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Factors Associated with ARI in Toddlers in Coastal Areas at Kolono and Tumbujaya Health Centers, South Konawe

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ABSTRACT

Introduction: ARI is one of the diseases with a fairly high mortality and mortality rate, the housing environment in particular is very influential on the immune system. Housing that is dirty, cramped, crowded, and does not have adequate clean water facilities will cause children to be often infected by germs that come from dirty places and eventually get various infectious diseases. Houses that do not have enough clean air flow and whose residents are often found in the kitchen accumulated in the house will be susceptible to ARI.

Method: The type of research uses a quantitative research design with a cross sectional study design with a total sample of 95 respondents.

Result: There is a relationship between residential density, home environment and immunization with the incidence of ARI in children under five in the coastal area of the working area of the Kolono Health Center and Tumbujaya Health Center, Kolono District and East Kolono District, South Konawe Regency.

Conclusion: Factors related to ARI in toddlers include residential density, home environment, and immunization.

Introduction

ARI is one of the diseases with high morbidity and mortality rates. Toddlers are more often affected by the disease than adults. This is because the body's defense system in infants against infectious diseases is still in the development stage. One of the most common infectious diseases suffered by toddlers is ARI. This infection affects the respiratory tract which is a very sensitive organ so that germs can easily breed. Moreover, the toddler's immune system is not yet strong. Mild ARI conditions with common cold cough are often ignored, but if the child's immune system is weak, the disease quickly spreads to the lungs. The condition of the disease if not getting proper treatment and care can lead to death.[1],[2]

Data from the Southeast Sulawesi Provincial Health Office in 2018 Respiratory Tract Infection in 2018 there were 4.768 cases (11,76%) and in 2019 there were 8.829 cases (20,24%). The Health Profile of South Konawe Regency in 2020 obtained

data that from 316,123 people in South Konawe, the detection of ARI diseases found in 2018 was 336 cases or around 29,17%, and increased to 854 cases or 67,93% in 2020.[3]

Several factors trigger the occurrence of ARI in the community. Some of these factors include environmental factors such as kitchen smoke, residential density factors, and environmental factors around the house, nutritional status and other factors. Indoor air pollution is said to be more dangerous because the source is close to exposed humans. In developing areas, the problem of indoor air pollution generally occurs because human activities are indoors without adequate ventilation or ventilation. There are several risk factors for morbidity and risk of death in infants with ARI. Among these factors are Low Birth Weight (LBW), nutritional status, immunization, density of residence and physical environment. In LBW infants, the formation of anti-immune substances is less than perfect so that they are more susceptible to infectious diseases, especially ARI. There is a relationship between ARI patients who received incomplete and complete immunizations, and statistically significant. Immunization non-compliance is associated with an increase in ARI patients.[4],[5]

The term ARI is an abbreviation of Acute Respiratory Tract Infection with the following meaning: infection is the entry of micro-organisms into the human body and multiply, causing disease. The ducts are organs from the nose to the alveoli along with their adnexal organs such as the sinuses, middle ear cavity and pleura. Acute infection is an infection that lasts up to fourteen (14) days. The limit of fourteen (14) days is taken to indicate an acute process even for some diseases that can be classified as ARI. this process may take more than fourteen (14) days. While pneumonia is an acute infectious process that affects lung tissue (alveoli). Based on the above understanding, ARI is an acute infection process lasting for fourteen (14) days, which is caused by micro-organisms and attacks one or more parts of the respiratory tract, starting from the nose (upper tract) to the alveoli (lower tract). including adnexal tissues, such as the sinuses, middle ear cavity and pleura.[6],[7]

Based on the description above, ARI is one of the diseases with a fairly high morbidity and mortality rate, so that in its handling it requires high awareness from both the community and officers, especially about the importance of paying attention to several factors that trigger the occurrence of ARI in the community. Some of these factors include environmental factors such as kitchen smoke, environmental factors around the house that are dusty such as proximity to the highway, residential density factors, and other factors such as the immunization status of toddlers.

Method

This type of research uses a quantitative research design with a cross-sectional study design, where data collection and measurement of independent and dependent variables are carried out at the same time.[8]

Result

Table 1 shows that of statistical tests using the Chi square test, the results obtained are X^2count = 7,712 > X^2table = 3,841, p-value = 8,902, and Phi = 0,306, meaning that there is a relationship between ARI and residential density for children under five in coastal areas at the Kolono and Tumbujaya Health Centers. The results of the close relationship test showed a phi coefficient of 0,306, this indicates a moderate strength of the relationship between residential density and the incidence of ARI in coastal areas.

Table2 shows that of statistical tests using the Chi square test obtained the results of X^2count = 9,034 > X^2table = 3,841, p-value = 10,331, and Phi = 0,330, meaning that there is a relationship between ARI and the home environment for toddlers in coastal areas at the Kolono and Tumbujaya Health Centers. . The results of the closeness test showed a phi coefficient of 0,330, this indicates a moderate strength of the relationship between the home environment and the incidence of ARI in coastal areas.

Table 3 shows that of statistical tests using the Chi square test obtained the results of the X^2count = 8,174 > X^2table = 3,841, the p-value = 9,444, and the Phi = 0,315, meaning that there is a relationship between ARI and immunization for toddlers in coastal areas at the Kolono and Tumbujaya Health Centers. The results of the close relationship test showed a phi coefficient of 0,315, this indicates a moderate strength of the relationship between immunization and the incidence of ARI in coastal areas.

Table 1
The Relationship Between Residential Density with Incidence of ARI in Children Under Five in the Coastal Area of the Kolono Health Center and Tumbu Jaya Health Center, South KonaweRegency

Occupancy Density	ARI status				Total		X^2	p-value	Phi
	ARI		No ARI						
	n	%	n	%	n	%			
congested	28	66,7%	14	33,3%	42	100%	7,712	8,902	0,306
not solid	19	35,8%	34	64,2%	53	100%			
Total	47	49,5%	48	50,5%	95	100%			

Table 2
The Relationship Between Home Environment with Incidence of ARI in Children Under Five in the Coastal Area of the Kolono Health Center and Tumbu Jaya Health Center, South KonaweRegency

Home Environment	ARI status				Total		X^2	p-value	Phi
	ARI		No ARI						
	n	%	n	%	n	%			
qualify	20	35,7%	36	64,3%	56	100%	9,034	10,331	0,330
not eligible	27	69,2%	12	30,8%	39	100%			
Total	47	49,5%	48	50,5%	95	100%			

Table 3
The Relationship Between Immunization Status with Incidence of ARI in Children Under Five in the Coastal Area of the Kolono Health Center and Tumbu Jaya Health Center, South KonaweRegency

Immunization Status	ARI status				Total		X^2	p-value	Phi
	ARI		No ARI						
	n	%	n	%	n	%			
Complete	23	37,7%	38	62,3%	61	100%	8,174	9,444	0,315
Incomplete	24	70,6%	10	29,4%	34	100%			
Total	47	49,5%	48	50,5%	95	100%			

Discussion

Occupancy Density and Respiratory Tract Infection Incidence

The results showed that of the 42 samples living in densely populated areas, 28 (66,7%) had ARI and were recovering while 14 (33,3%) had not had ARI for the last 6 months but had experienced ARI. This can be caused by the number of occupants in one (1) house where there are two (2) to three (3) heads of household in one (1) house. This data was found when researchers visited the homes of residents of coastal areas to collect data. Then the lack of awareness of citizens about the dangers of ARI in toddlers by occupying a narrow building and not in accordance with the number of residents so that it will have a bad impact such as lack of oxygen in the room so that the toddler's immune system decreases.

Occupant density is the floor area in the house divided by the number of family members of the occupant. Density of residents is categorized as meeting the standard (2 people per 8 m20) and high density, which is more than 2 people per 8 m2 with the provisions that children <1 year are

not taken into account and ages 1-10 years are counted half.[9]

Based on the results of statistical tests using the Chi square test, the results obtained are X^2count = 7,712 > X^2table = 3,841, p-value = 8,902, and Phi = 0,306, meaning that there is a relationship between ARI and residential density in children under five in coastal areas at the Kolono Health Center and Tumbujaya. The results of the close relationship test also show a phi coefficient of 0.306, this indicates a moderate strength of the relationship between residential density and the incidence of ARI in coastal areas.

The results of this study are in line with researchfound that there was a relationship between occupancy density and the incidence of ARI in children under five (OR = 2,20; 95% CI: 1,00-4,93; p = 0,03). This means that toddlers who live at home with a solid category have a risk of experiencing pneumonia incidence 2.20 times greater than toddlers who live at home with a non-dense category.[10]

Home Environment and Respiratory Tract Infection Incidence

The results showed that of 39 samples whose home environment did not meet the requirements, there were 27 (69,2%) samples who were experiencing ARI and 12 (30,8%) samples who were not experiencing ARI. This is because the residential environment is close to the highway, dirty, narrow, and densely populated will cause frequent infections by germs that come from dirty places and eventually get various infectious diseases. Houses that do not have enough clean air flow and whose residents often inhale street dust, kitchen fumes and various other air pollutants that collect in the house will be susceptible to ARI.

Based on the results of statistical tests using the Chi square test, the results obtained are X^2count = 9,034 > X^2table = 3,841, p-value = 10,331, and Phi = 0,330, meaning that there is a relationship between ARI and the home environment for toddlers in coastal areas at the Kolono Health Center and Tumbujaya. The results of the relationship closeness test also show a phi coefficient of 0.330, this indicates a moderate strength of the relationship between residential density and the incidence of ARI in coastal areas.
Immunization Status and Respiratory Tract Infection Incidence.

The results showed that from 34 samples who had incomplete immunizations, there were 24 (70,6%) samples experiencing ARI and 10 (29,4%) samples not experiencing ARI. This is because immunization is a way to increase a person's immunity to a disease by giving a "mild infection" that is harmless but sufficient to prepare an immune response, so that when later exposed to the disease he is not easily sick. By giving complete basic immunizations, it can also reduce factors that increase ARI mortality, the method that has been proven to be the most effective at this time is by giving Measles and Pertussis immunization. With effective measles immunization about 11% of deaths due to ARI or under-five pneumonia can be prevented and with pertussis immunization 6% of pneumonia deaths can be prevented.

Based on the results of statistical tests using the Chi square test, the results obtained are X^2count = 8,174 > X^2table = 3,841, p-value = 9,444, and Phi = 0,315, meaning that there is a relationship between ARI and immunization for children in coastal areas at Health Center of Kolono and Tumbujaya. The results of the relationship closeness test also show a phi coefficient of 0,315, this indicates a moderate strength of the relationship between residential density and the incidence of ARI in coastal areas.

Conclusion

Factors associated with ARI in toddlers include residential density, home environment, and immunization status at the Kolono and Tumbujaya Health Centers, South Konawe Regency.

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