.2%) were male. The highest distribution was found in Grade III (29.8%), and the lowest in Grade V (20.5%). Most respondents (63.9%) had a fair level of knowledge, and only a small portion (12%) had a poor level of knowledge. When viewed by grade level, students in Grades V and VI had better knowledge levels compared to students in lower grades. Meanwhile, regarding the respondents' behavior in preventing acute respiratory infections (ARI), nearly all (75.4%) demonstrated good behavior.

When analyzed by grade level, Grade VI students had the highest number of students showing good behavior in ARI prevention (24.1%) compared to students in lower grades. To determine the relationship between the level of knowledge and students' behavior in preventing the transmission of ARI, as well as the strength of the relationship between these two variables, data analysis was conducted using the Chi-Square test and Cramer's V. The results of the Chi-Square and Cramer's V tests are presented in the table below (Table 2):

Table 2: The Relationship Between Knowledge Level and Student Behavior in Preventing Acute Respiratory Infections at SDN 017 Sekejati, Bandung City (n=191)

Variable		Behavior		Total	χ^2	Pv	Nilai V
		Positive	Negative				
Level of Knowledge	Good	44	2	46	17,560	0,000	0,3676
	Fair	88	34	122			
	Poor	12	11	23			
Total		144	47	191			

Based on the results of the Chi-Square test analysis, the result obtained was $\chi^2 = 17.560$ with a p-value < 0.000 ($p < 0.05$), indicating a significant relationship between students' level of knowledge and their behavior in preventing ARI (Acute Respiratory Infections) at SDN 017 Sekejati, Bandung City. A p-value less than 0.05 indicates that the knowledge variable is significantly associated with ARI prevention behavior.

The value of $\chi^2 = 17.560$ means there is a significant difference between groups, which demonstrates a meaningful relationship between students' knowledge and behavior regarding ARI prevention. These results prove that students with a good level of knowledge tend to exhibit good behavior in efforts to prevent ARI, while students with lower knowledge are more likely to show poor behavior.

This confirms that the higher the level of knowledge, the better the behavior in preventing ARI. Furthermore, the result of Cramér's V test was 0.3676, indicating a strong relationship between knowledge and ARI prevention behavior.

This study reveals a significant relationship between students' level of knowledge and their behavior in preventing Acute Respiratory Infections (ARI) at SDN 017 Sekejati, Bandung City. Based on the analysis conducted using the Chi-Square test, a score of $\chi^2 = 17.560$ with a p-value < 0.001 was obtained, indicating that the relationship between knowledge and behavior is statistically significant. This result is further supported by a Cramér's V value of 0.368, indicating a relationship

with a moderate to strong level of association. This suggests that students' knowledge plays an important role in shaping their behavior in efforts to prevent ARI.

These findings are consistent with Lawrence Green's theory, which states that knowledge is a predisposing factor that can influence the formation of a person's health behavior (Green & Kreuter, 2005). Knowledge is a crucial foundation for behavior change, as understanding what is happening, why it happens, and how to respond enables individuals to make better choices. For children at the elementary school level, increasing knowledge through health education is vital to instill healthy habits from an early age.

Based on the results of this study, most students in Grades V and VI at SDN 017 Sekejati Bandung had better levels of knowledge compared to those in Grades III and IV. As individuals grow older, their knowledge tends to improve. Education level can influence knowledge levels (Sulistyowati et al., 2017). Children with good knowledge are more likely to engage in actions that prevent ARI compared to those with limited knowledge.

Several studies have demonstrated a significant correlation between knowledge levels and health behavior among elementary school-aged children, especially in areas such as handwashing, waste disposal, and maintaining personal hygiene and health. Children with good knowledge tend to show better health practices than those with lower knowledge levels (Pauzan & Hudzaifah, 2017; Gusti et al., 2015).

The broader a person's knowledge, the easier it becomes for them to make decisions and take appropriate actions in their lives (Mujiburrahman et al., 2020). This aligns with Piaget's theory of development, which states that school-age children are in the concrete operational stage a period characterized by improved cognitive and language development. During this stage, children begin to think logically and perform actions not merely by imitating or adopting from their surroundings, but also by considering the knowledge and reasoning they acquire from stimuli and various sources of information (Agustin, 2019).

The level of education is also thought to play a role in how information is received and processed. Children in higher grades tend to have more advanced knowledge and behavior compared to those in lower grades. The close relationship between knowledge and behavior is also supported by Sulastris's research, which found a significant link between elementary students' knowledge and behavior related to clean and healthy living habits (PHBS). A two-year health education intervention in elementary schools significantly improved students' health literacy (Sulastris et al., 2014). However, without updated materials or more engaging approaches, these improvements tend to stagnate in subsequent years, highlighting the importance of quality and sustainable health education (Griebler et al., 2023). Therefore, school learning must be supported by specific and structured health education (Heiss et al., 2025).

In this study, students with a good level of knowledge almost entirely displayed positive behavior in preventing the spread of ARI. Conversely, students

with poor knowledge were more likely to demonstrate poor preventive behaviors. This indicates that improving students' knowledge can contribute to the development of positive attitudes toward disease prevention efforts. According to Piaget's theory, in the concrete operational cognitive development phase, elementary school children are already capable of understanding basic cause-and-effect relationships, including the importance of maintaining their health. Thus, providing effective, repeated, and interactive education to elementary school children can enhance their knowledge while also shaping more positive attitudes toward disease prevention. Health education can increase students' knowledge, which is accompanied by improvements in their daily health behaviors (Yunika et al., 2022).

Knowledge is a fundamental element that influences how individuals make decisions and behave in their daily activities. The better students understand the causes and prevention methods of Acute Respiratory Infections (ARI), the more likely they are to adopt positive attitudes and healthy behaviors such as proper handwashing, wearing masks when ill, and practicing proper coughing and sneezing etiquette (Mujiburrahman, Riyadi, et al., 2020) although the consistency of such practices may still vary (Klar et al., 2022). This suggests that even when students possess good knowledge, it does not necessarily mean they can consistently and correctly apply preventive behaviors. This may be due to a lack of follow-up evaluation and reinforcement after health promotion activities (Anggraini & Siregar, 2023).

These findings are also supported by research from Kusumawardani and Saputri, as well as Rubai, which found that the majority of elementary students had only low to moderate levels of knowledge related to clean and healthy living behaviors, indicating the need for comprehensive and ongoing interventions (Kusumawardani & Saputri, 2020; Rubai et al., 2021). Although the findings of this study indicate a strong and significant correlation between knowledge and ARI prevention practices, promotive and preventive efforts are essential in enhancing students' knowledge through continuous health education. In addition, regular evaluation and reinforcement are necessary to ensure that attitude changes are internalized and translated into real practices both at school and at home. This study has important implications for schools and partnering public health centers (puskesmas) to optimize health education programs using more interactive methods such as educational games, handwashing demonstrations, and routine mask-wearing practices in schools.

In summary, the findings of this study indicate a relationship between students' knowledge levels and their preventive behavior toward ARI. Lack of knowledge remains one of the key factors behind suboptimal preventive behavior among students at SDN 017 Sekejati, Bandung. Strategies to improve students' knowledge using engaging, interactive, and sustainable teaching methods are crucial to forming consistent healthy behaviors for ARI prevention.

D. CONCLUSION

This study proves the existence of a relationship between knowledge and preventive behavior toward Acute Respiratory Infections (ARI) among students at SDN 017 Sekejati, Bandung City. Students with good knowledge demonstrated positive behavior in preventing ARI. Overall, the findings of this study emphasize that improving knowledge through well-planned and sustainable health education programs is essential to support ARI prevention efforts among elementary school children.

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