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Risk Factors For Acute Respiratory Infections (ARI) In Toddlers In The Working Area Of Durian Kawan Public Health Center, East Kluet Sub-District, South Aceh District

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Abstract

Acute Respiratory Infections (ARI) are a primary global cause of sickness and death, which can spread throughout the respiratory system and deprive the body of sufficient oxygen, leading to compaction. Nearly 4 million people die each year, of which Infections of the lower respiratory tract account for 98% of those deaths and often occur in infants and toddlers. This study set out to identify the variables that increase a toddler's chance of developing ARI in the Working Area of UPTD Public Health Center Durian Kawan. This study uses a cross-sectional approach and is quantitative in nature. This research was conducted in March - April 2024 with 85 respondents. Data were analyzed using the Chi-square test. The results showed an association between parental knowledge and risk of ARI in children (p-value = 0.020), relatives who smoke and risk of ARI in children (p-value = 0.013), exclusive breastfeeding and risk of ARI in children. in children (p-value = 0.005), vaccination status and the effect of ARI on children (p-value = 0.000). It is expected that the health center can increase preventive efforts through counseling about ARI disease and increase information about ARI through posters posted at the health center or in other places that are easily visible and read so as to increase public knowledge, especially mothers who have toddlers.

Keywords: ARI; Risk Factors; Toddlers

Introduction

ARI is an acute viral and bacterial infection that lasts 14 days and affects one or more parts of the respiratory tract, including adnexal areas from the nose (upper respiratory tract) to the alveoli (lower respiratory tract), sinuses, middle ear, and ear. pleura (Ningsih, 2023). Symptoms that usually appear in ARI disease are fever accompanied by one or more other symptoms such as sore throat or swallowing pain, runny nose, dry cough or phlegm (Lamria, 2023). ARI is the leading cause of morbidity and mortality in the world, because it can spread throughout the respiratory system and prevent the body from getting enough oxygen, causing serious compilations, including respiratory failure because the lungs stop functioning and conestive heart failure. Nearly 4 million people die from ARIs every year, with 98% of those deaths caused by lower respiratory tract infections. The mortality rate is particularly high in infants and toddlers because their immune system is lower than older children (WHO, 2020). Based on data from the National Basic Health Research Report in 2018, the prevalence rate of acute respiratory infections (ARI) in children under five in Indonesia

according to diagnosis by health workers was 7.8%, while according to diagnosis by health workers or symptoms that have been experienced by ART is 12.5%, with a total of 200,000 cases (Kemenkes RI, 2023).

Based on data from the Aceh Health Office, the estimated number of ARI cases is high at 9,205 cases (22.62%). Based on data obtained from the annual report of Disease Control and Prevention (P2P) of the South Aceh Health Office where in 2023 there were 677 cases obtained from 33 Puskesmas in South Aceh District (Marlina, 2023). Durian Kawan is one of the health centers in East Kluet District, South Aceh Regency which has a working area of 4 villages with a population of 5,479 people. There are 548 children in the Durian Kawan Health Center area. In the region where Durian Kawan Health Center operates, the number of children with ARI in 2023 is approximately 45. The causes of ARI are divided into internal factors and external factors. Intrinsic factors include age, gender, diet, low body weight (LBW), vaccination, breastfeeding, and vitamin A administration. Internal factors such as the physical environment of the home include labor intensity, air pollution, inhalation, cigarette smoke, fuel consumption, etc. takes place, and maternal factors including knowledge, education, age and maternal behavior (Lutpiana et al., 2022; Lazamidarmi et al., 2021).

Some research results regarding ARI risk factors, namely in Rahayuningrum and Nur's research (2021), showed that ARI was mostly found in toddlers with incomplete immunization status, namely 78.2%. Mothers who have good knowledge have 6.2 times their babies have complete immunization, so maternal knowledge is an important factor in preventing ARI. Andayani's research (2020) states that The effects of exclusive breastfeeding and ARI infection are based on the benefits of exclusive breastfeeding, where babies are fed only breast milk will not get the full benefits that are more influential with the formation of antibodies that can defend the body from viral, bacterial and fungal infections. Children who are exclusively breastfed will get beneficial substances such as protective substances (lactobifidus, lactoferrin, lysozyme, complement C3 and C4, breast milk contains antistreptococci), antibodies and cellular immunity that can protect children under five from the entry of germs in the body. In addition, research by Aryani and Syapitri (2018) said that toddlers diagnosed with ARI were found in the homes of toddlers who had smoker family members in the house.

Based on an initial survey conducted by researchers on 12 mothers of toddlers whose toddlers have a history of ARI, 3 of them know what ARI is, but do not know what causes ARI, how the mechanism of transmission and treatment, 4 of them allow family members to smoke in the house, so that the air they breathe is contaminated by cigarette smoke which is at risk of increasing the incidence of ARI, 2 of them do not provide exclusive breastfeeding to babies on the grounds that milk is difficult to come out and is replaced with formula milk since birth, and 3 of them do not provide complete basic immunization starting from Polio, Hepatitis B, BCG, HiB, and Measles on the grounds that they are afraid that the baby will have a fever after immunization. Based on this description, the purpose of this study was to look at the Risk factors for Acute Respiratory Tract Infection in toddlers in the Working Area of the UPTD Puskesmas Durian Kawan, East

Kluet District, South Aceh Regency.

Methods

This study is a qualitative study with a cross-sectional research design that aims to simultaneously determine the relationship between the variables that define the independent and dependent variables (Dharma, 2011). This study was conducted in March to April 2024 at the study area of UPTD Durian Kawan Health Center, South Aceh, Kluet District. This study is a preliminary study aiming to investigate the relationship between variables. Independent and dependent variables depend on the same unit of time. The purpose of this study was to determine the impact of ARI on young children in the catchment area of UPTD Durian Kawan Health Center, East Aceh, Kluet District. The population of this study includes all parents of young children working at the UPTD health center Durian Kawan which amounted to 548 toddlers (1-5 years). The research sampling technique used the Slovin formula with a Margin of Error of 10% or 0.1 so that 85 samples were obtained. The sampling technique used in the convenience sampling method is a random sampling technique that does not take into account the layers in the universe. The data sources used In this study, they are primary data and secondary data. Primary data was obtained through survey and secondary data was obtained through survey from the Aceh Health Profile, the Annual Report on Prevention and Control of Communicable Disease Outbreaks (P2PMWB) of the South Aceh Health Office, and the Durian Kawan Health Center.

Results

Based on Table 1. Mothers who have good knowledge are more dominant (54.1%) compared to mothers who have poor knowledge (45.9%), the frequency of having family members who smoke is higher (87.1%) than the frequency of people who do not have family members who smoke (12.9%). The frequency of toddlers who get exclusive breastfeeding is more (64.7%) than the frequency of toddlers who do not get exclusive breastfeeding (35.3%), the frequency of toddlers whose immunization is complete is more (70.6%) than the frequency of toddlers whose immunization is incomplete (29.4%). The frequency of toddlers at risk of ARI was more dominant (52.9%) than the frequency of toddlers who were not at risk of ARI (47.1%).

Tabel 1. Univariate Analysis

Variabel	Frekuensi	Persentase
Mother's knowledge		
Not Good	39	45,9%
Good	46	54,1%
Family Smoker		
Yes	74	87,1%
No	11	12,9%
Exclusive breastfeeding		
Yes	55	64,1%
No	30	35,3%
Immunization Status		

Variabel	Frekuensi	Persentase
Complate	60	70,6%
Incomplate	25	29,4%
Risk of ARI		
At Risk	45	52,9%
Not At Risk	40	47,1%

(data primer, 2024)

Based on Table 2, shows that of the 39 respondents who have poor knowledge, 26 are at risk of ARI and 13 are not at risk of ARI, of the 45 respondents who have good knowledge, 19 are at risk of ARI and 27 are not at risk of ARI, p-value = 0.020 means there is a relationship between maternal knowledge and the risk of ARI in toddlers in the working area of UPTD Puskesmas Durian Kawan. Of the 74 respondents who have family members who smoke, 43 are at risk of ARI and 31 are not at risk of ARI, and of the 11 respondents who do not have family members who smoke, 2 are at risk of ARI and 9 are not at risk of ARI, p-value = 0.013 UPTD means there is an association between family smoking in the Puskesmas area and the risk of ARI in children Durian Kawan.

Variable	ARI						*p-value*
	At Risk		Not At Risk		Total		
	n	%	n	%	n	%	
Mother's knowledge							
Not Good	26	66	13	33	39	45,8	0,020
Good	19	47,5	27	67,5	46	54,2	
Total	40	47	45	53	85	100	
Family Smoker							
Yes	43	58	31	45	74	87	0,013
No	2	19	9	82	11	13	
Total	45	53	40	47	85	100	
Exclusive breastfeeding							
Yes	23	42	32	58	55	65	0,005
No	22	73	8	26	30	35	
Total	45	53	40	47	85	100	
Immunization Status							
Complate	22	36	38	63	60	71	0,000
Incomplate	23	92	2	8	25	29	
Total	45	53	40	47	85	100	

55 respondents who provided exclusive breastfeeding, 23 were at risk of ARI and 22 were not at risk of ARI, and of the 30 respondents who did not provide exclusive breastfeeding, 32 were at risk of ARI and 8 were not at risk of ARI, p-value = 0.005 means there is an association between exclusive breastfeeding and the risk of ARI in toddlers in the UPTD Puskesmas Durian Kawan work area. Of the 60 respondents who had complete immunization status, 22 were at risk of URTI and 23 were not at risk of URTI, and of the 25 respondents who had incomplete immunization status, 38 were at risk of URTI and 2 were not at risk of URTI, p-value = 0.005, meaning that there was an association between immunization status and the risk of URTI in toddlers in the UPTD Puskesmas Durian Kawan working area.

Discussion

Relationship between maternal knowledge level and ARI risk

According to the chi-square test, the p value is 0.020 (p < 0.05), indicating that there is a relationship between parental knowledge and the impact of ARI on young children in the study area of UPTD Puskesmas Durian Kawan. The findings of this study are consistent with those of Miniharianti (2023) who stated that the Chi-Square test results found p-value = 0. 034 < a = 0. 05 rejected Ho; This means that there was a correlation between parental knowledge andcases of ARI among children in the study area of Simpang Tiga Puskesmas in Pidie regency in 2022. The findings of this study are also supported by the following results: Lestari Study (2023) at the Jeulingke Health Center in BandaAceh, which stated that there was a significant relationship between knowledge and the incidence of ARI in young children with a p value of 0.003, with a p value = 0 000, which It means that the mother has little knowledge about ARI, the more cases of ARI in toddlers and vice versa This section is also the main part of the research article and is also usually the longest part of an article.

According to the assumptions of researchers in the UPTD Puskesmas Durian Kawan Working Area, most of the respondents with good knowledge get health information independently, namely through various media and in groups or when attending posyandu and the like organized at the village level. For respondents who are less knowledgeable and their toddlers suffer from ARI, this is very unfortunate because there are still many mothers who do not want to come when there is counseling on the grounds that they are busy working and do not want to find out independently on the grounds that ARI is not a serious disease that will heal by itself, but mothers with good knowledge do not necessarily their families and toddlers avoid ARI, because the occurrence of ARI is not from knowledge alone but many other factors that can cause ARI in toddlers.

Relationship between family member smoking and ARI risk

According to the chi-square test, the p value is 0.013 (p < 0.05), which means that Ho is rejected and Ha is accepted, which means that there is a strong association between smoking and the risk of ARI in children. UPTD Puskesmas Durian Kawan's workspace. The results are consistent with Oktaviani's (2022) research showing a strong relationship between smoking in the home and the effects of a spa on young children; The chi-square test shows a p value of 0.037 (< 0).05). Theresult is also supported by Manalu's (2021) study, which found the p value to be 0.029 (p < 0.05), so it is known that there is a relationship between family members' smoking habits and problems at home. The likelihood of ARI among young children in the study area of Puskesmas Terjun Medan is also consistent with Aprantit's (2023) study, which noted that participants whose families were accustomed to smoking at home were 24 times more likely to experience ARI. The rate of suffering was higher in ARIcompared to participants whose families were not accustomed to smoking at home. The results of the chi-square test gave p-value = 0.000

According to the researcher's assumption, respondents gave a statement that family members smoking in the house was a common thing, namely fathers and sons on the grounds that cigarette smoke was not a

dangerous thing, even though cigarette smoke from both residents of the house and parents under one roof can pollute the air, and if inhaled by children can damage the defense of the respiratory tract, so that pathogens that cause ARI are vulnerable to enter and can infect children who cause clinical symptoms of ARI. The more cigarette smoke inhaled by toddlers, the greater the risk of ARI. In this study there were still respondents who had families who used to smoke in the house but the toddler did not have ARI. Vice versa there are respondents who have families who are not accustomed to smoking in the house but the toddler ISPA. This can be caused because although family members smoke in the house, always open the windows of the house so that the air does not just stay in one room it is rarely around children under five which can be seen from the answers in the questionnaire. While families who have a habit of not smoking in the house but the child ISPA can be caused by other factors such as maternal knowledge, exclusive breastfeeding and immunization status of toddlers.

The relationship between exclusive breastfeeding and the risk of ARI

According to the Chi-Square test, the p value is 0.005 ($p < 0.05$), which means that there is an association between exclusive breastfeeding and the risk of ARI in young children in the UPTD Puskesmas Durian Kawan area. This study is consistent with Zullaikah's (2023) study, which showed a significant association between exclusive breastfeeding and ARI in young children. p-value = 0.000 ($p < 0. 05$). This study is also supported by the study by Sabri (2019). The p-value of exclusive breastfeedingis 0.004 <0. This means that exclusive breastfeeding has a significant effect on the high incidence of ARI in young children in Deleng Pokhkisen Health Center in Southeastern Aceh. Another related study is the study by Kristianingsih (2019), which indicates that exclusive breastfeeding and ARI disease are common because about 42 participants experienced ARI, but ARI did not occur in exclusively breastfeeding mothers. The results of the Chisquerestatistical test found p-value = 0.002 ($p < 0.05$); This means there is a significant association between exclusive breastfeeding and the risk of ARI in toddlers at BPM Hj. Nurhayati, SST Jatimulyo, South Lampung Regency.

According to the researcher's assumption, the exclusive breastfeeding rate is influenced by several factors including work that makes it difficult for mothers to breastfeed their babies so they give formula milk, little or no breast milk, and lack of information and knowledge about breastfeeding. Breast milk is a source of nutrition for infants and contains antibodies, cytokines, growth factors, antimicrobial substances, and specific immunity. Infants receive essential nutrients and compounds through the placenta during pregnancy. However, not all immune substances in the form of Immunoglobulin (Ig) are transmitted through the placenta, such as Ig A which functions to protect the body from infectious diseases. In addition, breast milk also contains carbohydrates, fats, and proteins that are useful for the development of the baby's brain, inhibiting the growth of pathogenic germs such as Streptococcus pneumoniae and Haemophilus influenzae. Therefore, there is a need for counseling and providing information to parents about breastfeeding and longer breastfeeding duration.

Relationship between Immunization Status and ARI risk

According to the Chi-Square test, the p value is 0.000 (p < 0.05), indicating that there is a relationship between vaccination status and the risk of ARI in children at the workplace of UPTD Public health center of Durian Kawan. This study is in parallel with the research of Chandra (2022) conducted by PT Kideco clinic in 2021, which revealed a significant relationship between vaccination and ARI disease in children, and the results of theChi test Square analysis obtained. value = 0.000 < 0, Kec. Lembang Jaya Kab. Solok in 2021 with a p-value = 0.001, because there are still mothers who have toddlers with incomplete immunization status during the interview. According to the researcher's assumption, toddlers with incomplete immunization status will be more susceptible to disease, especially ARI due to lack of immune system, this is because mothers of toddlers who think if immunized their children will experience fever after immunization so that mothers do not bring their children to the Posyandu, even though basic immunization which is carried out completely and regularly can reduce morbidity and mortality rates of toddlers. Vaccination can prevent many types of infectious diseases, including ARI. Children who were fully vaccinated but developed ARI; This is due to the child's immune system which can affect the incidence of ARI in children, therefore immunization cannot prevent the entry of disease seeds into the body, but immunization can reduce the level or risk of development of more severe diseases. Immunization is useful to provide immunity to protect children from infectious diseases. Immunizations that are most effective in preventing ARI are measles and DPT. Deaths due to ARI as a large number come from types of ARI that develop from diseases that can be prevented by immunization such as diphtheria, partusis and measles. complete immunization is useful for reducing ARI mortality, so that toddlers who have complete immunization status if exposed to ARI are expected to develop the disease will not become severe.

Conclusion

Based on the results of research on ARI risk factors in toddlers in the working area of the UPTD puskesmas Durian Kawan, it can be concluded that there is a relationship between parents' knowledge and the risk of ARI in children under five years of age in the public health center area in Durian Kawan p-value = 0.020. There is an relationship between family smokers and the risk of ARI in children under five years of age in the public health center area in Durian Kawan p-value = 0.013. There is an relationship between exclusive breastfeeding and the risk of ARI in children under five years of age in the public health center area in Durian Kawan p-value = 0. 005. There is an reletionship between immunization status and the risk of ARI in the risk of ARI in children under five years of age in the public health center area in Durian Kawan p-value = 0.000.

The suggestions that researchers give after researching this problem to the community, it is hoped that this research can increase public knowledge related to ARI risk factors, symptoms of ARI to the mechanism of ARI transmission. For respondents with a good level of knowledge can maintain in order to reduce the risk of morbidity in children. It is also expected that health services, especially the Durian Kawan Health Center

in an effort to improve health services by conducting health promotion and counseling about ARI, causes of ARI, symptoms of ARI, prevention of ARI and increasing information about ARI through posters posted at the Puskesmas or in other places that are easily visible and read so as to increase public knowledge, especially mothers who have toddlers.

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Author Contribution and Competing Interest

NQ Conceptualization, Formal Analysis, Methodology, Validation, Visualization, Writing – Original Draft, Review & Editing; RA Investigation, Methodology, Validation, and Writing – Original Draft, Review & Editing; IS: Methodology, Validation, and Writing – Original Draft, Review & Editing; RR Resources, Investigation, and Writing –Review & Editing; SH Formal Analysis, Validation, Writing – Review & Editing; AFH Resources, Supervision, and Writing –Review & Editing

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