
DIET RELATIONSHIP, EXCLUSIVE BREASTFEEDING, IMMUNE STATUS AND BIRTH WEIGHT WITH GENESIS FREQUENCY ACUTE RESPIRATORY INFECTIONS (ARI) IN INFANTS AT INTEGRATED PUBLIC HEALTH CENTRE HEBEYBHULU YOKA PAPUA

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ABSTRACT

ARI known as Acute Respiratory Infections is an acute respiratory tract disease caused by an infectious agent transmitted from human to human. Total cases according to World Health Organization (WHO) data in 2012, for Acute Respiratory Infections (ARI) incidence in developing countries reached 0.29% (151 million people) and in industrialized countries of 0.05% (5 million people). This research is a quantitative research by using cross sectional design. The study was conducted for 6 months in the working area of Integrated Health Centre (IHC) Hebeybhulu Yoka. Population in this research is all of toddler that exist in work area of Integrated Health Centre (IHC) Hebeybhulu Yoka that is counted 976 toddlers. The number of samples in this study is totally 91 samples. Sampling technique is simple random sampling. Research Result has shown that there is a relationship between exclusive breastfeeding, immunization status and birth weight with the frequency of ARI experienced by infants. Suggestions that can be given, especially to the Integrated Health Centre (IHC) is if prevention programs can be done by considering the factors that in this research proved to have relationship with the frequency of the occurrence of ARI in infants, so that the incidence of ARI in children under five years in the working area of and birth weight with the frequency of ARI experienced by infants.

Keywords: *Acute Respiratory Infectious, Infant, Papua*

1. PRELIMINARY

Acute Respiratory Infection is often abbreviated ARI is an acute respiratory tract disease caused by an infectious agent transmitted from human to human. ARI is still an important health problem because it causes high infant and toddler mortality. Each child is estimated to have 3-6 cases of respiratory infection each year and 40% -60% of visits in Integrated Health Centre(IHC) is with ARI (Husin, 2014). According to World Health Organization (WHO) data in 2012, ARI incidence in developing countries reached 0.29% (151 million people) and in industrialized countries of 0.05% (5 million people). The prevalence of ARI in Indonesia in 2012 is 25%. ARI population characteristics were highest in the age group of 1-4 years (25.8%) (Risksedas, 2013). The prevalence of ARI in Papua higher than the national Program N which is only 25.5% in 2013. The prevalence of ARI in Papua based on data RISKESDAS in 2007 and 2013, respectively amounted to 30.56% and 33.1%. Community Health Centers Hebeybhulu Yoka is one

IHC in Jayapura City area who are also experiencing the same problem, which the ISPA was ranked first on the top 10 most frequent illnesses experienced by people (secondary data, 2017). In addition to environmental Hygiene and personal, there are several factors that can affect the frequency of ARI occurrence in infants, including malnutrition, incomplete immunization, inadequate breast feeding, and low birth weight (WHO, 2013).

2. RESEARCH PURPOSES

To determines the relationship Diet, exclusive breastfeeding, immunization status, and Weight Infants Born with the frequency of occurrence of ARI in children under five in the region of Community Health Centre Hebeybhulu Yoka.

2.1 Research Methodology

This research is a quantitative research by using cross sectional design. The study was conducted for 6 months in the working area of

Integrated Health Centre (IHC) Hebeybhulu Yoka. Population in this research is all of toddler that exist in work area of Integrated Health Centre (IHC)

Hebeybhulu Yoka that is counted 976 toddlers. The number of samples in this study is totally 91 samples. Sampling technique is *simple random sampling*.

3. RESULTS

a. Birth Weight

Birth weight distribution of toddlers can be seen in the following table:

Table 5. 4. Birth Weight Distribution of Toddlers in PKM Hebeybhulu Yoka

| No | Birth weight | Frequency (91) | Percentage (%) |
|----|---------------------|----------------|----------------|
| 1 | Low Birth Weight | 11 | 12.09 |
| 2 | Birth Weight Normal | 80 | 87.91 |

Source: Primary data, 2017

Table 5.4 shows that the majority of under-fives (87.91%) who become study samples have normal birth weight that is above 2500 grams.

b. Immunization Status

Distribution of toddler immunization status can be seen in the following table:

Table 5. 5. Distribution of Toddler Immunization status in PKM Hebeybhulu Yoka

| No | Immunization Status | Frequency (91) | Percentage (%) |
|----|---------------------|----------------|----------------|
| 1 | Incomplete | 4 | 4.40 |
| 2 | Complete | 87 | 95.60 |

Source: Primary data, 2017

From table 5.5 it can be seen that most (95.60%) of under-fives have received complete basic immunization

c. Exclusive Breastmilk Status

The frequency distribution of exclusive breastfeeding status can be seen in the following table:

Table 5. 6. Distribution of Exclusive Breast Milk Status at IHC Hebeybhulu Yoka

| No | Exclusive breastfeeding | Frequency (91) | Percentage (%) |
|----|-------------------------|----------------|----------------|
| 1 | No | 12 | 13.19 |
| 2 | Yes | 79 | 86.81 |

Source: Primary data, 2017

Table 5.6. shows that most toddlers (86.81%) have been exclusively breastfed.

d. Dietary Habit

Distribution of infant diet can be seen in the following table:

Table 5. 7. Distribution of Toddler's Diet in IHC Hebeybhulu Yoka

| No | Dietary habit | Frequency (91) | Percentage (%) |
|----|---------------|----------------|----------------|
| 1 | Not good | 40 | 43.96 |
| 2 | Good | 51 | 56.04 |

Source: Primary Data, 2017

Table 5.7 shows that the average of toddler's diet is good (56,04%).

e. Frequency of Acute Respiratory Infections (ARI)

The frequency distribution of ARI occurrences in infants can be seen in the following table:

Table 5. 8. Frequency Distribution of ARI of Infants at Toddlers in IHC Hebeybhulu Yoka

| No | Frequency of ARI | Frequency (91) | Percentage (%) |
|----|------------------|----------------|----------------|
| 1 | Often | 11 | 12.09 |
| 2 | Rarely | 80 | 87.91 |

Source: Primary Data, 2017

Table 5.8. showed that 87.91 percent of under five who become samples rarely suffer from ARD in the last 3 months.

f. Relation of Birth Weight with Frequency of ARI occurrence at toddler in IHC Hebeybhulu Yoka

Cross tabulation between birth weight variables and frequency of ARI occurrence in infants at IHC Hebeybhulu Yoka, are as follows

Table 5.9. Birth Weight Infant Relationship with Frequency of ARI occurrence in infants

| Birth Weight | Frequency of ARI | | Total | P_Value | OR |
|--------------|------------------|--------|-------|---------|--------|
| | Often | rarely | | | |
| Low | 2 | 9 | 11 | 0.508 | 0.4373 |
| Normal | 9 | 71 | 80 | | |
| Total | 11 | 80 | 91 | | |

(Source: primary data, 2017)

P_Value value shows there is no relation between birth weight of toddler with frequency level or frequency of ARI occurrence in toddler. From the data obtained, underweight children with normal

birth weight have a similar frequency of ARI occurrences, which in both groups are more likely to be infected with ARDs than those with frequent frequency.

g. Relationship of Immunization Status with Frequency of ARI occurrence in infants at IHC Hebeybhulu Yoka

Cross tabulation between Immunization status variables with frequency of ARI occurrence in infants at PKM Hebeybhulu Yoka, is as follows:

Table 5.10. The relationship of immunization status of children under five with the frequency of ARI occurrence in infants

| Immunization Status | Frequency of ARI | | Total | P_Value | OR |
|---------------------|------------------|--------|-------|---------|------|
| | Often | rarely | | | |
| Incomplete | 3 | 1 | 4 | 0,000 | 15.6 |
| Complete | 8 | 79 | 87 | | |
| Total | 11 | 80 | 91 | | |

(Source: primary data, 2017)

The results showed that there was a relationship (P_Value = 0,000) between the completeness of immunization of children under five with the frequency of ARI. The OR value of 15.6 indicates

that, infants who did not receive complete immunization had an opportunity of 15.58 times more likely to develop ARD compared to those who received complete immunization.

h. Relationship of Exclusive Breastmilk Status with Frequency of ARD of Infants at Toddler in IHC Hebeybhulu Yoka

Cross tabulation between exclusive breastfeeding variables and the frequency of ARI occurrences

among children under five at IHC Hebeybhulu Yoka, were as follows:

Table 5.11. The relationship of exclusive breastfeeding status to the frequency of ARI occurrence in infants

| Exclusive breastfeeding | Frequency of ARI | | Total | P_Value | OR |
|-------------------------|------------------|--------|-------|---------|------|
| | Often | Rarely | | | |
| No | 6 | 6 | 12 | 0,000 | 18.7 |
| Yes | 5 | 74 | 79 | | |
| Total | 11 | 81 | 91 | | |

(Source: primary data, 2017)

Table 5.11 shows that there is a relationship (P_Value = 0,000) between Exclusive Breastmilk status and frequency of ARI occurrence in infants, with OR value of 18.7. These results indicate that,

infants who are not exclusively breastfed have an opportunity of 18.7 times more likely to develop ARD compared to infants exclusively breastfed.

i. Relationship Diet with Frequency of Occurrence of ARI in infants at IHC Hebeybhulu Yoka

Cross tabulation between dietary variables of children under five with the frequency of ARI occurrence in children under five years old in IHC Hebeybhulu Yoka, are as follows:

Table 5.12. Relation of Diet with Frequency of Acute Respiratory Infections (ARI) occurrence in Toddler

| Dietary habit | Frequency of ARI | | Total | P_Value | OR |
|---------------|------------------|--------|-------|---------|------|
| | Often | rarely | | | |
| Not good | 10 | 30 | 40 | 0.001 | 11.2 |
| good | 1 | 50 | 51 | | |
| Total | 11 | 80 | 91 | | |

(Source: primary data, 2017)

Table 5.12 shows that there is a relationship (P_Value = 0.001) between eating patterns and the frequency of ARI occurrence in infants, with an OR value of 11.2, which means that under-five children who have poor diet have an opportunity of 11.2 times greater for more often infected with ARI compared with toddlers who have a good diet.

4. DISCUSSION

4.1 Relation of Birth Weight with Frequency of ARI Occurrence at Toddler in IHC Hebeybhulu Yoka (no relationship)

Low birth weight is an important issue in its management because it has a tendency towards an increased incidence of infection, the body regulate breathing difficulty so it is easy to suffer from hypothermia. Besides infants with low birth weight babies (LBW) susceptible to certain complications such as jaundice, hipoglikomia which

can cause death. Low birth-weight infants may be terminated with high-risk groups, because in low-birth-weight babies show a higher rate of mortality and health with enough birth weight.

The results of statistical tests show results that are not in line with the theory described above. The result of this research shows there is no correlation between birth weight of children under five with the frequency of ARI occurrence in infants. In addition to birth weight the occurrence of the frequency of infectious diseases in infants affected by many factors including, immunization, intake and environmental conditions of residence. In this study most of the toddlers have a good intake. a good intake can help keep the body's resistance to infectious diseases. Similarly, in immunization status variables, most of the infants have been immunized completely, so available frequency of occurrence of ARI in toddlers, even if the toddler has a low weight.

The Relationship between Immunization Status and Frequency of ARI of Infants at Interated Health Centre (IHC)Hebeybhulu Yoka (has no relationship)

Immunization is a way to actively boost a person's immunity against an antigen, so that when one is exposed to a similar antigen there will be no disease (John, 2006). Immunization is the process of immune system formation. Immunization material is called immunogen. Immunogens are antigen molecules that can stimulate the body's immunity. Most of the deaths of ARIs are from the types of ARDs that develop from preventable diseases with immunizations such as diphtheria, cough, measles, the increase in immunization coverage will play a major role in ISPA restriction efforts. To reduce the factors that increase ISPA mortality, full immunization is sought. Infants and toddlers who have complete immunization status when suffering from ARI can be expected the development of the disease will not be severe (Prabu, 2009).

The results of this study indicate there is a relationship between the provision of complete immunization with the frequency of toddlers suffering from ARI. One of the immunizations given to infants is influenza vaccine. Basically, the vaccine does not eliminate the chance of infectious diseases such as acute respiratory infection in young children, but infant and toddlers who have a

complete immunization status when suffering from ARI can be expected progression of the disease will not be severe (King, 2009). Most infants (87 infants) in this study have been immunized so that the number of infants that are rare (most never one time suffered from Acute Respiratory Infectious (ARI in the last 3 months) have ARDs were far more than those often suffer from acute respiratory infection (80 infants).

Relationship of Exclusive Breastmilk Status with Frequency of ARI of Infants at Toddler in PKM Hebeybhulu Yoka (no relationship)

Breast milk other than as a source of nutrition can provide protection to the baby through various immune substances it contains. Although the mother is in a nutritional state, breast milk still contains enough essential nutrients for infants and is able to cope with infection through phagocyte-cell components and immunoglobulins (Munasir and Kurniati, 2008). Meanwhile, according to Roesli (2005) ASI will stimulate the formation of the baby's immune system so that the milk also functions as an active immunization. The results of this study indicate there is a relationship between exclusive breastfeeding during infants aged 0-6 months with the frequency of ARI in infants (table 5.11). As explained briefly above, breast milk is an active immunity. Exclusive breastfeeding is able to increase the body's immune data, so it is not easy to catch the disease.

The immune system is the mechanism by which the body maintains the integrity of the body as a protection against the dangers posed by various materials in its environment (Matondang, et al, 2008). Breast milk contains in high amount not only vitamin A but also its raw material that is beta carotene. Vitamin A in addition to functioning for eye health, also serves to support cell division, immune, and growth (Hendarto and Pringadini, 2008). Breast milk contains various substances that serve as nonspecific and specific defenses. Nonspecific defense portrayed by cells such as macrophages and neutrophils as well as products and insoluble protective factors, whereas the specific cells by lymphocytes and their products (Matondang, et al, 2008). T lymphocyte cells account for 80% of lymphocyte cells present in breast milk. T lymphocytes can destroy *E.coli* bacterial capsules and transfer cellular immunity from mother to baby who breastfed (Munasir and Kurniati, 2008).

Nutrition is one of the determinants of the quality of human resources. The incidence of malnutrition will decrease cellular immunity, the thymus gland and the tonsils become atrophic and the number of T-lymphocytes decreases, so the body becomes more susceptible to disease or infection. In addition, the incidence of malnutrition will affect the respiratory tract in protecting from disease agents. Normal physiologic breathing channels can block disease agents entering the body through various mechanisms, such as cough and increased amount of mucosal fluid, but in children with malnutrition / poor nutritional status physiological processes can not run well, so the disease agent the incoming can not be driven out and will accumulate in the respiratory tract and in the lungs (Hadiana, 2013).

The results of statistical tests showed a relationship between the pattern of eating infants with the frequency of ARI occurrence in the natural. Frequency of ARI in infants with nutritional status is less high than with children who have good nutritional status. P is caused by toddlers who have nutritional status will have good endurance (antibody) more, so as to prevent or avoid diseases such as acute respiratory infection (Dwijayanti, 2008). The occurrence of malnutrition will decrease cellular immunity, thymus gland and tonsils become atrophic and the number of T-lymphocytes reduced, so the body will become more vulnerable against the occurrence of disease or infection.

5. CONCLUSION

From the results of research conducted can be concluded that there is a relationship between exclusive breastfeeding, immunization status and birth weight with the frequency of ARI experienced by infants. Suggestions that can be given, especially to the Integrated Health Centre (IHC) is if prevention programs can be done by considering the factors that in this research proved to have relationship with the frequency of the occurrence of ARI in infants, so that the incidence of ARI in children under five years in the working area of Integrated Health Centre (IHC) Hebebhulu Yoka can be reduced.

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