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The Relationship between Parents' Smoking Behaviour and the Incidence of Acute Respiratory Infections in Toddlers at the Southeast Sulawesi Police Primary Clinic

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Abstract

Acute Respiratory Infection (ARI) is one of the most common diseases in toddlers and is the leading cause of morbidity and mortality worldwide. One of the factors that contributes to the high incidence of ISPA in toddlers is exposure to cigarette smoke from parents or family members who smoke in the house. Based on the report of the South Sulawesi Police Primary Clinic, cases of ISPA in toddlers have continued to increase in the last three years, so research is needed on factors related to this incident. Objective: To determine the relationship between parental smoking behaviour and the incidence rate of ISPA in toddlers at the South Sulawesi Police Primary Clinic in 2025. Methods: This study is an observational analytical research with a cross-sectional design. The sample amounted to 46 respondents who were selected using the simple random sampling technique. Data collection was conducted using questionnaires, and data analysis was carried out univariate and bivariate using the Chi-Square test with a significance level of 0.05. Results: The results showed that out of 46 toddlers, as many as 41 toddlers (89.1%) experienced ISPA. Parental smoking behaviour was found in 29 people (63.0%). The results of the Chi-Square test showed a value of p = 0.035, which means that there is a significant relationship between parental smoking behaviour and the incidence of ISPA in toddlers. Conclusion: The results of this study confirm the importance of efforts to prevent exposure to secondhand smoke in toddlers through increasing parental awareness about the impact of smoking behaviour on children's health. These findings can be the basis for health workers to strengthen health education, smoking cessation counselling, and the implementation of smoke-free home policies to reduce the incidence of ISPA in children under five. In addition, the results of this study are expected to be considered in the planning of promotive and preventive programs in health service facilities, especially in the Southeast Sulawesi region.

Keywords: Acute Respiratory Tract Infection, smoking behaviour, toddlers, cigarette smoke.

INTRODUCTION

Acute Respiratory Infections (ARIs) are one of the most common illnesses in healthcare facilities, spanning a range from mild illnesses such as rhinitis to diseases that can cause outbreaks or pandemics, such as influenza, even to life-threatening illnesses such as pneumonia. Ispa is still the leading cause of morbidity and mortality of infectious diseases in the world. The mortality rate of ispa reaches 4.25 million every year. Thus, this data confirms that ISPA has a significant global health impact and needs to be the focus of attention in disease prevention and control efforts [1].

One of the causes of Acute Respiratory Infection (ARI) is the presence of members who smoke. Retna and Fajri in their research said that of the 26 pneumonia patients, 23 of them had family members who were active smokers. Smoking behavior in Indonesia continues to increase. The negative impact of cigarettes is not only felt by active smokers, passive smokers can also be affected. This is because passive smokers inhale the side smoke emitted by burned cigarettes. One of the problems that often occurs due to exposure to cigarette smoke is Acute Respiratory Tract Infection (ARI). ISPA is one of the main causes of patient visits to health facilities, as much as 40%-

60% of patient visits at health centers and 15%-30% of patient visits for treatment in the outpatient and hospitalization departments because they suffer from ISPA disease [2].

According to the latest WHO and UNICEF data, acute respiratory infections are one of the leading causes of death in children under five years of age globally. It is estimated that more than 700,000 children under five die each year from ARI, with an estimated 610,000 deaths in 2023**.** Clinically, ISPA occurs in about 1,400 out of every 100,000 children under five years of age. Overall, in 2023 around 4.8 million children under five died, and ISPA remains a *significant contributor* to this mortality rate, although prevention and treatment efforts have lowered mortality rates in recent decades [3].

Based on data from the Indonesian Ministry of Health, the incidence of Acute Respiratory Infections (ARI) in Indonesia remains high, with health surveillance system reports recording around 1.5–1.8 million cases of ARIs throughout 2023. The prevalence of ISPA in toddlers in Indonesia based on the diagnosis of health workers in 2023 is around 4.8%, and the province with the highest prevalence is Central Papua (±11.8%). Although case trends show variation between provinces and between periods, ISPA remains an important public health issue in the Indonesian group of toddlers that needs attention in disease prevention and control efforts [4].

Data from the Southeast Sulawesi Provincial Health Office shows that the incidence of Acute Respiratory Infections (ARI) in toddlers has experienced an upward trend over the last three reported years: from 4.24% in 2020, increasing to 8.93% in 2021, and 11.14% in 2022 as a percentage of all cases of toddlers served. These findings illustrate that ISPA remains one of the most common causes of toddlers coming to health services in the region, signaling the continued need for prevention and control of respiratory diseases in this age group [5,6].

Based on data reports obtained from the Southeast Sulawesi Police Polyclinic, there were 308 cases of ISPA in toddlers in 2022, and in 2023 cases will increase to 320 cases, while in 2024, the number of ISPA cases in toddlers will increase to 338 cases. There have been 52 cases of ISPA in the last 3 months since April, May and June 2025. Based on the data and the increase in cases found, researchers are interested in conducting research on "The Relationship between Smoking Behavior and the Incidence Rate of Acute Respiratory Infections (ISPA) in Toddlers at the PRATAMA CLINIC POLDA SULAWESI" [7].

METHODS

The type of research used in this study is Observational Analytics, which is a study that aims to find out if there is a relationship between variables and explain the Dependent Variables found between the two variables [8]. The research design used is cross sectional, which is research that emphasizes one measurement, namely independent variables and dependent variables measured at one time [9].

In this study, the sampling technique used simple random sampling, using inclusion criteria including toddlers aged 0–59 months who came for treatment and lived in the same house as a parent or primary guardian for at least the last six months. Parents or guardians of toddlers are willing to be respondents and sign an informed *consent sheet*. The sample used in the study was 46 people. The incidence of acute respiratory infection (ARI) in toddlers in this study is defined as the presence of a diagnosis of ARIs determined by health workers based on medical records, or the presence of clinical symptoms in the form of cough and/or cold, accompanied by or without fever at the time of a medical visit at the Southeast Sulawesi Police Primary Clinic.

The smoking behaviour variable of parents is defined as the smoking habit of fathers, mothers, or household members who live in the same household as toddlers, especially smoking in the house or around toddlers. Toddlers are categorised as exposed to cigarette smoke if parents or household members smoke in or near the toddler in the last seven days before the visit, while toddlers are categorised as not exposed if there are no household members who smoke or smoking behaviour is carried out outside the home and not around toddlers. Assessment of exposure to cigarette smoke was obtained through structured interviews using questionnaires to parents or guardians of toddlers. This study has obtained approval from the Research Ethics Committee, and written consent was obtained from parents or guardians of toddlers before data collection. The confidentiality and anonymity of respondents were maintained during the study. The instrument in the research is in the form of a structured questionnaire that is prepared based on a literature review and previous research

RESULTS

Table 1. Frequency of ISPA incidents at the South Sulawesi Police Primary Clinic in 2025

ISPA Incident	Frequency	Percentage (%)
ISPA	41	89,1
No ISPA	5	10,9
Total	**46**	**100,0**

Table 1 shows the frequency of ISPA is 41 people (89.1%) while those who do not suffer from ISPA are 5 people (10.9%).

Table 2. Frequency of Parental Smoking Behavior at the South Sulawesi Police Primary Clinic in 2025

Smoking Behavior	Frequency	Percentage (%)
Smoking	29	63, 0
No Smoking	17	37,0
Total	**46**	**100,0**

Table 2 shows the frequency of smoking behavior of the majority of parents who smoke as many as 29 people (63.0%) and those who do not smoke as many as 17 people (37.0%).

Table 3. The Relationship between Parents' Smoking Behavior and the Incidence of ISPA in Toddlers at the Kinik Pratama of the South Sulawesi Regional Police in 2025

Parental Smoking Behavior	Incidence of ISPA in Toddlers				
	ISPA	NO ISPA	Total		P value
	F	F	F	%	
YES	28	1	29	63,0	0,035
NO	13	4	17	33,7	
Total	41	5	46	100,0	

showed that the most behaviors of parents who smoke and toddlers experience ISPA as many as 28 people while the behavior of parents who do not smoke and toddlers experience ISPA as many as 13 people. Smoking behavior of parents and toddlers did not experience ISPA as many as 1 person, and non-smoking behavior and toddlers did not experience ISPA as many as 4 people.

The results of *the chi square statistical test* were obtained with the results of p=0.035 (p-value < 0.05) so that it can be concluded that there is a significant relationship between parents' smoking behavior and the incidence of ISPA in toddlers at the South Sulawesi Police Primary Clinic in 2025, H0 was rejected and Ha was accepted.

DISCUSSIONS

Based on the results of the study, data was obtained that the smoking behaviour of the head of the family is associated with the incidence of ISPA In toddlers, parents who exhibit smoking behaviour result in toddlers experiencing ISPA as many as 28 people, while the behaviour of parents who do not smoke and toddlers experience ISPA as many as 13 people. The smoking behaviour of parents and toddlers did not experience ISPA as many as 1 person, and the non-smoking behaviour and toddlers did not experience ISPA as many as 4 people. To determine the relationship between the smoking behaviour of the head of the family and the incidence of ISPA in toddlers, the researcher used chi-square, namely the p-value taken from the Pearson chi-square, which is 0.035 < 0.05. So it can be concluded that there is a relationship between smoking behaviour and the incidence of ISPA in toddlers at the South Sulawesi Police primary clinic in 2025.

Exposure to secondhand smoke contains a variety of toxic substances, such as nicotine, carbon monoxide, and fine particles, which can irritate the respiratory tract and decrease mucociliary defence mechanisms in children, thereby increasing susceptibility to respiratory tract infections [10]. This condition is exacerbated when smoking behaviour is carried out indoors or around toddlers, which causes the concentration of harmful substances in the indoor air to be higher and stay longer [11].

In addition to the exposure factor to cigarette smoke, the level of knowledge and awareness of parents also plays an important role in the prevention of ISPA in toddlers. Several studies have stated that low parental knowledge about the health impacts of cigarette smoke contributes to uncontrolled smoking behavior in the home environment, thereby increasing the risk of ISPA in children, This shows that changes in health behavior in parents are an important component in efforts to prevent respiratory diseases in toddlers [12]. A harmonized study conducted by Amaliyah and Faidah showed a relationship between exposure to cigarette smoke and the incidence of ISPA in toddlers with significant Chi-Square test results (p = 0.000) [13].

The results of this study are consistent with previous studies that showed a significant association between exposure to cigarette smoke in the home environment and the incidence of acute respiratory infections in toddlers in various primary health care areas. For example, research at the Pundong Bantul Health Center showed a significant relationship between exposure to cigarette smoke and ISPA with significant chi-square test results (p < 0.05)[14].

According to the researchers' assumptions, parents' smoking behavior is influenced by a low level of knowledge and awareness about the impact of exposure to secondhand smoke on the health of children, especially toddlers. This lack of understanding can cause parents to smoke without considering the health risks to other family members, including smoking in and around the home environment. In addition, easy access to cigarettes also plays a role in strengthening smoking habits, so that these behaviors become difficult to control and tend to recur. This condition has the potential to increase exposure to cigarette smoke in toddlers and negatively

impact children's respiratory health.

CONCLUSIONS

The incidence of ISPA in toddlers at the South Sulawesi Police Primary Clinic is very high, which is as many as 41 out of 46 toddlers (89.1%) in 2025. Parents' smoking behavior is still quite high, namely, as many as 29 people (63.0%) have a smoking habit, both in and around the house. There was a significant relationship between parental smoking behaviour and the incidence of ISPA in toddlers, as evidenced by the results of the Chi-Square test which showed a value of $p = 0.035$ ($p < 0.05$). This means that parents' smoking behavior plays a role in increasing the risk of ISPA in toddlers. Exposure to cigarette smoke has been proven to be an important risk factor for ARI, so parental smoking behaviour needs to be a serious concern in efforts to prevent AKI disease in toddlers.

Based on the results of this study, it is recommended that families and the community further increased awareness about the dangers of cigarette smoke to the health of toddlers, especially because exposure to cigarette smoke is related to a high incidence of ARI. Parents are expected not to smoke in the home or around children and strive to create a clean and smoke-free living environment to prevent respiratory problems in toddlers. For the South Sulawesi Regional Police Primary Clinic, it is hoped that it can improve health education to the community through counselling, information media, and counselling about the dangers of smoking, so that the incidence of ISPA can be reduced. Clinics also need to strengthen promotive and preventive programs related to the control of risk factors for ARI. For future researchers, it is recommended to examine other variables that have the potential to influence ARI, such as home ventilation, immunisation status, housing density, and nutritional status of toddlers, and consider the use of broader research designs or direct observation methods to make the results more comprehensive.

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