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Risk Factors for Acute Respiratory Infection (ARI) in Toddlers of the Mee Tribe in Ayaigo Village, Working Area of Kebo II Public Health Center, Kebo District, Paniai Regency, Central Papua Province

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Abstract

Background: Acute Respiratory Infection (ARI) is a disease caused by a virus or bacteria that is usually contagious so that it can cause a wide spectrum of disease that ranges from asymptomatic disease to severe and deadly disease, depending on the causative pathogen, environmental factors, and host factors. **Objectives:** Knowing the risk factors for the occurrence of acute respiratory infections (ARI) in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency. **Methods:** Analytical descriptive research employs a cross-sectional study approach. This research included 71 Mee tribe mothers with toddlers as a total sampling sample. Data were collected via a questionnaire and analyzed using chi square and binary logistic regression. **Result:** Factors related to the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency are the age of the toddler (p-value = 0.049; (RP) = 2.245; CI95% = (0.991 – 5.086), the immunization status of the toddler (p-value = 0.007; (RP) = 2.227; CI95%= (1.339 – 3.706), nutritional status of toddlers (p-value = 0.013; (RP) = 2.231; CI95%= (1.404 – 3.545), and mother's education (p-value = 0.003; (RP) = 2.539; CI95% = (1.357 – 4.753).

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Meanwhile the factors that are not related to the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of Kebo II Health Center, Kebo District, Paniai Regency are the sex of the toddler (p -value = 0.170; (RP) = 1.562; CI95% = (0.909 – 2.683), and mother's age (p-value = 1.000; (RP) = 1.043; CI95% = (0.588 – 1.852). Dominant factors in the incidence of ARI in toddlers are mother's education and immunization status in toddlers, and the most dominant risk factor is mother's education.

Keywords: Risk Factors; Incidence of Acute Respiratory Infections.

1. Introduction

Acute Respiratory Infection Disease (ARI) is still a public health problem that is important to pay attention to, because it is an acute disease and can even cause death in children under five in various developing countries including Indonesia. Acute respiratory infections are caused by viruses or bacteria. Anatomically, ARI can be divided into two parts, namely upper ARI and lower ARI. This disease begins with fever accompanied by one or more symptoms: sore throat or painful swallowing, runny nose, dry cough or phlegm [1].

According to the World Health Organization (WHO) report, infant mortality is a health problem in the world. As many as 15,000 children under five in the world die every day. In 2017 the total number of under-five deaths reached 5.4 million children. ARI accounts for 16% of the total number of deaths of children under the age of 5 in the world, namely 920,136 children under five die or more than 2,500 children under five per day [2].

In general, there are 3 (three) risk factors for ARI, namely environmental factors, individual child factors, and behavioral factors. 1) Environmental factors include indoor air pollution (the habit of smoking in the house and kitchen fumes), physical condition of the house and the density of the house's occupancy, 2) individual factors of the child including the child's age, birth weight, nutritional status, vitamin A, and immunization status, 3) behavioral factors related to the prevention and control of ARI in toddlers, in this case the practice of handling ARI in the family, whether carried out by the mother or other family members [3].

Most ARI sufferers are found to be less than 2 years old and male. The age factor for children under two years is generally the first infection and the natural immune process has not been optimally formed. In addition, the child's immunity is not good and the lumen of the airways is still narrow. Toddlers who are male are more susceptible to catching ARI because boys are more active in activities so they get tired easily and tend to have a decreased immune system, compared to girls [4].

The incidence of ARI that occurs in children under five (age 1 – 60 months) from Syahidi's research (2016) revealed that infants suffering from ARI are more found in mothers with low education and mother's age > 35 years, incomplete immunization status, administration of vitamin A capsules, mother's knowledge, kitchen smoke, use of mosquito coils, house ventilation and presence of family members who smoke in the house [5].

Some of the characteristic factors of mothers with low education tend to be that their toddlers experience severe ARI. This is due to the fact that the higher the mother's education, the higher her knowledge about handling ARI. Meanwhile, families with more than the minimum wage are able to provide their children with better

nutritional intake and immediately take their toddlers for treatment compared to those with low socioeconomic status [6].

Togodly's research (2022) in Tolikara Regency found that Immunization status, history of exclusive breastfeeding, nutritional status of toddlers, smoking habits in the family of toddlers and use of mosquito coils all have no effect on the incidence of Acute Respiratory Infection Disease (ARI) in the Karubaga Health Center, Tolikara Regency [7].

Based on data from the Papua Provincial Health Office for 2021, the incidence of ARI reached 31% and 23% occurred in children under five [8]. Preliminary study, data on the incidence of ARI in toddlers in Paniai Regency in 2021 the incidence of ARI ranks first in the pattern of the top ten diseases with a prevalence reaching 23.64% of the 18 Community Health Centers in Paniai Regency with the highest incidence of ARI at the Kebo II Health Center (66.9%) and lowest at Enarotali Health Center (43%) [9].

Based on the 2022 Kebo II Health Center annual report, it is known that generally 63.27% of the indigenous people in Paniai Regency are the Mee Tribe [10].

The Mee tribe, also known as Bunani Mee or Ekari is a tribe that inhabits mountainous areas in Central Papua Province, Indonesia. The majority inhabit the areas of Deiyai and Paniai Regencies which are included in the Mee Pago customary territory [11].

The environment where the Mee people live has high mountains with deep valleys, tropical forests and grasslands with a cold climate so that the Owaa traditional house usually has a stove for cooking or heating the room so that there is a lot of smoke in the room causing respiratory problems, especially toddlers. Based on the description put forward, it is necessary to conduct research to examine the Risk Factors for Acute Respiratory Infections in Toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

2. Methods

This research is an observational analytic research which aims to determine the relationship between two or more variables [12].

This study explains the relationship of the variables studied, using a cross-sectional study approach with data collection carried out simultaneously at one time [13].

This research was conducted in Ayaigo Village, Kebo District, Paniai Regency which was carried out in November 2022. The population is all toddlers from the Mee tribe who live in traditional houses in Ayaigo Village, Kebo District, Paniai Regency, totaling 71 toddlers. Thus the number of samples is 71 mothers of toddlers as total sampling. With a 5% significance level, data were analyzed using chi-square and binary logistic regression tests.

3. Results

3.1. The relationship between the age of toddlers and the incidence of ARI in toddlers

Table 3.1: The relationship between the age of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Age	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
< 3 years old	25	51.0	24	49.0	49	100
≥ 3 years old	5	22.7	17	77.3	22	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 0.049; RP=2.245; CI 95% (0.991-5.086)

Source: Primary data, 2022

Based on Table 3.1, it shows that out of 49 toddlers aged <3 years, there were 25 toddlers (51%) with ARI and 24 toddlers (49%) did not. Meanwhile, out of 22 toddlers aged ≥ 3 years, 5 toddlers (22.7%) had ARI and 17 toddlers were not ARI (77.3%). The results of the chi square test obtained a p-value = 0.049 <0.05, meaning that there significant relationship between age and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency. Prevalence ratio test results (RP) = 2.245; CI95% = (0.991 – 5.086.) The number 1 is between the lower value of 0.991 and the upper value of 5.086 meaning that the age of under five is not a significant factor with the incidence of ARI in toddlers.

3.2. The relationship between the gender of toddlers and the incidence of ARI in toddlers

Table 3.2: The relationship between the gender of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Gender	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
Male	16	53,3	14	46,7	30	100
Female	14	34.1	27	65.9	41	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 0.170; RP=1.562; CI 95% (0.909-2.683)

Source: Primary data, 2022

Based on Table 3.2, it shows that out of 30 children under five who were male, 16 people (53.3%) had ARI and 14 people (46.7%) did not. Meanwhile, out of 41 people who were female, 14 people (34.1%) had ARI and 27

people (65.9%) did not.

The results of the chi square test obtained a p-value = 0.170 > 0.05.

This means that there is no significant relationship between gender and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Prevalence ratio test results (RP) = 1.562; CI95%= (0.909 – 2.683). The number 1 is between the lower value of 0.909 and the upper value of 2.683 meaning that the sex of the toddler is not a risk factor of ARI in toddlers.

3.3. The relationship between the immunization status of toddlers and the incidence of ARI in toddlers

Table 3.3: The relationship between the immunization status of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Immunization status	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
Incomplete	15	68.2	7	31.8	22	100
Complete	15	30.6	34	69.4	49	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 0.007; RP=2.227; CI 95% (1.339-3.706)

Source: Primary data, 2022

Based on Table 3.3, it shows that out of 22 toddlers with incomplete immunization status, 15 people (68.2%) had ARI and 7 people (31.8%) did not. Meanwhile, out of 49 toddlers with complete immunization status, 15 people (30.6%) had ARI and 34 people were not ARI (69.4%).

The results of the chi square test obtained a p-value = 0.007 <0.05.

This means that there is a significant relationship between the immunization status of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Prevalence ratio test results (RP) = 2.227; CI95% = (1.339 - 3.706) which means that the incomplete immunization status of toddlers is a risk factor for ARI incidents.

Incomplete immunization status of toddlers has a risk of 2.227 times higher than toddlers with complete immunization status.

3.4. The relationship between the nutritional status of toddlers and the incidence of ARI in toddlers

Table 3.4: The relationship between the nutritional status of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Nutritional status	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
Poor	10	76.9	3	23.1	13	100
Good	20	34.5	38	65.5	58	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 0.013; RP=2.231; CI 95% (1.404-3.545)

Source: Primary data, 2022

Based on Table 3.4, it shows that out of 13 toddlers with poor nutritional status, 10 people (76.9%) had ARI, and 3 people (23.1%) did not have ARI. Meanwhile, out of 58 toddlers with good nutritional status, 20 people (34.5%) had ARI and 38 people (65.5%) did not. Chi square test results obtained p-value = 0.013 <0.05. This means that there is a relationship between the nutritional status of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency. Prevalence ratio test results (RP) = 2.231; CI95% = (1.404 – 3.545) which means that poor nutritional status of children under five is a risk factor for ARI in toddlers. Poor nutritional status of toddlers is at risk of 2.231 times higher than toddlers with good nutritional status.

3.5. The relationship between the mother's age of toddlers and the incidence of ARI in toddlers

Table 3.5: The relationship between the mother's age of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Mother's age	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
≤ 25 years old	10	43.5	13	56.5	23	100
> 25 years old	20	41.7	28	58.3	48	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 1.000; RP=1.043; CI 95% (0.588-1.852)

Source: Primary data, 2022

Based on Table 3.5, it shows that out of 23 mothers aged <25 years, 10 people (43.5%) had ARI and 13 people (56.5%) did not. Meanwhile, out of 48 mothers aged > 25 years, 20 (41.7%) had ARI and 28 were not ARI (58.3%). The results of the chi square test obtained a p-value = 1.000 > 0.05. This means that there is no

significant relationship between the age of the mother and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency. Prevalence ratio test results (RP) = 1.043; CI95% = (0.588 – 1.852), and because the number 1 is included in the lower and upper limit values, the mother's age is not a risk factor for the occurrence of ARI in toddlers of the Mee tribe.

3.6. The relationship between the mother's education of toddlers and the incidence of ARI in toddlers

Table 3.6: The relationship between the mother's education of toddlers and the incidence of ARI in toddlers of the Mee Tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Mother's education	Acute Respiratory Infection (ARI)				Total	%
	Yes		No			
	n	%	n	%		
Low	21	61.8	13	38.2	34	100
High	9	24.3	28	75.7	37	100
TOTAL	30	42.3	41	57.7	71	100

P-value = 0.003; RP=2.539; CI 95% (1.357-4.753)

Source: Primary data, 2022

Based on Table 3.6, it shows that out of 34 mothers with low education, 21 people (61.8%) had ARI and 13 people (38.2%) did not. Meanwhile, out of 37 mothers with higher education, 9 (24.3%) had ARI and 28 did not have ARI (75.7%).

The results of the chi square test obtained a p-value = 0.003 <0.05. This means that there is a significant relationship between mother's education and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Kebo II Public Health Center, Kebo District, Paniai Regency. Prevalence ratio test results (RP) = 2.539; CI95% = (1.357 - 4.753) which means that mothers with low education have a risk of 2.539 times higher ARI than mothers with higher education.

3.7. Multivariate Analysis

Multivariate analysis is used to obtain the dominant factors related to the incidence of ARI in infants, so it is necessary to carry out bivariate analysis and proceed to multivariate tests. Multivariate analysis was used to obtain the dominant factors related to the incidence of ARI in infants, so it was necessary to carry out bivariate analysis and proceed with a multivariate test.

The independent variables that meet the requirements to be included in the multivariate analysis are the age of the toddler, the sex of the toddler, immunization status, nutritional status, mother's age and mother's education. In the multiple logistic regression multivariate test using the Backward LR method. The result of the analysis can be seen in Table 3.7.

Table 3.7: Analysis of Multiple Logistics Regression with Backward LR Method.

Variables	B	*p-value*	OR	95% C. I. for Exp (B)	
				Lower	Upper
Immunization status	1.854	0.003	6.388	1.847	22.090
Mother's education	1.856	0.002	6.399	2.010	20.374
Constant	-5.563	0.000	0.004		

Source: Primary Data, 2022

Table 3.7 above shows that the dominant factors found in the incidence of ARI in toddlers are mother's education and immunization status in toddlers, and the most dominant is mother's education.

4. Discussion

4.1. The relationship between the age of toddlers and the incidence of ARI in toddlers

The results showed that there was a significant relationship between the age of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Kebo II Public Health Center, Kebo District, Paniai Regency.

This study supports the findings of researcher Azis (2019), who discovered that toddlers aged < 3 years are more susceptible to ARI [14]. This study supports Sofia's (2017) findings that children under the age of five are at a one-time greater risk of ARI than children over the age of three [3].

Age has a large enough influence on the occurrence of ARI. Children aged < 3 years are a risk factor for ARI. This is because children under three years of age have imperfect immunity and narrower airways. The incidence of ARI in infants and toddlers will provide a bigger and worse clinical picture, this is because ARI in infants and toddlers is the first infection and the natural immune process has not been optimally formed [15].

At the age of < 3 years, the body's defense system is still in the developing stage compared to children aged > = 3 years so it is very susceptible to infectious diseases such as ARI [16]. ARI in toddlers and preschool children is often caused by viruses, namely: Adeno, Parainfluenza, Influenza A or B and various bacteria, namely: S.pneumoniae, Hemophilus influenza, Streptococci A, and Chlamydia.

Toddlers of the Mee tribe who are <3 years old are 51% with ARI incidents, but 49% do not suffer from ARI. This shows almost the same proportion and from the results of the prevalence ratio test the lower and upper values of the prevalence ratio test results include 1 which means that the age of toddlers is not a significant factor with the incidence of ARI. The absence of significant factors between the ages of the toddlers of the Mee tribe depends on the condition of the healthy child's home environment and the surrounding environment. If the sanitary conditions at home are healthy, then the child's low immunity will reduce exposure to bacteria and viruses that cause ARI.

This is in line with research by Jayanti and his colleagues (2018) which found that most toddlers are at home.

The physical environment of the house where the family gathers and takes shelter is unhealthy, so there is a great risk of causing ARI. This is because an unhealthy home environment will be a place for bacteria and viruses to grow and develop which will be exposed to toddlers [17].

At the age of the toddler, the mother plays an important role in caring for her child. One of the risks of increasing ARI due to significant environmental pollution at home is that the roof of the house has no ceiling/ceiling that is not kept clean. In addition, the behavior of the family at home is very risky with the incidence of ARI, such as the family's habit of smoking, not giving children complete immunizations, rarely bringing children to unified service post to be weighed, even though this is important to know the growth and development of children according to age [18]. Thus, the immune system of toddlers who are vulnerable, especially toddlers aged 3 years, can be prevented from severe ARI with good parenting by mothers in improving the immune status of children's bodies through child hygiene, housing, nutritional intake and immunization.

4.2. The relationship between the gender of toddlers and the incidence of ARI in toddlers

The results showed that there was no significant relationship between the sex of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Kebo II Public Health Center, Kebo District, Paniai Regency.

In line with research conducted by Nurjamillah (2022) in Serang City, it was revealed that there was no relationship between the sex of toddlers and the incidence of ARI [19].

According to the distribution of toddlers, male toddlers account for up to 53.3% of those with ARI, while female toddlers account for up to 34.1%. This demonstrates a greater proportion of male children. According to Sari's (2017) research, males are more likely than girls to have ARI because boys play more outside the home and are thus more exposed to air than girls who play more dominantly within the house. Meanwhile, in this study, the gender of toddlers - boys and girls - had the same chances of developing ARI [4].

This condition permits toddlers to change their habits. Currently, both boys and girls have the same playing proclivity. With the amenities available at the time, children preferred to play inside the house rather than outside. As a result, changeable factors such as nutritional status and immunization in children under the age of five, which might boost the body's immune, are more strongly linked to the occurrence of ARI [4].

4.3. The relationship between the immunization status of toddlers and the incidence of ARI in toddlers

The results showed that there was a significant relationship between toddler immunization status and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Kebo II Health Center, Kebo District, Paniai Regency. The results of the prevalence ratio test showed that the immunization status of infants who were incomplete had a 2.227 times higher chance of ARI occurring than toddlers from the Mee tribe with complete immunization status.

Every kid has the right to basic immunization in order to prevent and avoid illnesses, and the government is required by Health Law Number 36 of 2009 to provide comprehensive basic immunization to every infant and child. The Minister of Health's Regulation No. 42 of 2013 governs vaccination implementation. Every newborn (aged 0-11 months) must receive a full set of basic immunizations, including Hepatitis B, BCG, DPT-HB-Hib, polio, and measles. Immunization is one of the measures used to prepare the immune system for disease exposure [20].

The crucial role of parents in improving their families' health condition through vaccination helps prevent a variety of infectious illnesses, including ARI. If an infant or toddler has a complete vaccination record and develops ARI, the condition will not progress to a severe stage [18].

4.4. The relationship between the nutritional status of toddlers and the incidence of ARI in toddlers

The results showed that there was a relationship between the nutritional status of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

Previous research by Widia (2017) revealed that the nutritional status of toddlers is related to the incidence of ARI due to poor nutritional status which causes a lack of immune system in toddlers [21].

The distribution of toddlers from the Mee tribe with undernourished status was 76.9%, with the incidence of ARI and 23.1% without ARI. From the results of the prevalence ratio test, the poor nutritional status of toddlers has a 2.231 times higher chance of ARI occurring than toddlers with good nutritional status.

Toddlers are a group of people who are vulnerable to malnutrition, in this group they experience growth and development cycles that require more nutrients than other age groups so that toddlers are the easiest to suffer from nutritional disorders. The incidence of malnutrition is like the iceberg phenomenon where the occurrence of malnutrition can cause death. In cases of malnutrition, will be more susceptible to infection due to decreased immunity against pathogen invasion. Good growth and adequate immunological status will also result in good health [22].

According to Maryunani (2017), ARI more often attacks toddlers, this is likely to be closely related to the problem of the baby's immune system which is still not very strong compared to adults. In a state of good nutrition, the body has enough ability to defend itself against infectious diseases. Meanwhile, if the nutritional state becomes poor, then the body's immune reaction will decrease so that the body's ability to defend itself from infection will also decrease. This incident is caused by the process of forming antibodies which is disturbed or inhibited and ultimately the production of these antibodies will decrease. This decrease makes the body more susceptible or susceptible to infection. Hence the state of malnutrition and the incidence of ARI often work together and foster a poor prognosis [18].

The role of community health center staff can increase mother's knowledge through the role of integrated service posts when toddlers are weighed by providing counseling about providing balanced nutritional intake so

that mother's knowledge increases and affects the provision of nutrition to their children.

4.5. The relationship between the mother's age of toddlers and the incidence of ARI in toddlers

The results showed that there was no relationship between the age of the mother and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, the Working Area of the Kebo II Health Center, Kebo District, Paniai Regency.

This research is in line with what was conducted by Syahidi (2016) at the Tebet Barat Village Health Center, Tebet District, South Jakarta, which revealed that the age of the mother was not related to the incidence of ARI in toddlers [5].

The age distribution of mothers under five aged <25 years was 43.5% with the incidence of ARI and not ARI as much as 56.5%. This shows that there is an equal chance at the mother's age with the incidence of ARI in toddlers.

This supports Maramis' (2013) claim that younger moms have better memory and are more creative when it comes to locating and identifying something new [23]. Furthermore, because the brain operates properly at a young age, it is simpler to acquire new knowledge. Meanwhile, Priyoto (2014) claims that when a person's age increases, physical and psychological (mental) changes occur. A person's level of thinking gets more mature on the psychological or mental level [24].

4.6. The relationship between the mother's education of toddlers and the incidence of ARI in toddlers

The results of the study showed that there was a relationship between mother's education and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Kebo II Public Health Center, Kebo District, Paniai Regency.

In line with Lediyana's research (2022) that education is a risk factor for the incidence of ARI in toddlers [25].

The distribution of mothers with low education was 61.8% with the incidence of ARI and not ARI as much as 38.2%, and the results of the prevalence ratio test meant that mothers with low education of their children under five had a risk of ARI by 2.539 times higher in toddlers with mothers with higher education . This is because respondents who have low education are at greater risk of experiencing ARI in toddlers, compared to respondents with higher maternal education because of their lack of knowledge about ARI.

The low education of mothers in the Mee tribe is 47.9%, this causes many parents to have less knowledge about ARI in toddlers. Knowledge about health is very important for every community to know, therefore efforts can be made to provide education and information, because there are still many people who have low knowledge of the factors that can cause disease.

Mother's education is linked to family health. In general, mothers have an important influence in the health of

their newborns and toddlers. Every attempt is being made to keep her child healthy. As a result, maternal education is critical in protecting the health of newborns and toddlers. Mothers who are highly educated will be able to preserve the health of their newborns and children. Kebo II Health Center personnel may help prevent ARI by expanding counseling efforts for moms, so that women with little education can learn how to care for their family, especially their newborns and toddlers.

4.7. Dominant factors associated with the incidence of ARI in infants.

The dominant factors for the incidence of ARI in toddlers from the results of the logistic regression test obtained were mother's education and immunization status in toddlers. The factor of parental education obtained in this study is that the majority have low education, where the mother's low education will also affect parenting patterns in preparing food and fulfilling toddler nutrition. Good nutrition will affect the immune system of toddlers against various diseases including Acute Respiratory Infection (ARI) [21].

Immunization can prevent various types of infectious diseases including ARI. To reduce factors that increase ARI mortality, complete immunization is attempted, especially DPT and measles. Infants and toddlers who have complete immunization status when suffering from ARI can be expected that the development of the disease will not become severe. Immunization non-compliance is associated with an increase in ARI sufferers, this is in accordance with other researchers who found that complete immunization can play a significant role in preventing ARI incidents [26].

DPT and Measles vaccines are both associated with ARI. Toxin-mediated diseases include DPT (diphtheria, anti-tract infection inhalation), pertussis (for whooping cough and tetanus), and ARI. Toxins produced by germs (attached to upper respiratory tract vibrating feathers) will immobilize the feathers vibrating, causing disruption of the flow of secret breathing. As a result, providing DPT vaccine is critical in preparing toddlers for environments that cannot always be guaranteed to be clean. Measles vaccine, in addition to DPT, is one method of preventing ARI. Because the measles virus enters the respiratory system and then travels to the lymph nodes beneath the mucosa.

One method of protection for toddlers is immunization, since immunization is one method of protecting toddlers from ARI and can minimize the risk of ARI. Toddlers who receive pentavalent immunization will develop immunity to diphtheria, pertussis, tetanus, hepatitis b, and hemophilus influenza type b, so that when exposed to these diseases, the body can detect and respond to kill bacteria or viruses that enter, because the body already has memories about bacteria and viruses from previous immunizations [18].

The Mee tribe mothers who are highly educated would recognize that delivering more comprehensive vaccines to their children improves their children's health care, such that the relationship between mother's education and immunization status is directly connected to the occurrence of ARI in toddlers.

5. Conclusion

Based on the results of the discussion it can be concluded as follows:

a. There is a significant relationship between the age of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 0.049; (RP) = 2.245; CI95% = (0.991 - 5.086).
b. There is no significant relationship between the sex of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 0.170; (RP) = 1.562; 95% CI = (0.909 – 2.683).
c. There is a significant relationship between immunization status of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 0.007; (RP) = 2.227; 95% CI = (1.339 – 3.706).
d. There is a significant relationship between the nutritional status of toddlers and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 0.013; (RP) = 2.231; 95% CI = (1.404 – 3.545).
e. There is no significant relationship between mother's age and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 1.000; (RP) = 1.043; 95% CI = (0.588 - 1.852).
f. There is a significant relationship between mother's education and the incidence of ARI in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency (p-value = 0.003; (RP) = 2.539; 95% CI = (1.357 – 4.753)
g. The dominant factors in the incidence of ISPA in toddlers of the Mee tribe in Ayaigo Village, Working Area of the Kebo II Health Center, Kebo District, Paniai Regency are the mother's education and immunization status. While the most dominant factor is the mother's education.

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