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Nutrition and Breastfeeding in the View of Islam to Prevent Acute Respiratory Infections in Toddlers

Gizi dan ASI dalam Pandangan Islam Untuk Mencegah Kejadian Infeksi Saluran Pernafasan Akut pada Balita

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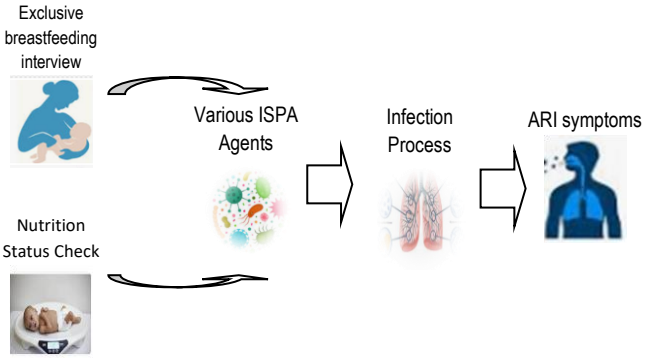
Abstract
Acute Respiratory Infection (ARI) in Indonesia generally occurs in urban areas and always ranks first as a cause of death in infants or toddlers. Studies on the incidence of ISPA in toddlers in rural areas are still rarely studied. This study aims to analyze the relationship between nutritional status and exclusive breastfeeding with the incidence of ARI in toddlers. This study was an analytic survey study with a case-control design. The population in this study consisted of 68 toddlers diagnosed with ISPA and all of them were sampled with a ratio of 1:1 and the total sample was 136 people. The toddler's mother pleaded as the respondent. The instruments used were questionnaires and health cards (KMS) for toddlers. Data analysis used is chi square. Statistical analysis of the relationship between nutritional status and the incidence of ARI (P=0.001) and the relationship between exclusive breastfeeding and ARI was obtained (P=0.001). This means that there is a significant relationship between nutritional status and exclusive breastfeeding program and the incidence of ARI. Nutritional status and exclusive breastfeeding programs contribute to the incidence of ARI among toddlers in rural areas. This study recommends that mothers prioritize giving primary food to babies in the form of exclusive breastfeeding for 2 years according to the guidance of the Koran. This action will greatly affect the nutritional status of toddlers, especially in preventing ARI.

Abstrak
Infeksi Saluran Pernapasan Akut (ISPA) di Indonesia umumnya terjadi di perkotaan dan selalu menempati urutan pertama sebagai penyebab kematian pada bayi atau balita. Studi mengenai kejadiaan ISPA pada balita di daerah pedesaan masih jarang dikaji. Penelitian ini bertujuan untuk menganalisis hubungan status gizi dan ASI ekslusif dengan kejadian ISPA pada balita. Penelitian ini merupakan penelitian survei analitik dengan desain case control.Populasi dalam penelitian ini merupakan balita yang terdiagnosis sebagai penderita ISPA sebanyak 68 orang dan seluruhnya dijadikan sampel dengan perbandingan 1:1 dan keselurug sampel berjumlah 136 orang. Ibu balita berperas sebagai respnden. Instrumen yang digunakan adalah kuesioner dan kartu menuju sehat (KMS) balita. Analisis data yang digunakan adalah chi square. Analisis statistik hubungan antara status gizi dengan kejadian ISPA (P=0,001) dan hubungan antara ASI eklusif dengan ISPA diperoleh (P=0,001).Artinya bahwa ada hubungan yang signifikan antara ststus gizi dan program ASI ekslusif dengan kejadian ISPA. Status gizi dan program ASI eklusif berkontribusi terhadap kejadian kejadian ISPA pada balita di daerah pedesaan. Penelitian ini merekomendasikan ibu untuk memperioritaskan pemberian makanan utama pada bayi berupa ASI eksklusif selama 2 tahun sesuai dengan tuntunan Al-Quran. Tindakan ini akan sangat berpengaruh pada status gizi balita utamanya dalam mencegah penyakit ISPA.

Graphical Abstract



Keyword
breast feeding; infant; mothers; nutritional status; toddlers

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INTRODUCTION

ISPA ranks in the top 10 diseases in children under five and causes death in children under five in developing countries, especially in rural areas (Hassen et al., 2020). The morbidity rate due to ISPA in children under five years of age is 41 per 1,000 children and increases again in toddlers under the age of 2 years by 45 per 1,000 children. It is estimated that every year deaths from ARI in children are around 2,200 children every day or 100 children every hour, and 1 child per second. Throughout the world, ARI is the highest infectious disease as a cause of death in children, especially toddlers compared to other infectious diseases (UNICEF, 2020).

Acute Respiratory Infection (ARI) in Indonesia always ranks first as the cause of infant mortality, and ranks second as the cause of death for children and adolescents. The number of ARI cases in under-fives in Indonesia is estimated at 5,394,598, and the Case Fatality Rate (CFR) of under-fives due to ARI pneumonia reaches 498 cases (0.16%). This number may still be unreported if sufferers do not enter health services such as hospitals and health centers (Kemenkes RI, 2020). Many factors can be associated with the incidence of ARI in toddlers, such as environmental factors, behavioral factors, health service factors and genetics (Hernández-Díaz et al., 2019; Nhung et al., 2018; Wang et al., 2016; Windi et al., 2021). Poor residential environmental factors and community behavior (mothers under five) have been shown to contribute to the incidence of ARI (Ariano et al., 2019). Nutritional problems are also an important factor that must be considered in the growth process of a toddler (Calder et al., 2020). Toddlers with poor nutritional status are vulnerable to various diseases, especially infectious diseases (Freeman et al., 2017; Irma et al., 2021).

The exclusive breastfeeding program is a strategic program in developing countries in improving the nutrition and health of children, especially toddlers (Balogun et al., 2015). Breast milk is the best source of nutrients and bioactives for newborns (Andreas et al., 2015). Adequacy of nutrition for infants, especially aged 0-6 months, can build immunity from children and fully support their growth. Mother's Milk (ASI) is a natural, best and perfect food for babies. Breast milk contains all the nutrients that are suitable for the growth and development of babies (Kemenkes RI, 2020).

Data from the Southeast Sulawesi Health Office regarding the incidence of ARI in children under the age of 5 in 2020 recorded 34,968 cases, with the highest incidence of cases recorded in the Kendari City area of 6,487 and the lowest cases occurring in the Konawe Islands region with a total of 270 cases. And the incidence of ARI in children under the age of 5 years in the Konawe Regency area is 1,799 cases. From the ISPA data in Konawe District, one of the puskesmas areas that became the highest contributor to ISPA cases was the Sampara Health Center. This can be proven that ISPA cases at the Sampara Health Center are always in the top 3 out of 10 diseases recorded each year (Dinas Kesehatan Provinsi Sulawesi Tenggara, 2022).

Several studies have proven that there is a simultaneous relationship between exclusive breastfeeding and the incidence of ARI in infants (Ahmed et al., 2020; Ghimire et al., 2022; Mulatya et al., 2020; Pinzón-Rondón et al., 2016). However, studies on the effect of breastfeeding on ARI with a focus on rural areas are still rare. This study aims to determine the contribution of nutritional status and exclusive breastfeeding programs to the incidence of ARI in rural areas.

METHODS

This research is an analytical survey research with a case control study design. The population in this study were toddlers who were recorded as many as 68 people with ARI in rural areas, the working area of the Sampara Health Center, Konawe Regency, Southeast Sulawesi. Sampling of cases was taken using a non-probability sampling technique or a total sample of 68 people with ISPA, with a comparison between the case sample and the control sample was 1: 1 so that the total sample was 136 children under five. The control sample is the closest neighbor of the case sample who was visited at his home and is in good health. The mother of the toddler acts as a respondent who can provide accurate information regarding the exclusive breastfeeding program and the nutritional status of the toddler based on the measurement results of the health worker (doctor, midwife or nurse) recorded on the toddler's health card (KMS). ARI in this study was determined based on the results of a diagnosis by a trained doctor or paramedic in the working area of the Sampara Health Center which was divided into 2 criteria, namely ARI and no ARI. The data collection instruments in this study were in the form of KMS for toddlers and questionnaires that had been tested for validity and reliability tests. Statistical analysis was carried out

Table 1
Characteristics of Mothers and Toddlers

Characteristics	Frequency	Percentage
Age		
16-25 Years	42	30,9
26-35 Years	83	61,0
36-45 Years	11	8,1
Mother's Education Level		
No school	6	4,4
Elementary school	1	,7
Junior High School	7	5,1
Senior High School	67	49,3
Higher Education (DIII/S1/S2)	55	40,4
Toddler Age		
0 - 12 Months	44	32,4
13 – 24 Months	33	24,3
25 – 59 Months	59	43,4
Toddler Gender		
Man	77	56,6
Woman	59	43,4

using the chi square test. to see the contribution of nutritional status and exclusive breastfeeding to the incidence of ARI in the Sampara health center work area with α = 0.05. The involvement of respondents in this study was through signing an informed consent form. This research was also carried out on the recommendation or ethical merit of the health research ethics committee at Halu Oleo University.

RESULTS

Based on Table 1, it can be seen that the majority of respondents are in the age group of 26-35 years, namely 83 (61.0%) respondents and at least 36-45 years of age, namely 11 (8.1%). In terms of education level, the majority of respondents were at the high school level, namely 67 (49.3%) and the least education level was elementary school, namely 1 (0.7%). For toddlers the majority are aged 25-59 months, namely 59 (43.4%) and the least aged 13-24 months, namely 33 (24.3%), while according to gender the majority of toddlers, namely 77 (56.60%) are boys – male and 59 (43.4%) were female.

Table 2 shows that of the 136 respondents, ARI children under five have the same number as non ARI children, namely 68 (50.0%) respondents because it is adjusted for the number of samples and the comparison between the case sample and the control sample. Table 2 also shows that of the 136 respondents, it was found that 38 (27.9%) of the under-fives had poor nutritional status and 98 (72.1%) of the under-fives had good nutritional status. Furthermore, from 136 respondents, it was found that 63 (46.3) respondents were not doing exclusive breastfeeding and 73 (53.7%) respondents were doing exclusive breastfeeding.

Table 3 shows that of the group with ISPA, there were 38 (27.9%) respondents who had poor nutritional status and in the non-ARI group, there were no toddlers who had malnutrition status. The results of the Ujichi square obtained a P value (0.001 < α (0.05). Statistically the results of this analysis could be interpreted that there was an effect of nutritional status on the incidence of ISPA in toddlers in rural areas in the working area of the Sampara Health Center. Table 3 also shows that from the ISPA group, There were 61(44.9%) respondents who did not practice exclusive breastfeeding and in the non-ARI group, there were 2(1.5%) respondents who did not practice exclusive breastfeeding. Chi square test results obtained P value (0.001) <α (0.05) Statistically the results of this analysis can be interpreted that there is an effect of exclusive breastfeeding on the incidence of ARI in toddlers in the working area of the Sampara Health Center.

DISCUSSION

Nutritional Status and ARI Incidence

Nutritional status is a state of the body caused by a balance between nutrient intake and needs. Nutritional status is influenced by food consumption and the use of nutrients in the body. A body that obtains enough nutrients and uses them efficiently will

Table 2
Distribution of Respondents According to ARI Incidence, Nutritional Status and Exclusive Breastfeeding

Variables	Frequency	Percentage
ARI incident		
Yes	68	50
No	68	50
Nutritional status		
Less	38	27.9
Good	98	72.1
Exclusive Breastfeeding		
Not Exclusive Breastfeeding	63	46.3
With Exclusive Breastfeeding	73	53.7

achieve an optimal nutritional status in which physical growth, brain development, work ability and general health are at the highest possible level (Septiawati et al., 2021). The incidence of undernutrition in this study was caused by mothers who did not pay attention to the growth and development of their toddlers due to a lack of mother's knowledge about the importance of paying attention to the nutritional status of their toddlers. In addition, many toddlers have low birth weight at birth. Based on the results of bivariate analysis, it was shown that from the group with ARI sufferers, there were 38 (27.9%) toddlers who had poor nutritional status and in the non-ARI group, there were no toddlers who had undernourished status. Statistically, the results of this analysis can be interpreted that there is a relationship between nutritional status and the incidence of ARI in toddlers. Malnutrition did not occur in toddlers who did not have ARI in this study because mothers paid attention to the development and growth of their toddlers. In addition, the mother pays attention to the nutrition that enters her toddler's body, in addition to paying attention to the nutrition that enters her toddler's body, the mother also regulates her toddler's eating pattern and sleep pattern.

The results of this study found that toddlers suffering from ARI had poor nutritional status and toddlers who did not suffer from ARI had good nutritional status. This is because toddlers with poor nutritional status will be more susceptible to infection due to decreased toddler immunity, as well as stunted toddler growth accompanied by low toddler immunity and cause toddlers to get sick easily. In addition, toddlers who have low birth weight at birth do not produce enough anti-immune substances so that they are more susceptible to infectious diseases. Infectious diseases are caused by a lack of immune system which affects the health of the body and results in a decrease in the body's immunity to infection. Toddlers with poor nutritional status will be more easily exposed to ARI compared to toddlers who have good nutritional status because of their weak immune system, so that in a state of malnutrition, toddlers will easily be exposed to ARI. In addition, nutrition is important for the prevention of ARI where the incidence of ARI can be prevented if the child has good nutrition. This assumption is supported by scientific evidence from research that the nutritional status of children can be affected by various types of tropical diseases. Tropical diseases in this case include diarrhea and ARI as well as tuberculosis or tuberculosis (Irma et al., 2021).

The age factor is an important variable of the host factor or people in the epidemiological study of the incidence of a disease. The toddler age group is a group that is susceptible to certain diseases, especially infectious diseases (Irma & Masluhiya, 2020). Toddlers are a vulnerable group to various

Table 3
Analysis of the Influence Between Nutritional Status and Exclusive Breastfeeding on ARI Incidence in Toddlers

Variables	ARI incident				Total		P Value
	Yes		No				
	n	%	n	%	n	%	
Nutritional status							
Less	38	27.9	0	0	38	27.9	0.001
Good	30	22.1	68	50	98	77.1	
Exclusive Breastfeeding							
Not Exclusive Breastfeeding	61	44.9	2	1.5	63	46.3	0.001
With Exclusive Breastfeeding	7	5.1	66	48.5	73	53.7	

health problems so that if they are malnourished, they will be very susceptible to infections, one of which is pneumonia. Toddlers with malnutrition will be more susceptible to ISPA compared to toddlers with normal nutrition because of their weak immune system. Infectious diseases themselves will cause toddlers to have no appetite and lead to malnutrition. In a state of malnutrition, toddlers are more susceptible to severe ARI and even longer attacks (Sunarni et al., 2017).

In addition, one of the factors causing the occurrence of ARI in toddlers is nutritional status, where poor nutritional status is one of the factors that can facilitate the process of disrupting the hormonal and immune systems in the toddler's body. Toddlers with poor nutritional status are more susceptible to ISPA than toddlers with good nutritional status because of their weak immune system. The results of this study are supported by the results of previous studies which found that there is a relationship between nutritional status and the incidence of ISPA in toddlers. This research was also conducted on toddlers (Giroth et al., 2022).

Exclusive Breastfeeding and ARI Incidence

Breast milk is the right food for babies because it contains compositions that are suitable for babies' needs and contain elements of immunity that are very necessary to protect babies from various infections effectively. Exclusive breastfeeding for newborns until they are 6 months old is one of the efforts to prevent ARI. ISPA is a disease that is often found in infants and children. Symptoms also vary from mild to severe. Severe ARI can become pneumonia which is the main cause of death in toddlers (Ardila et al., 2019). ISPA is a group of tropical disease infections that often occur in infants. Toddlers are the most vulnerable group to various tropical diseases including diseases of the respiratory tract and digestive system (Irma et al., 2021).

Toddlers who do not do exclusive breastfeeding because many mothers have less milk at the time of delivery. Due to the lack of breast milk at the time of delivery the baby is given formula milk as a substitute for breast milk so that he does not starve. In addition, many mothers give additional food to their toddlers at the age of three months because mothers think that providing additional food at that age will make their babies full longer. In this study, a relationship was obtained between exclusive breastfeeding and the incidence of ARI in toddlers in the working area of the Sampara Health Center. In this study, many toddlers who suffer from ARI do not do exclusive breastfeeding even though exclusive breastfeeding can reduce the risk of toddlers getting ARI because breast milk contains many ingredients that can protect toddlers from the dangers of germ infections and can prevent toddlers from germs that cause ARI. The reason for the importance of exclusive breastfeeding for the first 6 months is that exclusive breastfeeding is beneficial for the baby's immune system, growth and development. Exclusive breastfeeding can reduce infant mortality rates caused by various diseases that commonly afflict children such as diarrhea, pneumonia, and speed recovery when sick.

The results of this study found that many toddlers who suffer from ARI do not do exclusive breastfeeding and only a few toddlers who do not suffer from ARI do not do exclusive breastfeeding. This is due to the mother's lack of knowledge about exclusive breastfeeding due to lack of information regarding knowledge about exclusive breastfeeding. Exclusive breastfeeding has a positive impact early in life on increasing endurance and helping the growth and development of toddlers. Breast milk contains IgG and IgA antibodies which are components of the immune system that protect the body against infection. IgA is present in colostrum, which functions to prevent viruses and bacteria from adhering to the mucosal surfaces of the digestive tract and airways, while IgG plays a role in the immunity of infants up to the age of 6-9 months. A toddler should continue to get exclusive breastfeeding for the first 6 months of life and continue until he is 2 years old or beyond. If the toddler's milk needs are not met, it can cause malnutrition problems in toddlers (Sirait, 2017).

Inadequate breastfeeding as a risk factor for the emergence of ARI in children under five is undoubted evidence. The protective effect of breastfeeding tends to reduce morbidity in the group of children who are breastfed, especially in the early months of life. Exclusive breastfeeding for 6 months or more provides a greater protective effect related to the dose response of the protective effect against infection. The greater the dose of breast milk given, the greater the protective effect produced. This can be explained that breastfeeding as passive protection affects the immune response of the child's system in various ways, namely maturational, anti-inflammatory, immunomodulatory, and antimicrobial. Several immune effects can be generated in the form of extended protection against ARI (Fadlila & Rahmawaty, 2015).

This research is also supported by previous research which found many factors related to the incidence of ARI such as exclusive breastfeeding programs and the character of the mother under five are also linked. For example, mother's occupation and knowledge about ISPA disease prevention. In addition, the educational factors of parents (mothers of toddlers also) have an effect (Chandra, 2017). Sari et al. (2019) who examined the relationship between exclusive breastfeeding and the incidence of ARI in infants (0-59 months) at the Pembina Palembang Health Center in 2017, found scientific evidence that there was a relationship between the exclusive breastfeeding program and the incidence of ARI.

Islamically, breast milk (ASI) is a type of food for babies that is halal and of very good quality, even though formula milk is also halal, breast milk for newborns is a type of food that is very good and of good quality. In this context, it can be said that formula milk is indeed halal but not thayyibaa (bad/low quality/low quality) when given to newborns. In line with this, in the study of medical and health science it turns out that breast milk can form and enhance the immune system of a child (Robi'aqalbi, 2019).

Exclusive breastfeeding is not only beneficial for the baby but also for the mother, including as a natural contraceptive when breastfeeding and before menstruation, maintaining the health of the mother by reducing the risk of developing breast cancer and helping the mother to bond with her child. As explained in the Al-Qur'an Surah Al-Baqarah/2:233 whose translation is:

> "*Mothers may breastfeed their children two complete years for whoever wishes to complete the nursing [period]. Upon the father is the mothers' provision and their clothing according to what is acceptable."*

The verse above explains that two years is the period when breastfeeding is considered perfect. This gives the mother a choice whether to breastfeed for two years or not and breastfeeding is not forced but according to the mother's wishes.

Given the importance of breastfeeding for babies because there is no milk or drink and any food that is commensurate with the goodness of breast milk. Even for mothers who cannot breastfeed their own children for certain reasons, God, through His word in the Koran, does not encourage parents to give other foods or drinks as a substitute for breast milk. However, God guides parents so that they can find other women to breastfeed their children. Even if they have to pay for wages. As God says in the continuation in QS. Al-Thalâq/65:6 whose translation is:

> *"...but if you are in discord, then there may breastfeed for the father another woman"*

Imam Ibnu Katsîr explained that this verse means that if a divorced husband and wife have different opinions, where the mother is not willing to breastfeed her child because of a discrepancy in the wages given by the father, then she may breastfeed her child to another woman. Even so, even in the context of married couples who are not divorced, this verse still applies, of course, in the appropriate context of "difficulties", such as health problems in the mother so that she cannot breastfeed her child directly, or other difficulties. What is clear is that the position of breast milk cannot be replaced by other types of food or drink for babies. Or in other words, it is better to be breastfed by other women than to switch to milk or other breast milk substitutes (Nurfitriani, 2022).

Even though breastfeeding does not always have to be directly from the mother's breast, because breast milk that is collected from the mother's breast and delayed is still relatively of the same quality, provided that the storage method is correct. In essence, for whatever reason, and if it does not cause harm, the mother must continue to breastfeed her child (Ismail, 2018).

This research has constraints and drawbacks, including the ability of mothers of toddlers to remember a history of exclusive breastfeeding which can lead to information bias, therefore researchers also ask questions about the history of exclusive breastfeeding for other family members besides mothers of toddlers. In addition, there were several respondents who were not included in this study because the data in the KMS for toddlers was not complete. The independent variables examined in this study are still lacking so that other variables are still needed to be examined. While the strength of this study is that all the independent variables studied are important variables in the process of disease occurrence and the results of this study will become basic data and important information for the incidence of ARI in toddlers, especially those in rural areas.

CONCLUSIONS

Nutritional status and the exclusive breastfeeding program are two factors that influence the incidence of ARI in toddlers in rural areas in the working area of the Sampara Health Center, Sampara District, Konawe Regency. Good nutritional status can prevent toddlers from ARI cases, as well as the implementation of a good exclusive breastfeeding program can support the nutritional needs of toddlers (0-1 month old babies) and help shape their body's immune system so as to reduce the chance of ARI occurring in toddlers. Based on the results of this study, the performance of health center staff in charge of the Maternal and Child Health (KIA) program and nutrition program needs to be maintained and continue to educate mothers, especially for pregnant women who visit the health center and education about good diet for toddlers and the importance of implementing the breastfeeding program exclusive. The results of this study are expected to contribute to the prevention and control of diseases, especially ARI in toddlers. The advantage of this research is that it can propose a conclusion that shows several factors about the incidence of ARI in toddlers. This study has limitations on the number of independent variables studied, therefore the researchers suggest for future researchers to try to analyze other factors on the incidence of ARI in toddlers.

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Irma wrote the manuscript, acquired the data, revised the manuscript, and read and approved the final manuscript. Kamrin and Harleli analyzed the data. Arini Handayani enrolled participants and collected data. All authors designed the study, formulated the concept, reviewed the manuscript, revised the manuscript, and performed the field work.

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COMPETING INTERESTS
The author(s) declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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