THE RELATIONSHIP BETWEEN KNOWLEDGE AND ATTITUDES IN THE USE OF ANTIBIOTICS IN ISPA PATIENTS IN MOTOLOHU VILLAGE, RANDANGAN DISTRICT, POHUWATO REGENCY

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ABSTRACT

This study aims to determine the relationship between knowledge and attitudes in the use of antibiotics in patients with ISPA in Motolohu Village, Randangan District, Pohuwato Regency. This study uses an observational analytical design with *a cross-sectional approach*. The sample amounted to 21 respondents with ISPA who were selected in *total sampling*. Primary data was collected through questionnaires that assessed knowledge and attitudes, while secondary data was obtained from relevant health agencies. Data analysis was conducted using Fisher's exact Test. Most of the respondents had a high level of knowledge (52.4%), but the attitude of antibiotic use was dominated by the poor category (61.9%). All respondents used amoxicillin (100%) antibiotics. The results of Fisher's exact Test showed a value of p = 0.183 (p > 0.05), which means that there was no significant relationship between knowledge and attitudes of people with ispa. A high level of knowledge about drugs is not always directly proportional to the rational attitude in the correct use of antibiotics.

Keywords: Knowledge, attitudes, antibiotics, ISPA

INTRODUCTION

Acute Respiratory Tract Infections (ARIs) are a major global health problem that contributes greatly to the number of illnesses and deaths. Globally, Acute respiratory tract infections (ARIs) are still one of the leading causes of morbidity and mortality worldwide. Based on Global *Burden of Disease (GBD)* data released by the World Health Organization (WHO) in 2021, the number of cases of lower respiratory infections in the world is estimated to reach around 344 million cases with a death rate of around 2.18 million people. in 2022 it is estimated that there will be around 10 million people suffering from ISPA with 1.4 million deaths every year. In Indonesia, in 2022 there were around 166,702 cases of ISPA, meeting 53% of the national target.

Data from 2023 shows that the prevalence of people with ISPA reaches around 9.3%, with a total of 877,531 recorded cases, and the age group of one to four years has the highest prevalence of 13.7%. The trend of increasing cases can be seen in several regions in 2023, such as in DKI Jakarta which reported around 638,291 cases in the period from January to June. Toddlers are the most vulnerable group, accounting for 31.4% of cases in 2022, and are the second leading cause of death in children under five years aged 12-59 months with a mortality rate of 9.4%. The prevalence of ISPA in toddlers in 2024 is estimated to reach 34.2%. ISPA control efforts are faced

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with challenges, including the impact of the COVID-19 pandemic which increases the risk and number of cases.

The ISPA problem in Gorontalo Province has shown a consistent and worrying trend in recent years. In 2021, there were 1,258 cases of ISPA in all provinces. Although the 2022 data focuses more on vulnerable groups, where 128 toddlers aged 24-59 months in the work area of the East City Health Center experience a high proportion of ISPA (70.7%), this data indicates a high susceptibility of children to this disease. A drastic surge was seen in 2023 and continued until 2024, where the total number of ISPA cases reached a significant number, which is around 6,787 cases every year. Based on the Early Warning and Response System (SKDR) Report, this figure makes ISPA the highest disease with the potential to become an extraordinary event (KLB) in the province, indicating an urgent public health burden and the need for serious treatment. Early 2025: In the 9th week of 2025, there was an increase in *Influenza-Like Illness* (ILI) cases by 1,242 cases.

The high number of cases shows the importance of proper and rational handling, including in the supervision of antibiotic use. Empirically, research in the Gorontalo area has indicated a significant relationship between the level of knowledge of public attitudes towards the act of using antibiotics without a prescription in people with ISPA [1]

In the local context at the Motolohu Village Health Center, during the period from January to July 2025, a total of 164 ISPA patients were recorded. Based on medical record data, it was found that only 21 patients received antibiotic prescriptions. This figure indicates that *Supply Side* control (prescription) by health workers has been doing quite well in limiting prescriptions for ISPA. However, the 21 adult ISPA patients who had received this prescription constituted the most critical study population. This group is at the highest risk of irrational Antibiotic Use in the household, such as stopping doses or storing leftover medications.

However, the focus of the problem must now shift to the risk of irrational antibiotic use practices at the household level, driven by attitudes and intentions of non-compliance. Although initial interviews with health workers showed that most adult people with ARIs in Motolohu Village already had adequate theoretical knowledge regarding the dangers of antibiotic resistance, observations showed this group remained at high risk of developing incorrect attitudes, such as underestimating the importance of consuming full doses or the tendency to store leftover medications. This indicates a significant quality of Knowledge: that Theoretical Knowledge has not been converted into Applied Knowledge capable of forming a strong obedience attitude[2]. Therefore, the Knowledge variable is retained to specifically analyze and prove empirically the types of Knowledge (Application and Theoretical) that are most significantly related to the formation of Compliant Attitudes towards the correct use of antibiotics in a critical group of adult ISPA patients receiving this prescription.

Based on the description and the existence of a gap in the quality of knowledge that affects attitudes in this critical group, the researcher is interested in

conducting a study entitled "The Relationship of Knowledge to Attitudes to the Use of Antibiotics in Patients with ISPA in Motolohu Village, Randangan District, Pohuwato Regency." This research is expected to provide an overview of the quantitative relationship between the quality of knowledge and public attitudes, as well as the basis for the preparation of an educational program on the rational use of antibiotics in the work area of the Motolohu Health Center, as an active contribution to efforts to prevent Antimicrobial Resistance.

RESEARCH METHODS

This study uses an observational analytical design with a *cross-sectional* approach. This research was conducted from September to November 2025 in Motolohu Village, Randangan District, Pohuwato Regency.

1. Data Source

The data sources of this study were obtained from primary and secondary data, primary data was collected directly from respondents through filling out questionnaires, and secondary data was obtained from medical record data.

2. Sample

The sample in this study was all ISPA patients in Motolohu Village, Randangan District, Pohuwato Regency who specifically received antibiotic prescriptions in the same period with a sample size of 21 people.

3. Research instruments

The instrument in this study uses respondent and questionnaire data.

a. Data Responden

This respondent data contains names, ages, genders, education and place of residence.

b. Kuisioner

A questionnaire is a data collection instrument that is carried out by giving several statements or written questions to respondents for them to answer. In this study, this questionnaire was used to measure the attitude and knowledge of the respondents. The variable to be measured is used as a variable indicator, then the indicator is used as a benchmark to formulate a question

4. Data collection techniques

a. Primary Data Collection

Primary data from the study were collected directly from the respondents using a validated questionnaire instrument. The collection process is carried out systematically through the following stages:

1. Submission of Research Permit: The researcher submits an application for official permission to the Head of the Motolohu Village Health Center to obtain approval for the implementation of research in the work area of the Health Center.
2. Explanation and Approval: After permission is obtained, the researcher will meet with the prospective respondent. The researcher explains the objectives, benefits, and procedures of the research. Respondents who are willing to participate will sign an *informed consent* form as proof of willingness.

3. Distribution and Filling of the Questionnaire: The questionnaire is then given to respondents who have agreed to be filled out independently. This questionnaire serves to record quantitative data on the patient's knowledge, attitudes, and actions.
4. Data Collection and Examination: Once the questionnaire is filled out, the researcher will collect it again. Initial checking (editing) is carried out to ensure that all questions are filled in completely and correctly before the data is prepared for analysis.

b. Secondary data collection

Secondary data is data that has been previously available and recorded by the Health Center. This data will be obtained from the patient's medical records or administrative records. Secondary data collection is carried out after the researcher obtains official permission. This data serves as very important supporting information, especially for:

1. Identify and calculate the total population of people with ISPA who visit the Puskesmas during a predetermined period of time.
2. Provide additional information about recorded prescription history or antibiotic use patterns.

5. Data analysis techniques

1. Univariate analysis of the frequency distribution of each variable, such as age, gender, occupation, and education.
2. Bivariate analysis using *Fisher's Exact Test, because the sample is relatively small*

RESEARCH RESULTS

1. Univariate Analysis

a. Respondent Characteristics

Table 1 Frequency of Respondent Characteristics

Characteristics of respondents	n	%
Gender		
Man	6	28,6
Woman	15	71,4
Total	21	100%
Age		
24-33	13	61,9
34-43	4	19,0
44-53	2	9,5
54-63	2	9,5
Total	21	100%
Work		
IRT	9	57,7
Self employed	12	42,9
Total	21	100%
education		
SD	7	33,3
SMP	4	19
SMA	10	47,6
Total	21	100%

(Source: Processed data, 2025)

Table 4.1 The description of the characteristics of the respondents in this study shows that the total number of research subjects is 21 people. Judging from gender, the majority of respondents were women, namely 15 people (71.4%), while male respondents amounted to 6 people (28.6%).

Based on age group, most of the respondents were in the age range of 24-33 years, which was 13 people (61.9%). The next age group is 34-43 years old with 4 people (19.0%), while the age group of 44-53 years and 54-63 years old each has 2 people (9.5%), so these two groups are the category with the least number.

In terms of employment, respondents with self-employed jobs were the largest group, namely 12 people (57.1%). Meanwhile, respondents with work as

housewives (IRT) amounted to 9 people (42.9%), making it a smaller category than the self-employed group.

Judging from the last level of education, respondents with high school education dominated with 10 people (47.6%). Furthermore, elementary education amounted to 7 people (33.3%), while the least respondents were respondents with junior high school education, which was 4 people (19.0%).

b. Last use of antibiotics

Table 2 Respondents by Last Use of Antibiotics

Last use of antibiotics	N	%
1 Week	1	4,8
2 Weeks	1	4,8
3 weeks	1	4,8
1 Month	11	52,4
2 Months	4	19,0
3 Months	2	9,5
4 Months	1	4,8
Total	21	100%
Types of antibiotics		
Amoxicilin	21	100
Total	21	100%

(Source: Processed data, 2025)

Table 4.2 shows the distribution of respondents based on the last time of using amoxicillin antibiotics shows that most of the respondents, namely 11 people (52.4%), used antibiotics one month ago, 4 people (19%) used antibiotics two months ago, 2 people (9.5%) three months ago, and the remaining 4 people (19%) used in the range of one week to four months. All respondents (100%) used amoxicillin antibiotics, no other types of antibiotics were found.

c. Knowledge

Table 3 Distribution of Respondents' Knowledge

Knowledge	n	%
Low	10	47.6
Tall	11	52.4
Total	**21**	**100%**

(Source: Processed data, 2025)

Table 4.3 The distribution of respondents' knowledge indicates that the overall distribution of knowledge is adequate, where the majority of respondents are categorized as having high knowledge, namely 11 people (52.4%) and at least 10 respondents have low knowledge as many as 10 people (47.6%).

d. Attitude

Table 4 Respondent Attitude Distribution

Attitude	n	%
Less good	13	61.9
Good	8	38.1
Total	**21**	**100%**

(Source: Processed data, 2025)

Table 4.4 The distribution of respondents' attitudes shows that the respondents have the most unfavorable attitudes, namely 13 people (61.9%), and the least respondents have good attitudes, namely 8 people (38.1%) towards the use of antibiotics.

2. Bivariate Analysis

Table 4.5 Analysis of the relationship between knowledge and respondents' attitudes in antibiotic use.

Knowledge	Attitude				Total		P value
	Less		Good				
	n	%	n	%	n	%	
Low	8	38.1%	2	9.5%	10	47.6%	0.183
Tall	5	23.8%	6	28.6%	11	52.4%	
Total	13	61.9%	8	38.1%	21	100%	

(Source: Processed data, 2025)

Table 4.5 The results of the analysis of the relationship between knowledge and attitudes in the use of antibiotics showed that the most respondents had a lack of attitude with low knowledge as many as 8 people (38.1%) and the least respondents with high knowledge as many as 5 people (23.8%). The most respondents had a good attitude with high knowledge as many as 6 people (28.6%) and the smallest respondents with low knowledge were 2 people (9.5%).

3. Statistik hypothesis

The results of statistical analysis showed a significance value (p) of 0.183. Because p > 0.05, the Null Hypothesis (H0) is accepted, which means that there is no significant relationship between the level of knowledge and the attitude of people with ISPA in the use of antibiotics. Statistical analysis using fisher's test. Exact test.

DISCUSSION OF RESEARCH RESULTS

1. Univariat Analysis

a. Distribution of respondent characteristics

The majority of respondents were female, namely 71.4% (15 people), while men were only 28.6% (6 people). The dominance of female respondents can affect the results of the research according to Adnan, R and Putri, (2019) because women generally have a greater role in taking care of family health, including understanding the use of drugs such as antibiotics. Women also interact more often with health services, so their knowledge of the rules of use, dosage, and risk of antibiotic resistance tends to be better. This condition has the potential to affect their attitude, for example being more careful in using antibiotics and more compliant with doctor's rules [3]

Most of the respondents were in the age range of 24-33 years, namely 61.9% (13 people). This age group is in the productive period, so they usually have more access to health information and education, including related to the use of antibiotics. Meanwhile, the 34-43 age group and older have longer health experiences, which can affect their habits and attitudes towards antibiotics. This age variation suggests that respondents' level of knowledge and attitudes towards antibiotic use can vary based on experience and the level of health literacy possessed by each age group [4]

In terms of employment, most of the respondents were housewives (IRT) at 57.7% (9 people), while self-employed people amounted to 42.9% (12 people). IRT usually plays an important role in family treatment decisions, including choosing whether or not to use antibiotics when family members are sick. This can make them have a higher level of awareness of drug use, but also have the potential to self-medicate if the information they have is not accurate. Meanwhile, respondents who work as self-employed may have a high level of busyness that can affect the way they seek

health information, which ultimately affects their attitudes towards antibiotic use, such as medication adherence and tendency to buy antibiotics without a prescription.

In terms of education, the majority of respondents had a high school education level (47.6%), followed by elementary (33.3%) and junior high school (19%). This level of education greatly affects the ability of respondents to understand health information, including rules for the use of antibiotics. Those with higher education tend to have an easier time understanding concepts such as dosage, side effects, and dangers of antibiotic resistance. In contrast, respondents with basic education may have limited knowledge and are more at risk of using antibiotics inappropriately, such as not taking medication or using antibiotics without a recommendation from a health professional. This difference in education level is an important factor that affects respondents' attitudes and behaviors in the use of antibiotics.

b. Last time distribution using antibiotics

The distribution of the last time respondents used antibiotics showed that most respondents took antibiotics in a relatively close time span. The majority of respondents, namely 52.4%, last used antibiotics in the last 1 month, followed by respondents who used antibiotics in the last 2 months (19.0%). Meanwhile, a small percentage of respondents took antibiotics in the last 1-3 weeks (4.8%) and the last 3-4 months (9.5% and 4.8%, respectively).

This distribution illustrates that the use of antibiotics in people with ISPA is still quite high, especially in the last one to two months. This condition can be influenced by the high incidence of ISPA in the community and the perception that antibiotics are the drugs needed to overcome the symptoms they experience. In addition, the tendency of people to use antibiotics when experiencing coughs, colds, or strep throat reinforces the high consumption in the near future.

All respondents who used antibiotics were recorded to use amoxicillin (100%), which is a broad-spectrum penicillin class antibiotic and is often used as the first choice for respiratory tract infections suspected of bacterial origin. The dominance of amoxicillin use can also be influenced by its wide availability in primary health facilities, its relatively affordable price, and it is a commonly prescribed antibiotic in cases of cough, strep throat, or ear infections.

Amoxicillin is a β-lactam (penicillin) antibiotic that has a broad spectrum of action and is effective against various bacteria that cause respiratory tract infections, such as *Streptococcus pneumoniae* and *Haemophilus influenzae*. Because of its high effectiveness, affordability, safety for various age groups, and widely available in healthcare facilities, amoxicillin is often used as a first-line therapy in cases of suspected bacterial infections.

However, the overall use of amoxicillin in all respondents showed a potential tendency for uniform therapeutic patterns regardless of whether the ISPA was caused by a virus or bacteria. This is important because the WHO (2022) confirms that more than 70% of ISPA

cases are caused by viruses, so they do not require antibiotics. Inaccuracies in the administration of amoxicillin in viral ISPA can increase the risk of antibiotic resistance, where bacteria become immune so that treatment becomes less effective in the future [5]

c. Knowledge Distribution in the Use of Antibiotics

Based on the results of the study, it is known that respondents' knowledge about ISPA and the use of antibiotics is in the high category of 52.4% (11 respondents) and low category of 47.6% (10 respondents). This proportion shows that most respondents already have a good understanding of the causes of ARI, symptoms, and the proper principles of antibiotic use. However, the difference between high and low knowledge is still relatively small, so there are still groups of respondents who do not understand the correct use of antibiotics.

The high percentage of knowledge in some respondents can be influenced by wider access to health information, both through health service facilities, the internet, social media, and education from health workers. People today have easier to obtain information about the dangers of improper use of antibiotics, including the risk of antibiotic resistance. This is in line with the statement of the Ministry of Health (2019), that increasing public health literacy is an important factor in reducing antibiotic misuse [6]

However, the presence of respondents with low knowledge categories can be caused by a lack of direct education from health facilities, differences in education levels, and a culture of antibiotic use that still assumes that every infectious disease, including ISPA, must be treated with antibiotics. In fact, most ISPA is self-limiting and caused by viruses, so it does not require antibiotics. This ignorance often contributes to excessive demand for antibiotics or the use of antibiotics without a doctor's prescription. These findings are in line with research that reports that low public knowledge is associated with high use of antibiotics independently [7].

From the perspective of health services, the variation in respondents' knowledge shows the need to strengthen education, both through counseling at health centers, leaflet distribution, direct consultations, and health campaigns in the research area. This effort is important to ensure that the public understands that the use of antibiotics must be in accordance with the appropriate medical indications, dosage, and duration to prevent antibiotic resistance, which is now a global health problem. Overall, although most respondents already have good knowledge, knowledge gaps still need to be addressed through more intensive and ongoing educational interventions in the field.

d. Distribution of respondents' attitudes in the use of antibiotics

The results showed that most of the respondents had a poor attitude towards the use of antibiotics, which was 61.9%, while respondents with a good attitude were only 38.1%. This illustrates that the respondents' views on the use of antibiotics are still not in accordance with the principles of correct drug use [8]

This poor attitude can be influenced by several conditions found in the field. Respondents tended to rate antibiotics as a "definitely necessary" medication when experiencing symptoms of ISPA such as coughs and colds. In addition, some respondents admitted that they rarely received a complete explanation from health workers regarding the indications of antibiotics, so their attitudes were shaped by personal experiences and habits in the surrounding environment. This finding is in accordance with the attitude theory according to Notoatmodjo (2017) which states that a person's attitude can be influenced by experiences, social interactions, and information received from health workers [9]

Other theories also support this finding. According to Ajzen (Theory of Planned Behavior, 2015), a person's attitude towards an action is shaped by the beliefs he has about the benefits or risks of the action. In this context, respondents' belief that antibiotics can speed up recovery makes them have an inappropriate attitude, even though this belief is not always in line with scientific evidence. This is in line with a study by WHO (2020) which states that excessive perception of the benefits of antibiotics is one of the causes of the emergence of attitudes that do not support the rational use of antibiotics [5]

On the other hand, respondents who had a good attitude (38.1%) showed a more appropriate view, such as understanding that antibiotics are not always necessary and that their use should be based on a doctor's prescription. This positive attitude usually appears in respondents with better knowledge, according to the theory of knowledge attitudes which states that knowledge is one of the factors that affect the formation of attitudes [10]

In general, the results of the study show that respondents' attitudes towards antibiotic use still need to be improved. Although some have sufficient knowledge, their attitudes are still influenced by old habits, lack of education, and inappropriate perceptions. Therefore, ongoing education on the wise use of antibiotics needs to be improved to help form more rational attitudes and prevent the improper use of antibiotics.

a. Relationship of Knowledge to respondents' attitudes in antibiotic use

Based on the results of the analysis using the Fisher's Exact Test, a value of p = 0.183 was obtained, which means that the value is greater than $\alpha = 0.05$. Thus, it can be concluded that there is no significant relationship between respondents' level of knowledge and attitudes in antibiotic use.

These results showed that although respondents had different levels of knowledge, with 52.4% in the high knowledge category and 47.6% in the low knowledge category, the difference did not directly affect their attitudes towards antibiotic use. This can be seen from the distribution of data, where respondents with low knowledge are still dominated by poor attitudes (38.1%), but there are also respondents with high knowledge who have poor attitudes (23.8%). These findings suggest that good knowledge

does not necessarily form good attitudes, and conversely, good attitudes can also be found in respondents with lower knowledge.

The insignificance of this relationship can be explained by the theory that attitudes are influenced by more than just knowledge. According to Notoatmodjo (2017), a person's attitude is shaped by personal experiences, social influences, long-established beliefs, and the conditions of the environment where they live. Thus, even if a person understands the use of antibiotics in theory, their attitudes can still be influenced by people's habits, previous experience of using antibiotics, or a lack of direct education from health workers. This is in accordance with the theory of health behavior which states that knowledge is only one of the factors that influence attitudes, but not the only determining factor [9].

b. Statistik hypothesis

The results of the bivariate analysis applied to this study, namely Fisher's Exact Test, clearly indicate that there is no statistically significant relationship between respondents' level of knowledge and their attitudes towards antibiotic use in ISPA cases. With a significance value (*p-value*) obtained of 0.183 ($p > 0.05$), this finding strongly rejects the proposed Alternative Hypothesis (H_1). This means that the high level of knowledge of the respondents, where 52.4% is classified as the High category, fails to be the main predictor of a rational attitude. The insignificance of this statistic is in line with the results of the study which also shows that although ISPA patients have excellent knowledge, it is not always followed by a comparable attitude towards treatment [11]

This apparent disconnect between the cognitive realm (knowledge) and the affective realm (attitude) challenges the classic K.A.P. (Knowledge, Attitude, Practice) model, where increased knowledge is assumed to form a positive attitude. The data shows that the majority of respondents, namely 61.9%, actually have a Less Good attitude, even though they are in the high-knowledge group. This phenomenon, known as the behavioral knowledge gap, is supported by similar studies on rational antibiotic use and also concluded that there is no meaningful relationship between knowledge and rational practice ($p = 0.602$), reinforcing that knowledge alone is not enough to transform attitudes into positive ones [12].

Based on the results of this study, it was stated that H_0 was accepted and H_1 was rejected because there was no relationship between knowledge and attitude towards respondents. The absence of a relationship between antibiotic use knowledge and behavior can occur due to the many factors that affect antibiotic use behavior. First, environmental factors, namely the importance of good delivery from health workers so that a person tends to be obedient and rational in using antibiotics. The second factor is trust. Trust is the cognitive component of socio-psychological factors. For example, a person believes that a doctor or health worker can definitely cure his disease. They believe that doctors can cure their

illnesses so they tend to obey the doctor's words. The third factor is habit. Habit is a sedentary aspect, occurring automatically and unplanned [13]

Several other factors can affect such as age. This can be explained by the fact that as we age, a person's memory and thinking abilities tend to decline [11]. In addition, the level of knowledge does not always depend on age. Health knowledge is more influenced by access to information and participation in health education programs, not by age factors alone. In conditions where all age groups have equal access to information, the level of knowledge tends to be uniform. Attitudes toward health are more influenced by personal experiences, access to health information, and individual beliefs, rather than by age. Age is not the dominant factor in shaping attitudes towards ISPA. Access to information and deep understanding are the main determining factors.

CONCLUSION

Based on the results of the research and discussion, it was concluded that the level of knowledge: the majority of people with ISPA have high knowledge (52.4%) about the use of antibiotics. Respondents' Attitudes: The majority of people with ISPA have a poor attitude (61.9%) in the use of antibiotics. Relationship (Hypothesis): There was no statistically significant relationship between the level of knowledge and attitudes of people with ISPA in the use of antibiotics (p = 0.183).

BIBLIOGRAPHY

[1] A. Rauf, "The relationship of knowledge and attitudes towards the use of antibiotics in patients with ARIS," *J. Heal. Mass*, vol. 8, no. 2, pp. 88–97, 2023.

[2] F. L. Rahim and T. S. Maulana, "PENYULUHAN DAN EDUKASI TENTANG KOMUNIKASI YANG BAIK ANTAR SESAMA DI SEKOLAH DASAR INPRES MOUTONG TIMUR," vol. 4, no. 1, pp. 46–57, 2025.

[3] S. Adnan, R., & Putri, "Gender relationship to infectious attitudes," *Heal. J.*, vol. 12, no. 3, pp. 78–89, 2019.

[4] D. Rahmawati, N., Susanto, H., & Lestari, "Factors that affect public health knowledge," *J. Heal. Educ.*, vol. 5, no. 1, pp. 14–22, 2020.

[5] World Health Organization (WHO), "Respiratory infections: Global situation report.," World Health Organization.

[6] Ministry of Health of the Republic of Indonesia., "No TitleIndonesian public health literacy report. Ministry of Health of the Republic of Indonesia.," 2019.

[7] R. Moon, "The influence of knowledge and attitudes on healthy living behaviors.," *J. Community Heal. Sci.*, vol. 12, no. 4, pp. 150–165, 2021.

[8] R. Hadi, F., Prasetyo, A., & Wulandari, "Attitude to antibiotic use," *J. Public health Res.*, vol. 9, no. 2, pp. 45–52, 2021.

[9] S. Notoatmodjo, *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta, 2014.

[10] S. Azwar, *Sikap manusia: Teori dan pengukurannya (Edisi revisi).* Pustaka Pelajar, 2018.

[11] Z. (2025). Serdiani, S., Hasan, M., & Limonu, "The relationship between

knowledge and attitudes towards the treatment of ISPA in rural communities.," *J. Heal. Sci.*, vol. 14, no. 1, pp. 11–19, 2025.

[12] S. Amalia, A. N., Anggraeni, S. B., & Purnamaningsih, "Evaluation of the use of antibiotics in patients with acute respiratory tract infections (ARI) in children in the inpatient facility of Hospital X in 2021.," *Sci. J. Mar. Farming,* vol. 14, no. 1, pp. 10–20, 2023.

[13] L. Zahra, "Community habits in the use of antibiotics: Psychological and behavioral factors," *J. Heal. Psychol.*, vol. 4, no. 2, pp. 33–42, 2022.

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