

FACTORS INFLUENCING THE OCCURRENCE OF ISPA IN TODDLER IN THE WORK AREA OF THE KAMPALA COMMUNITY HEALTH CENTER UPTD, SINJAI REGENCY IN 2026

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Abstract

ISPA is a respiratory disorder caused by infectious pathogens such as bacteria, viruses, rickettsia, fungi, and parasites that can be transmitted through droplets of fluids. ARI is one of the diseases that contributes to the highest morbidity and mortality rates in toddlers. The purpose of this study was to determine what factors influence the incidence of ISPA in toddlers in the Kampala Community Health Center work area of Sinjai Regency in 2025 based on cigarette smoke exposure and immunization status. This research method uses an observational analytical quantitative research method with a cross-sectional study approach. The sample in this study were all mothers who had children aged 12-59 months who experienced ISPA as many as 31 respondents. Data collection was carried out using a questionnaire. The collected data was processed and analyzed using the SPSS program and analyzed using the Chi-square test. The results of the study were that there was a significant relationship between exposure to cigarette smoke and the incidence of ISPA in toddlers ($p\text{-value} = 0.00$ OR 12.667) and there was a relationship between immunization status and the incidence of ISPA in toddlers with a total value ($p\text{-value} = 0.045$, OR 9.600) in the Work Area of the Kampala Health Center UPTD, Sinjai Regency in 2025. The high incidence of ARI was influenced by several factors such as exposure to cigarette smoke and immunization status in toddlers.

Keywords: *Apium Graveolens, Complementary Therapy, Elderly, Hypertension, Blood Pressure*

INTRODUCTION

Acute Respiratory Tract Infection (ARI) is a common disease and deserves attention because it causes infant mortality in developing countries, including Indonesia. ARI is a respiratory disorder caused by infectious pathogens, including bacteria, viruses, rickettsiae, fungi, and parasites, which can be transmitted through droplets. ARI is one of the diseases that contributes to the highest morbidity and mortality rates in infants (Ministry of Health of the Republic of Indonesia, 2024).

The World Health Organization (WHO) reported that in 2021, there were approximately 120 million cases of acute respiratory infections (ARI) annually, with a death toll of 1.4 million. In 2022, the number of cases increased to 3.46 million, or approximately 6.1% of the total affected population, with 15,000 children under five dying daily from the disease. Meanwhile, in 2023, the number of cases of acute respiratory infections (ARI) in children reached 5.4 million, contributing to 16% of the total number of deaths among children under five worldwide, with 920,136 deaths, or more than 2,500 deaths per day. (WHO, 2023)

The 2023 Indonesian Health Survey (SKI) showed a significant increase, with a total of 877,531 cases of acute respiratory infections (ARI) across all age groups, of which 86,364 occurred in toddlers. This data confirms that toddlers are a highly vulnerable group to acute respiratory infections (ARI) because their immune systems are still developing.

According to data from South Sulawesi Province, 29,481 cases of ARI were recorded, with 2,990 of these cases occurring in infants. South Sulawesi Province ranks 10th in the national ranking for the highest number of ARI cases in infants (Ministry of Health, 2023).

Based on data from the Sinjai District Health Office in 2023, the number of ISPA cases in toddlers was 2,818 cases, while in 2024 it decreased to 2,347 cases and in 2025 it increased drastically to 3,724 cases and in 2025 there were 790 cases as of January-March (Sinjai District Health Office profile 2025).

Toddlers are at a particularly vulnerable age group to illnesses, including acute respiratory infections (ARI) due to their immature growth and immune systems. ARI in toddlers can lead to serious consequences, including stunted growth, death, and long-term health problems like impaired growth and development, lung and digestive tract problems (Li et al. 2021).

The high incidence of ARI can be caused by infectious agents and influenced by several risk factors. Based on the epidemiological triangle, risk factors for ARI include the host, namely age, gender, nutritional status, low birth weight (LBW), immunization status, and exclusive breastfeeding. Agents include bacteria, viruses, and fungi. The most common causes are *Streptococcus pneumoniae* and *Haemophilus influenzae* type B. Meanwhile, environmental factors include residential density, ventilation area, smoking habits, ownership of a smoke vent, and the type of cooking fuel used (Nuzulia, 2021).

The group most at risk of developing ARI are toddlers, accounting for approximately 20-40% of pediatric and infant patients in hospitals and community health centers. Toddlers are infants under five years of age, and they are susceptible to disease due to their weakened immune systems. A person contracts ARI when their immune system is weakened. Toddlers are more susceptible to disease than adults, as their immune systems are still developing against infectious diseases. One of the most common infectious diseases suffered by toddlers is acute respiratory infection (ARI) (WHO, 2022).

Based on data obtained from the Kampala Community Health Center UPTD in 2023, the number of ISPA cases based on the number of visits by toddlers with coughs or difficulty breathing was 247 cases, while in 2024 it became 237 cases and in 2025 it experienced a drastic decrease to 104 cases and in 2025 there were 31 cases as of January-March (Medical Records, 2025).

Based on research conducted by Idris (2025), it was obtained from analytical observation with a cross-sectional design, namely the results of the study showed that immunization status, nutritional status, residential density, and type of house floor were significantly related to the incidence of ARI in toddlers.

METHOD

This study applies an observational analytical quantitative approach with a cross-sectional study method to see the existence of an independent relationship (exposure to cigarette smoke and immunization status) and dependent variables (the incidence of ARI in toddlers). This approach allows researchers to obtain a relationship between risk factors and the events studied by collecting data and data collection is carried out only at one observation time (Paramita et al, 2021). This study will be conducted at the UPTD Kampala Health Center, Sinjai Regency. The time of this study was conducted in April - May 2025.

RESULTS AND DISCUSSION
Respondent Characteristics

Table 1

Frequency Distribution Based on Respondents' Age in the Working Area of Kampala Community Health Center UPTD, Sinjai Regency in 2026 (n=31)

No.	Respondent Age	Frequency (n)	Presentation (%)
1	20-25 Years	8	25.8
2	26-30 Years	12	38.7
3	31-40 Years	7	22.6
4	36-40 Years	4	12.9
Total		31	100

Source: Primary Data, 2026

Based on Table 1, based on research with 31 respondents, the age group with the largest number was 26–30 years, namely 12 respondents (38.7%), then the age group of 20–25 years amounted to 8 respondents (25.8%), the age group of 31–35 years amounted to 7 respondents (22.6%), and the age group of 36–40 years amounted to 4 respondents (12.9%). This data shows that the majority of respondents are of productive age who have good ability and affordability in accessing health services.

Table .2

Frequency Distribution Based on Respondents' Education Level in the Working Area of Kampala Community Health Center UPTD, Sinjai Regency in 2026 (n=31)

No.	Education Respondents	Frequency (n)	Presentation (%)
1	JUNIOR HIGH SCHOOL	13	41.9
2	SENIOR HIGH SCHOOL	13	41.9
3	S1	5	16.1
Total		31	100

Source: Primary Data, 2026

Based on Table 2, the data obtained shows that the majority of respondents had a high school education (13 respondents (41.9%)), while 13 respondents had a junior high school education (41.9%), and

5 respondents had a bachelor's degree (16.1%). The level of knowledge, understanding, and awareness of mothers in caring for toddlers, as well as compliance in completing immunizations and the ability to prevent exposure to cigarette smoke in the home environment are influenced by the mother's education level.

Table 3

Frequency Distribution Based on Respondents' Occupations in the Work Area of the Kampala Community Health Center UPTD, Jinjai Regency in 2026 (n=31)

No.	Education Respondents	Frequency (n)	Presentation (%)
1	Housewife (IRT)	25	80.6
2	Trader	6	19.4
Total		31	100

Source: Primary Data, 2026

Based on Table 3, the majority of respondents worked as housewives (25 respondents (80.6%), while 6 respondents (19.4%) worked as traders. Mothers' status as housewives allows them more time to care for their toddlers; however, a home that is not smoke-free makes toddlers susceptible to cigarette smoke.

1. Univariate Analysis

a. Incidence of ISPA in Toddlers

Table 4

Frequency Distribution Based on the Incidence of ISPA in Toddlers in the Working Area of the Kampala Community Health Center UPTD, Jinjai Regency in 2026 (n=31)

No.	Degree of occurrence of ISPA	Frequency (n)	Presentation (%)
1	Mild ISPA	22	71.0
2	Moderate ISPA	6	19.4
3	Severe ISPA	3	9.7
Total		31	100

Source: Primary Data, 2026

Based on Table 4, based on a sample of 31 toddlers, the frequency of ARI incidence in toddlers shows that the majority experienced mild ARI (22 toddlers (71.0%)), moderate ARI (6 toddlers (19.4%)), and severe ARI (3 toddlers (9.7%)). The high number of mild ARIs demonstrates that most cases can still be handled at the primary health care level. However, the presence of moderate and severe ARI cases requires further attention because they can cause complications that endanger toddlers.

b. Exposure to Cigarette Smoke in Toddlers

Table 5

Frequency Distribution Based on Cigarette Smoke Exposure in Toddlers in the Working Area of the Kampala Community Health Center UPTD, Sinjai Regency in 2026 (n=31)

No.	Derajat kejadian ISPA	Frekuensi (n)	Presentasi (%)
1	Paparan Rendah	9	29,0
2	Paparan Sedang	13	41,9
3	Paparan Tinggi	9	29,0
Total		31	100

Source: Primary Data, 2025

Based on Table 5, from a study of 31 toddlers, cigarette smoke exposure was divided into three categories: low exposure with 9 toddlers (29.0%), moderate exposure with 13 toddlers (41.9%), and high exposure with 9 toddlers (29.0%). This proves that a high number of toddlers in the Kampala Community Health Center UPTD work area live in environments exposed to cigarette smoke, which is one of the main risk factors for ARI.

c. Toddler Immunization Status

Table 6

Frequency Distribution Based on Immunization Status of Toddlers in the Working Area of Kampala Community Health Center UPTD, Sinjai Regency in 2026 (n=31)

No.	Immunization Status	Frequency (n)	Presentation (%)
1	Complete	13	41.9
2	Incomplete	18	58.1
Total		31	100

Source: Primary Data, 2026

Based on Table 6, a study conducted on 31 toddlers showed that 13 (41.9%) had complete immunizations, while 18 (58.1%) had incomplete immunizations. The majority of toddlers had incomplete immunizations, indicating low basic immunization coverage in the Kampala Community Health Center (Puskesmas) work area. This is a major concern, as it can increase toddlers' susceptibility to infectious diseases, including acute respiratory infections (ARI).

2. Bivariate Analysis

a. The Relationship Between Cigarette Smoke Exposure and the Incidence of ARI in Toddlers

Table 7

The Relationship Between Cigarette Smoke Exposure and the Incidence of ISPA in Toddlers in the Work Area of the Kampala Community Health Center UPTD, Jinjai Regency in 2026 (n=31)

Exposure to cigarette smoke	ISPA incident			Total		P- value
	Light	Currentl y	Heavy	n	%	
Low	9	0	0	9	100.0	0.002
Current	11	2	0	13	100.0	
ly						
Tall	2	4	3	9	100.0	
Total	22	6	3	31	100.0	

Source: Primary Data, 2026

Based on Table 7, there were 9 toddlers who experienced low cigarette smoke exposure, most of the toddlers experienced mild ARI (71.0%), with the majority being in the moderate cigarette smoke exposure category (41.9%) and most of them had incomplete immunization status (58.1%).

The results of the Chi-Square test show a value of $\chi^2 = 16.532$ with a p-value = 0.002. Because the p-value (0.002) is smaller than $\alpha = 0.05$, H1 is accepted, which means there is a significant relationship between exposure to cigarette smoke and the incidence of ARI in toddlers in the working area of the Kampala Community Health Center UPTD, Jinjai Regency in 2025. This shows that the higher the level of exposure to cigarette smoke, the higher the degree of ARI experienced by toddlers.

b. The Relationship Between Immunization Status and the Incidence of ARI in Toddlers

Table 8

The Relationship Between Immunization Status and the Incidence of ISPA in Toddlers in the Working Area of the Kampala Community Health Center UPTD, Jinjai Regency in 2026 (n=31)

Immuniza tion Status	ISPA incident			Total		P- value
	Light	Currentl y	Heavy	n	%	

Comple	13	0	0	13	100.0	0.010
te						
Incomplet	9	6	3	18	100.0	
e						
Total	22	6	3	31	100.0	

Source: Primary Data, 2026

Based on Table 8, there were 13 toddlers with complete immunization status, all of whom experienced mild ARI (100.0%), and none suffered from moderate or severe ARI. There were 18 toddlers with incomplete immunization status, including 9 toddlers (50.0%) suffering from mild ARI, 6 toddlers (33.3%) suffering from moderate ARI, and 3 toddlers (16.7%) suffering from severe ARI.

The results of the Chi-Square test show a value of $\chi^2 = 9.159$ with a p-value = 0.010. Because the p-value (0.010) is smaller than $\alpha = 0.05$, then H1 is accepted, which means there is a significant relationship between immunization status and the incidence of ARI in toddlers in the working area of the Kampala Community Health Center UPTD, Sinjai Regency in 2025. This also indicates that the completeness of immunization is very important because it plays a significant protective factor in reducing the severity of ARI in toddlers.

CONCLUSION

Based on the results of research conducted on 31 toddlers in the Working Area of the Kampala Community Health Center UPTD, Sinjai Regency in 2026, the following conclusions can be drawn:

1. Based on a total of 31 toddlers studied who experienced ISPA in the Working Area of Kampala Community Health Center UPTD, Sinjai Regency in 2026, with toddlers experiencing mild ISPA totaling 22 toddlers (71.0%), those experiencing moderate ISPA totaling 6 toddlers (19.4%), while those experiencing severe ISPA totaling 3 toddlers (9.7%). This number indicates that the incidence of ISPA is still relatively high and is a health problem in toddlers in the area that requires serious attention.
2. There is a significant relationship between cigarette smoke exposure and the incidence of ARI in toddlers in the working area of the Kampala Community Health Center UPTD, Sinjai Regency in 2026, with a χ^2 value of 16.532 and a p-value of 0.002 ($p < 0.05$). The higher the level of cigarette smoke exposure experienced by toddlers, the more severe the degree of ARI they suffer from. Of the 9 toddlers with high cigarette smoke exposure, 4 toddlers (44.4%) experienced moderate ARI and 3 toddlers (33.3%) experienced severe ARI. This proves that exposure to cigarette smoke in the home environment is a significant risk factor for ARI in toddlers.
3. There is a significant relationship between immunization status and the incidence of ARI in toddlers in the working area of the Kampala Community Health Center UPTD, Sinjai Regency in 2026, with a χ^2 value of 9.159 and a p-value of 0.010 ($p < 0.05$). All toddlers with complete immunization status only experienced mild ARI (100.0%), while toddlers with incomplete immunization experienced more moderate ARI (33.3%) and severe ARI (16.7%). This proves that complete immunization is very important as a protective factor in minimizing the occurrence of ARI in toddlers.

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