

**RISK FACTORS FOR ACUTE NASOPHARYNGITIS IN THE WORK AREA OF THE PUSKESMAS (PUBLIC HEALTH CENTER) TOLANGOHULA**

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**Abstract**

*Acute nasopharyngitis, coughs, and colds or colds are the most common people suffer from. Runny nose/runny nose (rhinorrhoea), blocked nose, sore throat and headache, mild fever, muscle aches, and body weakness (fatigue). The novelty of this study is that it examines the risk factors for acute nasopharyngitis. The research aims to determine whether there is an influence of risk factors for acute nasopharyngitis in the work area of the Tolangohula Health Center. The type of research used is quantitative research, cross-sectional design, using a sampling technique, namely purposive sampling. The sample obtained during the investigation was 150. Data analysis used the Odds Ratio (OR) test. The results of the study from 150 respondents had good knowledge, namely 87 respondents (58%) with the incidence of acute nasopharyngitis for the non-nasopharyngitis category, namely 7 respondents (8.0%) while in the smoking category for nasopharyngitis, namely 55 respondents (87.3%) and in-home environment that did not meet the requirements, namely 84 respondents (55.3%) with the incidence of acute nasopharyngitis for the non-nasopharyngitis category, namely 17 respondents (20.2%) and for the nasopharyngitis category, namely 67 respondents (79.8%). The conclusion is that there is a relationship between knowledge and the incidence of acute nasopharyngitis, with the obtained p-value = 0.000, where the OR value = 43.956. There is a relationship between smoking habits and the incidence of acute nasopharyngitis, p = 0.000, where OR = 8.865, and there is a relationship between the home environment and the incidence of acute nasopharyngitis, p = 0.000, where OR = 0.165.*

**Keywords:** *Acute Nasopharyngitis; Home environment; Knowledge; Smoke.*

**INTRODUCTION**

The environment-based disease occurs in a community group related, rooted, or closely associated with one or more environmental components in a space where the community lives or activities for a certain period (1).

ARI, or acute respiratory tract infection, is environment-based infectious.

One type of ARI disease that needs to be watched is nasopharyngitis, or the common cold. Common cold belongs to the category of non-specific ARI or "common cold." This disease is most often suffered by the community and is characterized by symptoms of runny nose/runny nose, nasal congestion, sore throat, headache, low-grade

fever, muscle aches, and body weakness (fatigue) (2)(3). Causes include rhinovirus, influenza, adenovirus (ADV), enterovirus, and parainfluenza viruses (PIV). This virus is widespread in children under 5 years of age (4).

The World Health Organization (2020) states that in the United States, nasopharyngitis or common cold is highest in April and September 2020 in areas with a temperate climate. The prevalence of nasopharyngitis or common cold in preschool-age children is 3–8 cases per year, with an increasing incidence in children entrusted to childcare facilities. In adolescents and adults in the United States, the average prevalence of nasopharyngitis or common cold is 2-4 cases per year. In Australia, nasopharyngitis or common cold is reported to be the reason for 11% of general practice consultations (5).

Based on the 2018 Basic Health Research (Riskesdas) results, the prevalence of nasopharyngitis or common cold in Indonesia is around 25.0%, and 13.8% of cases after being diagnosed by a doctor. The overall majority was 1,017,290 cases. Nasopharyngitis, or common cold in

toddlers in Indonesia, is estimated at 3 to 6 times per year. This means a young toddler is susceptible to cold cough attacks 3 to 6 times a year (6).

Factors that influence the incidence of acute nasopharyngitis are divided into three groups: demographic, biological, and pollution. Demographic characteristics include age, gender, and knowledge. Biological factors, such as the physical condition of the home environment, include occupancy density, air pollution, ventilation, and pollution factors such as cigarette smoke fuel use (5).

The results of research conducted by Sofa Fatonah in the health journal Budi Luhur Cimahi, Volume 11 Number 2, 2018 entitled "Overview of Maternal Knowledge About Acute Nasopharyngitis in Children Aged 5-14 Years in the Cipageran Cimahi Puskesmas Work Area", obtained the results of knowledge of mothers with sufficient knowledge as many as 39 people (47%), and knowledge of mothers with less knowledge as many as 43 people (51.8%) (7).

The results of research conducted by Milo (2015) show that cigarette smoke contains thousands of toxic chemicals and

ingredients that can cause cancer (carcinogens). Even harmful substances and toxins in cigarettes cause health problems in people who smoke and those around them who do not smoke, most of whom are babies, children, and mothers who are forced to become passive smokers because their fathers or husbands smoke at home. Smoking habits in the house can increase the risk of nasopharyngitis by 2 times (8).

One risk factor affecting the incidence of acute nasopharyngitis is the environment. The environment, especially the physical environment of the house, is very influential on the incidence of acute nasopharyngitis in toddlers. Some indicators of the physical environment of the house in the assessment of healthy homes include ventilation areas, latrine conditions, and clean water facilities. Unhealthy home conditions can be a place of disease transmission, one of which is acute nasopharyngitis (9).

Based on data obtained by researchers, the number of cases of acute nasopharyngitis in Gorontalo Regency in 2018 had the highest number of cases, namely 481 cases. A preliminary study at the Tolangohula Health Center obtained the highest case data

in May 2023, with the incidence of acute nasopharyngitis as many as 324 points. The cases are divided into 158 men and 166 women; the fewest issues are anemia, as many as 43 people.

### **RESEARCH METHOD**

This study is an analytical observational study with a cross-sectional study design. In this study, the dependent variable was acute nasopharyngitis, and the independent variable was knowledge, smoking habits, and home environment. This research was conducted at the Tolangohula Health Center in October 2022.

The population in this study was all patients who visited the Tolangohula Health Center. The population amounted to 324 respondents, with the sample of this study amounting to 180 respondents, with a sample obtained during the survey of 150 using purposive sampling techniques. Sampling techniques by determining specific criteria by the research objectives so that they are expected to answer research problems. The data analysis used was univariate analysis and bivariate analysis. The relationship test used in this study is the Odds Ratio test.

**RESULTS AND DISCUSSION****Results**

The sample that became the object of research was a total of 180 respondents.

## Identity of Respondents

Table 1. Distribution of Respondents Identities

<b>Characteristics of Respondents</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age</b>		
< 17 years old	2	1,3
18-25 years old	42	28,0
26-35 years old	74	49,3
36-45 years old	19	12,7
46-55 years old	4	2,7
>56 years old	9	6,0
<b>Gender</b>		
Male	65	43,3
Female	85	56,7
<b>Education</b>		
No school	1	0,7
Graduated from elementary school	38	25,3
Graduated from junior high school	40	26,7
Graduated from high senior school	62	41,3
College	9	6,0
<b>Job</b>		
does not work	33	22,0
Housewives	37	24,7
Farmer	22	14,7
Private Employees	23	15,3
Self employed	32	21,3
Teacher	3	2,0

*Sumber: Primary Data*

Based on Table 1, it is known that the most respondents were in the age group of

Then during the research the willing respondents were 150 respondents. The following are the results of data analysis from 150 respondents.

26-35 years (493%) and the lowest at the age of <17 years (1.3%). Respondents who

are female (56.7%) are more than respondents who are male (43.3%), with the highest level of education graduating from

high school (41.3%). Non-employed or IRT respondents were higher (24.7%) than teacher employment respondents (2.0%).

Table 2 Distribution of Risk Factors for Acute Nasopharyngitis

Variables under study	Frequency	Percentage (%)
<b>Incidence of acute nasopharyngitis</b>		
Nasopharyngitis	59	39,3
No Nasopharyngitis	91	60,7
<b>Knowledge</b>		
Good	63	42,0
Good enough	87	58,0
<b>Smoking Habits</b>		
Smoking	63	42,0
No Smoking	87	58,0
<b>Home Environment</b>		
Qualify	66	44,0
Not Eligible	84	56,0

Sumber: Primary Data

Table 2 shows that more respondents did not experience nasopharyngitis (60.7%) compared to nasopharyngitis (39.3%). Respondents with good knowledge at 58.0%, respondents have more non-smoking

habits at 58.0% with an environment that does not meet the requirements more significant than those who meet the requirements at 44.0%.

## Bivariate

Table 3 Analysis Of The Relationship Of Risk Factors For Acute Nasopharyngitis

Risk Factor	Incidence of acute nasopharyngitis						<i>p value and OR (UL-LL)</i>
	Nasopharyngitis		No Nasopharyngitis		Total		
	n	%	n	%	n	%	
<b>Knowledge</b>							0,000
Good	13	20,6	50	79,4	63	100	(16,424-
Good enough	80	92,0	7	8,0	87	100	117,640)
<b>Smoking Habits</b>							0,000
Smoking	55	87,3	8	12,7	63	100	(3,774-
No Smoking	38	43,7	49	56,3	87	100	20,827)
<b>Home Environment</b>							0,000
Qualify	26	39,4	40	60,6	66	100	(0,080-
Not Eligible	67	79,8	17	20,2	84	100	0,034)

Sumber: Primary Data

## 1. Knowledge

Based on Table 3, the results of the OR statistical test were obtained with a value of  $p = 0.000$  ( $p < 0.05$ ) with lower limit = 16.424 and upper limit = 117.640 Because the lower limit and upper limit values do not include value 1 with a confidence level of 95%, it is said to be significant (meaningful) so that the research hypothesis is accepted so that it can be concluded that there is a relationship between knowledge and the incidence of acute nasopharyngitis in toddlers.

## 2. Smoking Habits

Based on Table 3, the results of the OR statistical test were obtained with a value of  $p = 0.000$  ( $p < 0.05$ ) with lower limit = 3.774 and upper limit = 20.827 because the lower limit and upper limit values do not include value 1 with a confidence level of 95%, it is said to be significant (meaningful) so that the research hypothesis is accepted, so it can be concluded that there is a relationship between smoking habits and the incidence of acute nasopharyngitis.

## 3. Home Environment

Based on Table 3, statistical test results were obtained with a value of  $p = 0.000$  ( $p >$

0.05) with lower limit = 0.080 and upper limit = 0.341 because the lower limit and upper limit values do not include value 1 with a confidence level of 95%, it is said to be significant (meaningful) so that the research hypothesis is accepted. So it can be concluded that there is a relationship between the home environment and the incidence of acute nasopharyngitis.

### **Discussion**

#### 1. Knowledge

The results of the study, based on the level of knowledge of respondents, showed that respondents had a good understanding of the incidence of acute nasopharyngitis for the category of not nasopharyngitis, namely 50 respondents (79.4%) because respondents were able to maintain good health, where respondents were able to maintain personal hygiene. The environment was prevention of acute nasopharyngitis, and for the category of nasopharyngitis, 13 respondents (20.6%). This was Because there are still mothers who do not know well about nasopharyngitis, especially about the risk of increasing flu events, namely the presence of family members who smoke at home.

The results of statistical tests show that the value of  $p = 0.000$ , with an Odds Ratio (OR) value of 43.956, which means that respondents with a good level of knowledge 43.956 times are not at risk of nasopharyngitis compared to respondents who have a relatively good level of expertise. Research conducted by Harahap (2021) showed that of 42 respondents who have good knowledge, 33 respondents do not have nasopharyngitis, and 9 respondents have nasopharyngitis, with  $p\text{-value} = 0.000 < \alpha 0.05$ , which can be concluded that there is a meaningful relationship between knowledge and the incidence of nasopharyngitis (10).

This research is also in line with study conducted by Nur Fahma Laili (2021) regarding the relationship between knowledge and self-medication behavior related to nasopharyngeal events (11).

Knowledge is everything that is known based on human experience itself, and knowledge will increase according to the process of experience experienced. Low learning can occur due to common educational factors, such as only up to the elementary education level. The higher the

education, the better the level of knowledge (12).

The mother's knowledge regarding the prevention and treatment of acute nasopharyngitis is in the excellent category. Mothers know the symptoms of acute nasopharyngitis because the symptoms of the disease are widely known so that mothers can understand that their children have nasopharyngitis. Still, many mothers do not know about further risks if there is a high fever due to nasopharyngitis, such as seizures. Mother feels nasopharyngitis is a common disease, so assume that the condition does not reach the stage of seizures. If the nasopharyngitis disease is not treated correctly, it is feared that the child will not recover. If nasopharyngitis continues, such as high fever, it is feared that it will cause seizures. Therefore, it is necessary to provide further information for mothers about the problem of nasopharyngitis, which can not only be treated by stall drugs but also the need for treatment to health services to get the right drugs and doses for children.

## 2. Smoking Habit

The study's results based on respondents' smoking habits showed that 87 respondents did not smoke with the category of not nasopharyngitis, namely 49 respondents (56.3%). This is because respondents know the dangers of cigarettes and the impact of consuming cigarettes so that the risk of developing nasopharyngitis can be minimized for the category of nasopharyngitis, namely 38 respondents (43.7%), this is because there are family members or coworkers who smoke so that respondents who Nonsmokers are still at risk of nasopharyngitis due to exposure to secondhand smoke from friends or family.

Based on the results of statistical tests show that the value of  $p = 0.000$ , with the value of Odds Ratio (OR), obtained at 8.865, which means respondents with a habit of not smoking 8.865 times are not at risk of nasopharyngitis compared to respondents who have smoking habits.

The results of this study are from a study conducted by Gunawan Irianto (2021), which said that there is a relationship between the presence of smoking family members and the incidence of ARI or



nasopharyngitis in toddlers. This could happen because even though there are family members who smoke, these family members do not get used to smoking inside the house or smoke only outside the home, for example, when working (13).

Cigarette smoke contains thousands of toxic chemicals and ingredients that can cause cancer. Even harmful ingredients and toxins in cigarettes cause health problems in people who smoke and those around them who do not smoke, most of which are babies, children, and mothers who are forced to become passive smokers because their fathers or husbands smoke at home. Smoking habits in the house can increase the risk of ARI by 2.2 times (14).

Cigarette smoke inhaled by smokers is mainstream smoke, while smoke from the burning end of cigarettes is called sidestream smoke. Air pollution caused by sidestream smoke and mainstream smoke that has been extracted is called secondhand smoke or environmental tobacco smoke. Those who inhale smoke are called passive smokers or forced smokers (15).

### 3. Home Environment

The study's results based on the respondent's home environment showed that the unqualified home environment was 84 respondents with the incidence of acute nasopharyngitis for the category of not nasopharyngitis, namely 17 respondents (20.2%). This was caused by respondents who did not have access to defecation or latrines, but respondents carrying out defecation activities always hitchhiked to the neighbor. Then managed waste by breeding, even though respondents do not have a qualified home environment and for the nasopharyngitis category, namely 67 respondents (79.8%), this is because respondents who do not have toilet still defecate openly, than respondents who sometimes wash their hands when finished doing activities.

The statistical test results show that the p-value = 0.000, with an Odds Ratio (OR) value of 0.165, which means that respondents with an unqualified home environment are 0.165 times at risk of nasopharyngitis compared to respondents with a qualified home environment.

This study's results align with the results of research by Safitri and Keman (2017) in Labuhan Village, Labuhan Badas District, which concluded that there is a significant relationship between clean water facilities and the incidence of nasopharyngitis (16).

Water is needed to meet the needs of daily life. To improve the community's quality of life to realize an optimal degree of health, it is necessary to know the coverage of qualified community clean water facilities. If clean water facilities do not meet health requirements, the water used for daily needs, especially for drinking purposes, can be polluted, which can cause various infectious diseases, including nasopharyngitis (17).

The environment has a significant role in spreading and transmitting nasopharyngitis. An unhealthy environment can cause viruses and bacteria that cause nasopharyngitis and can also be a residence for these viruses and bacteria (18).

Maintenance of the surrounding environment, especially the home environment, is essential to prevent the entry of bacteria and viruses that cause infectious

diseases that can infect individuals living in it. Maintenance of the home environment can be done by routinely cleaning and arranging the components of the house so that it can produce a clean residential setting and prevent the emergence of disease (18).

### **CONCLUSION**

The risk factors associated with the incidence of acute nasopharyngitis are knowledge, smoking habits, and the home environment.

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### **REFERENCE**

1. Dompas BE, Sumampouw OJ, Umboh JML, 2020 W, 2021 W. Are Home Physical Environmental Factors Related To The Incidence Of Dengue Hemorrhagic Fever? *J Public Heal Community Med.* 2020;1(2):11–5.
2. Simbolon PT, Wulandari RA. The Relationship Between The Physical Environment And The Incidence Of Acute Respiratory Infections In Toddlers In Urban Areas In Indonesia In 2018 (2018 Riskesdas Data

- Analysis). *Jambura J Heal Sci Res* [Internet]. 2023 Mar 25;5(2):562–70. Available from: <https://ejurnal.ung.ac.id/index.php/jjhsr/article/view/18916>
3. Aftab A, Noor A, Aslam M. Housing Quality and its Impact on Acute Respiratory Infection (ARI) Symptoms Among Children in Punjab, Pakistan. Robinson J, editor. *PLOS Glob Public Heal* [Internet]. 2022 Sep 21;2(9):e0000949. Available from: <https://dx.plos.org/10.1371/journal.pgph.0000949>
  4. Dengo SW, Kadir L, Amalia L. Factors Associated With The Incidence Of Acute Respiratory Tract Infection (ARI) In Children Aged 24-59 Months I. *Gorontalo J Heal Sci Community*. 2023;7(3):272–80.
  5. Asrianto LO, Syuhada WON, Amrun. Analysis of Determinants of Common Cold Incidents in Toddlers in the Working Area of the Katobengke Community Health Center, Baubau City in 2021. *J Ilm Obs* [Internet]. 2022;14(2):21–31. Available from: <http://ci.nii.ac.jp/naid/110002383069>
  6. Riset Kesehatan Dasar (Riskesdas). Number of Cases of Nasopharyngitis. In: Badan Litbangkes. 2018.
  7. Fatonah S, Agustina A. Description of Mother's Knowledge Regarding Nasopharyngitis (Common Cold) in Children Aged 5-14 Years in the Working Area of Cipageran Cimahi Health Center. *J Kesehat Budi Luhur*. 2018;11(2):285–95.
  8. Milo S, Ismanto AY, Kallo V. The Relationship Of Smoking Habits In The House And The Incident Of Ispa In Children Aged 1-5 Years At The Sario Health Center, Manado City. *J Keperawatan*. 2015;3(2).
  9. Birawida AB, Daud A, Ibrahim E, Sila N, Khaer A. Risk Factors for Acute Respiratory Infections in View of Physical Environmental Conditions in Communities on the Spermonde Islands: Observational Research. *Heal Inf J Penelit* [Internet]. 2023 May 1;15(1):67–77. Available from: <https://myjurnal.poltekkes-kdi.ac.id/index.php/hijp/article/view/820>
  10. Harahap. The Relationship between

- Knowledge, Attitudes, Actions and Use of Masks with the Incidence of Acute Respiratory Tract Infections in the Landfill (Final Processing Site) in the Falls District of Medan Marelan. In: Skripsi. 2021.
11. Laili NF, Restyana A, Probosiwi N, Savitri L, Megasari E, A TS, et al. Relationship between Knowledge Level and Common Cold Self-Medication Behavior at Pharmacy X, Nganjuk Regency. *J Ilm Univ Batanghari Jambi*. 2021;21(3):1164.
12. Mohajan HK. Knowledge is an Essential Element at Present World. *Int J Publ Soc Stud* [Internet]. 2016;1(1):31–53. Available from: <https://archive.aessweb.com/index.php/5050/article/view/107>
13. Irianto G, Lestari A, Marliana M. The Relationship Between Family Members' Smoking Habits and the Incidence of ISPA in Toddlers Aged 1-5 Years. *Healthc Nurs J*. 2021;3(1):65–70.
14. Talhout R, Schulz T, Florek E, Van Benthem J, Wester P, Opperhuizen A. Hazardous Compounds in Tobacco Smoke. *Int J Environ Res Public Health* [Internet]. 2011 Feb 23;8(2):613–28. Available from: <http://www.mdpi.com/1660-4601/8/2/613>
15. Hussein T. Indoor Exposure and Regional Inhaled Deposited Dose Rate during Smoking and Incense Stick Burning—The Jordanian Case as an Example for Eastern Mediterranean Conditions. *Int J Environ Res Public Health* [Internet]. 2022 Dec 29;20(1):587. Available from: <https://www.mdpi.com/1660-4601/20/1/587>
16. Keman S, Safitri A. The Relationship between Home Health Levels and Respiratory Tract Infections in Toddlers in Labuhan Village, Labuhan Badas District, Sumbawa Regency. *J Kesehat Lingkungan Unair* [Internet]. 2017;3(2):3929. Available from: <https://media.neliti.com/media/publications/3929-ID-hubungan-tingkat-kesehatan-rumah-dengan-kejadian-ispa-pada-anak-balita-di-desa-l.pdf>
17. Armstrong L, Johnson E. Water Intake, Water Balance, and the Elusive Daily

- Water Requirement. Nutrients [Internet]. 2018 Dec 5;10(12):1928. Available from: <http://www.mdpi.com/2072-6643/10/12/1928>
18. Marwati NM, Aryasih IGAM, Mahayana IMB, Patra IM, Posmaningsih DAA. Assistance in Prevention of Acute Respiratory Infection Disorders in Selemadeg Timur District, Tabanan Regency. J Pengabmas Masy Sehat. 2019;1(2):120–7.