

# Parental Knowledge and the Incidence of Acute Respiratory Infections in Toddlers: A Cross-Sectional Study at Cilandak Health Center, South Jakarta

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## Abstract

**Background:** Acute Respiratory Infection (ARI) is a leading cause of morbidity and mortality in children under five years, particularly in low- and middle-income countries. In Indonesia, ARI continues to contribute significantly to the disease burden in toddlers. One critical factor influencing ARI incidence is the level of parental knowledge regarding prevention and early detection of symptoms.

**Objective:** This study aimed to determine the relationship between parental knowledge and the incidence of ARI in toddlers in the working area of Cilandak Health Center, South Jakarta.

**Methods:** This study applied a correlational analytic design with a cross-sectional approach. A total of 77 respondents were selected using accidental sampling, consisting of parents with toddlers. Data were collected using structured questionnaires to assess the level of parental knowledge and the incidence of ARI in their children. Statistical analysis used Pearson correlation to test the relationship between variables.

**Results:** The study found that 70.1% of parents had low knowledge about ARI, and 71.4% of toddlers had experienced ARI. The correlation test showed a very strong and significant negative relationship between parental knowledge and ARI incidence ( $p = 0.001$ ;  $r = -0.906$ ), indicating that higher knowledge levels are associated with lower ARI incidence in toddlers.

**Conclusion:** There is a significant inverse relationship between parental knowledge and the incidence of ARI in toddlers. Enhancing parental knowledge through health education may help reduce the burden of ARI among young children.

**Keywords :** Parents, Knowledge, Respiratory Tract Infections, Infant, Health Education

## INTRODUCTION

Acute Respiratory Tract Infection (ARI) is a disease that attacks the respiratory tract with mild to severe manifestations and usually lasts

more than 14 days (1). In addition, the symptoms of acute respiratory tract infection (ARI) in toddlers include decreased appetite, lethargy, malaise, headache, body aches, influenza, fuss, and discomfort (2).

The World Health Organization (3) stated that deaths under five due to ISPA are the highest in the world. The Under Five Mortality Rate (UMFR) of ISPA is around 41/1000 children, and at the Infant Mortality Rate (IFR) of ISPA is 45/1000 children, the issue of ISPA disease occurs in developed countries due to viruses, while in developing countries it is caused by bacteria. The death rate of toddlers due to ISPA in Indonesia is ranked first in ASEAN, in Indonesia accounting for 22.30% of the total deaths of children under five (4). Acute respiratory tract infections (ARI) are the leading cause of child death among all infectious diseases. In 2019, it was estimated that 1 in every 7 deaths among children under the age of 5 was caused by ISPA (5). Every year nearly 4 million people die from ISPA, 98% of which occur in low- and middle-income countries, with high mortality rates in infants, children, and the elderly (6).

The prevalence of ISPA in children under five in Indonesia has almost tripled from 12.8%, and almost tripled from 12.8% (7) become 34.2% (8). In DKI Jakarta Province, the prevalence reached 34.5%, with the highest distribution in the age group of 12–23 months (38.2%) and almost balanced between boys and girls (SURKESNAS & Kementerian Kesehatan RI, 2023). Based on data recorded from the DKI Jakarta Provincial Health Office, the trend and number of ISPA cases increased at the beginning of the year, then decreased, in 2023 relatively not much different than before the pandemic in 2018 and 2019. The trend of ISPA cases in toddlers compared to age groups over 5 years before the pandemic in 2018, 2019 and after the pandemic in 2023 shows a similar pattern. Various factors have been identified to contribute to the occurrence of ARI, including environmental conditions, nutritional status, immunization, and parental behavior and knowledge; (10,11)).

Parental knowledge, especially maternal knowledge, plays an important role in the prevention and management of ARI, as explained in Lawrence Green's theory that health behaviors are influenced by knowledge as a predisposing factor (12) Previous research shows mixed results of research (13) where there is a significant correlation between parental knowledge of ISPA and the incidence of ISPA in toddlers, the importance of parental knowledge in preventing and managing ISPA in

toddlers or children so that parents improve their understanding of ISPA and health care providers should also offer educational sessions to the community to address this issue effectively, while (14) did not find the relationship. These findings suggest inconsistencies and the need for further research to examine the relationship between parental knowledge and the incidence of ISPA in toddlers. By identifying the main factors that contribute to the prevalence of ARI, especially from the aspect of parental knowledge, this study is expected to provide a scientific basis for more effective interventions in an effort to reduce the incidence of ARIs in toddlers.

A preliminary study at the Cilandak District Health Center in South Jakarta in June 2024 shows that some parents still have inadequate knowledge about the prevention and handling of ISPA, even though the number of cases continues to increase. In 2023, there were 730 cases of ISPA under five, and as many as 327 cases occurred in the first five months of 2024. These findings show that there is no gap between the availability of information and the implementation of preventive measures by parents. Based on these conditions, it is important to further analyze the relationship between parental knowledge and the incidence of ISPA in toddlers, especially in the work area of the Cilandak Health Center. This research aims to provide a scientific basis for the development of more effective promotive and preventive interventions at the family level and primary health services. The results are expected to be used by health workers and policymakers to design targeted educational strategies, so as to be able to reduce the incidence of ISPA in children under five.

Based on the above background description, the data obtained from the initial survey in this study showed that there was a problem and it was found that the results of the study were inconsistent with the knowledge of parents with the incidence of ISPA in toddlers, so the researcher wanted to analyze further and was interested in conducting research on "The Relationship between Parental Knowledge and the incidence of ISPA in Toddlers at the Cilandak Health Center". Thus earlier identifying the main factors contributing to the prevalence of ISPA, this study aims to provide a solid foundation in developing effective promotive and preventive interventions at the family and primary service

levels. The results of this study are expected to be used by health workers and policymakers to design education strategies that are more targeted, so as to reduce the incidence of ISPA in children under five.

## METHODS

### Study Design:

This study is a quantitative research with a type of correlational analytical research and uses a cross-sectional study design.

### Sample:

The sampling technique in this study uses the Accidental Sampling technique, data collection is carried out using primary data, namely data obtained from the results of the questionnaire distribution. The sample in this study is all parents who have toddlers and seek treatment at the Cilandak Health Center, South Jakarta, on July 19-25, 2024, with a total of 77 respondents.

### Instruments:

The instrument used in this study was a questionnaire of parental knowledge related to the incidence of ISPA in toddlers, adjusted from (15) with 20 statements. The questionnaire has been tested for validity ( $r = 0.408-0.788 > r$  table 0.36) and reliability (Cronbach's Alpha =

$0.921 > 0.60$ ), so that it is declared valid and reliable. The scale used is the Guttman Scale to ensure the firmness of the respondent's answers.

### Data Collection:

The data used is primary data obtained through the distribution of questionnaires directly to respondents.

### Data Analysis:

The data was analyzed using univariate analysis and bivariate analysis with the spearman rank test.

### Ethical Considerations:

This research has received approval from the authorities. All respondents were provided with information about the purpose of the research and expressed consent to participate voluntarily through informed consent, as well as guaranteed their identity and personal data.

## RESULTS

During the research period that has been carried out from July 17-25,2024, 77 respondents were obtained at the Cilandak Health Center, South Jakarta.

**Tabel 1. Distribution of Frequency of ARI Incidence in Toddlers**

Variabel	Frequency ( <i>f</i> )	Percentage (%)
<b>Incidence ARI</b>		
ARI	55	71,4
Non ARI	22	28,6
	77	100

Based on table 1 above, it can be explained that of the 77 respondents at the Cilandak Health Center, the largest number of respondents was obtained in the category of ISPA Incidence which amounted to 55 respondents (71.4%), while the category of non-ISPA incidents amounted to 22 respondents (28.6%).

**Table 2. Distribution of Frequency of Respondents' Knowledge**

Variable	Frequency ( <i>f</i> )	Percentage (%)
<b>Parents' Knowledge of ARI</b>		
Good	23	29,9
Less	54	70,1
	77	100

Based on table 2, it can be seen that of the 77 respondents at the Cilandak Health Center in South Jakarta, based on parents' knowledge about ISPA, most of the parents' knowledge in the poor category was 54 respondents (70.1%), and in the knowledge with the good category as many as 23 respondents (29.9%).

**Table 3. Relationship between Parental Knowledge and the incidence of ARI in toddlers at the Cilandak Health Center.**

Knowledge Parents	ARI Incident		Total	Sig. P value	Coefficient Correlation (r)
	ARI	Non ARI			
<b>Good</b>	2	21	23	0,001	-0,906
	8,7%	91,3%	100%		
<b>Less</b>	53	1	54		
	98,1%	1,9%	100%		
	<b>55</b>	<b>22</b>	<b>77</b>		
	<b>71,4%</b>	<b>28,6%</b>	<b>100%</b>		

Based on the data from the results of the Spearman rank test in table 3, data was obtained that the most in the category of knowledge lacked with the incidence of ISPA amounting to 53 respondents (98.1%), and no ISPA as many as 1 respondent (1.9%). Meanwhile, in the category of knowledge, there were 2 respondents with the incidence of ISPA (8.7%) and 21 respondents (91.3%) and 21 respondents (91.3%). The results of the Spearman rank test were determined by the P-Value results obtained with a P-Value of < 0.05 and a p-value of 0.001 (<0.05) with a value of  $r = -0.906$ , an OR value of 0.002 so that it was stated that there was a strong significant negative relationship in parental knowledge with the incidence of ISPA in toddlers. The results of the analysis showed that knowledge of good ISPA had a very strong relationship with a reduced risk of ISPA, and that toddlers who experienced ISPA had a very low risk of developing ISPA compared to toddlers who did not experience ISPA.

## DISCUSSION

### Parents' knowledge of ISPA

Based on the results of the research that has been implemented at the Cilandak Health Center, South Jakarta, that out of 77 respondents, most respondents have parental knowledge about ISPA in the Lack category, 54 respondents (70.1%) and a small number of respondents have good knowledge about ISPA as many as 23 respondents (29.9%).

The results of this study are in line with the research (16,17) in Dawungsari District, Kendal Regency regarding the relationship between parental knowledge and the incidence of ISPA in toddlers, stating that out of 72 respondents, there were 26.4% of parents' knowledge about

ISPA with a lack category. This is because there are still many parents of toddlers with low education levels who lack information about the disease of ARI. In addition, this happens because many parents do not understand various aspects of ESPI disease, including the definition, causes, risk factors, signs and symptoms, management, complications and prevention of ESPA disease. Parents' knowledge is still limited to basic knowledge that has not reached the stage of deep understanding.

Factors that cause health problems, such as ISPA are influenced by behaviors determined by knowledge. The process of knowledge involves awareness, interest, evaluation, and then experimentation to do something. Another factor that influences behavior is belief, where parents need to be convinced that a phenomenon or object is true or real. In addition, behavior is also influenced by individual beliefs and values. This knowledge can be gained not only from formal education, but also through information and counseling(18)

According to L. Green, parental knowledge is very influential and important for a child's health in the prevention of ISPA disease because parents can decide what actions are appropriate and necessary to be taken to limit children's health problems. Parents who have a good understanding will be better able to make the right decisions to prevent ISPA in children (Setyawan et al., 2024).

### Incidence of ISPA in toddlers

The results of the characteristics of the incidence of ISPA in toddlers showed the highest frequency in the category of experiencing ISPA with a total of 55 respondents (71.4%). It can be concluded that the majority of respondents (71.4%) experienced ISPA, while the rest

(28.6%) did not experience ISPA. This shows a fairly high prevalence of ISPA in the group that the researchers studied. The results of this study are in accordance with the results of research conducted by (SORMIN et al., 2023) which said that from the results of the research on the 85 most respondents who were under five years old, 62 respondents (72.9%) experienced ARI.

The incidence of ISPA is closely related to the knowledge of ISPA owned by the community, especially the elderly, because parents are the main responsible person for maintaining family welfare. Those who take care of the household, prepare household needs, take care of sick families, and others. In the toddler period where toddlers are still very dependent on their parents, especially their mothers, it is very clear the role of parents in determining the quality of their children's welfare (20)

ISPA in toddlers often occurs in families with low levels of knowledge. Low knowledge is caused by the lack of information and counseling obtained by families regarding the incidence of ISPA in toddlers, causing the incidence of ISPA disease to increase. ISPA is more common in families with low knowledge, which generally leads to low information and counseling. In addition to congenital and environmental factors, family restrictions in caring for children and carrying out care functions at home also increase ISPA (13)

### **The relationship between parental knowledge and the incidence of ISPA in toddlers**

Based on the results of the study, the knowledge of good parents who experienced the occurrence of ISPA was obtained by 21 respondents (91.3%), while the results of good knowledge who did not experience the occurrence of ISPA were only 2 respondents (8.7%). The most dominant or high data obtained from this study was the lack of parental knowledge with the incidence of ISPA as many as 53 respondents (98.1%), for respondents who did not experience the incidence of ISPA as many as 1 respondent (1.9%). Based on the provisions of the Spearman Rank test results, the P-Value results were obtained by obtaining a value of  $p = 0.001$  which means a P-Value of  $< 0.05$  with a correlation coefficient value between the variables of parental knowledge and the incidence of ISPA in toddlers of -0.906, so that it was stated that there was a strong and direct

negative significant relationship between parental knowledge and the incidence of ISPA in toddlers at the Cilandak Health Center, South Jakarta. The value of the strong negative correlation coefficient, namely better knowledge among parents, was significantly related to a decrease in the incidence of ISPA in toddlers. This is important to consider in efforts to prevent and handle ISPA through increasing parental knowledge and awareness.

This research is in line with the research applied by (20) that there is a relationship between knowledge and the incidence factor of ISPA in children under five in the working area of the Simpang Tiga Health Center, Pidie Regency with a p-value = 0.034 ( $p > 0.05$ ). Parents' knowledge of ISPA disease is the main key to forming healthy habits by improving the quality of children's health. Knowledge/cognition is an important domain in shaping a person's actions. with good knowledge, awareness and a positive attitude on children's health, it is hoped that it will have a positive impact on children's health because reducing the risk of ISPA in children can prevent complications to a minimum. Knowledge is information about their health, illness, or well-being. Knowledge of health often varies between individuals, depending on the individual's perspective on the subject. Parental awareness of ISPA is a major factor in the development of healthy behaviors for children's quality of life. Because the danger of ISPA in children can be reduced to a minimum, parents who have knowledge of this condition are more likely to have a good influence on their child's health (21).

The lack of knowledge about the incidence of ISPA disease is also influenced by the low education of parents from the results of the study which shows that mothers with low levels of education tend to have poor knowledge, which has an impact on the high incidence of ISPA in toddlers. This research is strengthened by research (13) that an increase in maternal knowledge can reduce the incidence of ISPA in toddlers which can be caused by knowledge of providing information to a person in taking action, knowledge that allows the mother to take better preventive measures, thus preventing the disease rather than having to treat.

This is also reinforced by the research of Sutarno (22) in the (20) who said that the low level of knowledge and skills of the family,



especially mothers, is one of the causes of ISPA in toddlers. Many families experience ISPA at home caused by a lack of maternal knowledge about how to prevent STIs. The same research as the research conducted by (23) regarding the significant relationship between parental knowledge of ISPA and the incidence of ISPA in infants in the working area of the Gatak Health Center with the number of study respondents as many as 71 people. The percentage of respondents who are knowledgeable and sufficient amounts to 67.6%. Meanwhile, 32.4% of respondents who are knowledgeable are lacking. And it was found that 25 (35.2%) babies did not experience ARI. Parents' knowledge of ISPA disease is influenced by various factors such as work and age. Apart from work, knowledge is also influenced by the age factor. The older the parents, the more experience and knowledge they gain about ISPA. the older the age, the more mature and strong a person will be to think in prevention and treatment about ISPA.

## CONCLUSION

The results of the study showed that there was a significant relationship between the level of parental knowledge and the incidence of ISPA in toddlers. The majority of respondents who have low knowledge are likely to have children who suffer from ARI. Therefore, improving parental understanding through proper health education and counseling is very important in efforts to prevent and handle ISPA. This intervention has the potential to reduce the prevalence of ISPA in toddlers by increasing parents' awareness and ability to take care of children's health independently and effectively.

### Research limitations

This study faces limitations in one of the data normality tests of one of the variables that is not distributed normally, so that the Chi-Square test that was originally used is inappropriate. So the researcher used an alternative test, namely the researcher used the Spearman Rank test which is more suitable for ordinal and nominal data. Nonetheless, the results of these tests may be influenced by outliers that only measure ordinal correlation, so the findings should be interpreted with caution that may require further research for further validation.

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### Author Contributions

NAM: Conceptualization, data collection, methodology, drafting of the manuscript.

RBP: Statistical analysis, interpretation of results, critical revision, and final approval of the manuscript.

### Conflict of Interest Disclosure

No conflicts of interest were disclosed by any of the authors.

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### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. Due to privacy and ethical restrictions, the raw data are not publicly shared.

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