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**Original Research Article**

# Correlation between Parenting Style, Anemia, and History of Chronic Infection with Anthropometric Index for Toddlers 0-59 Months in Oesapa Health Center Work Area

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**Abstract:** Physical growth in infants and toddlers is often used as an indicator in measuring nutritional status. Parents and caregivers are very influential in the nutritional state of children. Children under five who have abnormal nutritional status have immune systems that can weaken, so they are susceptible to infectious diseases such as diarrhea and fever, and can also experience anemia. This research was conducted at the Oesapa Health Center. This research is analytic observational research design with a cross sectional approach. The number of respondents is 93 people taken using the technique simple random sampling. Retrieval of data using a questionnaire. From the results of statistical tests using Chi Square, it was found that there was a relationship between a history of chronic infection and the anthropometric index of TB/U toddler aged 0-59 months (p=0.021) and there was a relationship between a history of chronic infection and the anthropometric index of BB/TB toddler 0-59 month (0.001). The interventions carried out are providing education, counseling or leaflets to pregnant women, mothers who have babies under five regarding the problem of stunting and wasting, fostering Posyandu cadres to provide counseling on stunting, wasting, nutritional knowledge, maternal parenting and environmental hygiene and height measurement bodies routinely at posyandu activities every month to monitor the nutritional status of children at height/age on a regular basis.

**Keyword:** Nutritional Status, Antopometry, Parenting Style, Infectious Diseases, Anemia.



## INTRODUCTION

The fastest growing period for a child is the first 1,000 days of life (1,000 HPK), during which time the child's brain and other important organs are formed. If this is not fulfilled and not monitored properly during the growth period, the child will experience disturbances in his growth, especially height and weight that are not suitable for his age [1]. Early detection and immediate nutritional intervention may be needed because toddlers are a group that is prone to malnutrition. Impaired growth and development that occurs can be corrected immediately and has a very good prognosis [2]. WHO estimates that the prevalence of stunting worldwide is 22% or as many as 149.2 million in 2020, and 49% of the 10.4 million under-five deaths in developing countries are related to malnutrition. Data from the Directorate General of Public Health, Ministry of Health of the Republic of Indonesia (2021) regarding the nutritional status of toddlers explains that children aged 0-59 months (toddlers) get toddlers by measuring the index Weight by Height (BB/TB) as many as 126,367 (1.1%) malnourished toddlers and 492,336 (4.3%) malnourished toddlers. One of the main problems of the Government of Indonesia for children under five is malnutrition status which has an impact on the high prevalence of anemia in children under five. The prevalence of anemia in children under five (0-59 months) worldwide reaches 47.7%, the highest prevalence is in Southeast Asia at 65.5% and in Indonesia it reaches 44.5% [3].

Period toddleris from the age of 0-59 months. Toddler is an abbreviation of under five years, one of the human age periodswiththe age range of one to five years or commonly used month calculations, namely the age of 12-60 months. Toddlers are a group that shows

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rapid body growth, thus requiring high and relatively large amounts of nutrients per kilogram of body. In toddlers there is a range of changes in growth and development, namely the range of fast and slow. In the process of development it has physical, cognitive, self-concept, and social behavior characteristics. During this toddler period, if the growth period is not properly monitored, there will be disturbances so that it cannot be corrected in the next period until adulthood [2].

The prevalence of stunting in toddlers in Indonesia is quite worrying. Nationally, the prevalence of stunting in 2018 is30.8%. The World Health Organization (WHO) stipulates that the number of public health problems does not exceed 20%. Thus Indonesia is included in a country that has problems with public health. Based on data from the 2021 Indonesian Toddler Nutrition Status Survey (SSGBI), the prevalence of stunting is currently still at 24.4% or 5.33 million children under five. The prevalence of stunting has decreased from previous years. East Nusa Tenggara has 15 districts categorized as red. The red label is pinned on NTT because 15 districts in NTT have a prevalence of stunting under five above 30%. The results of the 2018 Basic Health Research (Riskesdas) showed that the prevalence of stunting in toddlers was 42.7% in NTT. Based on the Central Bureau of Statistics, East Nusa Tenggara Province ranks first with the highest ratio of people with malnutrition in 2018 (per 10,000 population), namely 9.7%. As for stunting, in 2018 it was 42.6% and in 2021 it decreased to 23.30%. Although the prevalence of stunting has decreased, the rate is still high. The prevalence of stunting in Kupang City in 2018 reached 23.7%. The latest stunting data for 2022 for the Oesapa Health Center is in the very high category with a percentage of 31.3% while the prevalence of wasting is 14.9%.

Physical growth in infants and toddlers is often used as an indicator in measuring nutritional status.Growth isincreasethe size and number of cells in all parts of the body that can be measured quantitatively, such as height, weight, and head circumference [4]. Growthand child development is very important as it will bethe basis of the quality of the nation's next generation. The degree of children's health reflects the health status of the nation, because children have abilities that can be developed in continuing the nation's development. Globally every year more than 200 million children less than 5 years show developmental delays and 86% occur in developing countries. About 43% of children in developing countries are feared to experience developmental disorders. Not fulfilling the potential for child development will cause the child's income in adulthood to decrease so that it will have implications for the national development of a nation [2].

Intervention needs to be done to prevent stunting. Intervention can start with the First 1000 Days of Life (1000 HPK). 1000 HPK begins during pregnancy and the first 2 years of life. Nutrition interventions at 1000 HPK will have a big impact because children's growth and development occurs very quickly. After passing the 1000 HPK period, children must still be given attention by their parents by providing nutritious food and maintaining healthy environmental conditions. Research in Zimbabwe shows that providing nutritious food can reduce stunting rates by 8%, while research in Burkino Faso explains that an unhealthy environment is related to the incidence of stunting in toddlers. The role of parents is very large in preventing and overcoming the problem of stunting. This is because toddlers are still very dependent on their parents, especially mothers. Many parental factors are associated with stunting, including education, occupation, and parental knowledge of nutrition, as well as the number of family members. Some of these parental factors are related to the distribution of food in the family which ultimately affects the amount of intake of toddlers [5].

While the factors that cause wasting are grouped into three, namely, based on mother, child and family factors. Maternal factors are exclusive breastfeeding, parenting style, mother's education level, mother's level of knowledge, and employment status. Child factors are gender, age, nutritional intake, infectious diseases and low birth weight. Family factors are family food security, economic level and number of family members.

Parents and caregivers are very influential in the nutritional state of children. Good parenting factors will be able to optimize the quality of the nutritional status of infants under five [6]. The emergence of malnutrition is not only from food but also due to illness, both current illnesses and past medical history. Children under five who have abnormal nutritional status have immune systems that can weaken, so they are susceptible to infectious diseases such as diarrhea and fever, and can also experience anemia [3]. Children who still need parents as caregivers or caretakers, of course, greatly determine the nutritional intake given to children. If a child's nutrition is deficient, it will have an impact on stunting the growth and development of the brain, decreased immunity and low immunity against infection [7]. Researchers are interested in conducting this research to find out the relationship between parenting style, anemia, and chronic infections with the Anthropometric Index for Toddlers 0-59 months at the Oesapa Health Center because of the high prevalence of stunting and wasting.

## METHOD

This research is a quantitative study using an analytic observational research design with a cross sectional approach. This research was conducted in the

Work Area of the Oesapa Health Center. The Oesapa Health Center has a high presentation of stunting and wasting. The research will be conducted in September-October 2022. The samples in this study are all toddlers aged 0-59 months in the working area of the Oesapa Health Center who take part in Posyandu in October 2022.

Population in this study were all toddlers aged 0-59 months in the working area of the Oesapa Health Center with a total of 2962 people. The sampling technique from the population in this study was simple random sampling, because the members of this research population were considered homogeneous because the samples taken were infants aged 0-59 months who actively participated in Posyandu using the Leme show formula and obtained a total sample of 93 respondents.

The independent variable in this study namelyparenting style, anemia (hemoglobin level) and history of chronic infection. The dependent variable is the variable that is influenced or the result of the independent variable. The dependent variable in this study is toddler growth in this case the anthropometric index consisting of TB/U, BB/TB dan Lingkar Lengan Atas (LILA).

The tools and materials used in this study were a history of disease questionnaire consisting of 4 questionsanswer "Yes" and "No", and the parenting pattern questionnaire consists of 15 questions with 3 answers consisting of "Always" (score 3), "Sometimes" (score 2), and "Never" (score 1). Then these answers were categorized into Good (score > 40), Moderate (score 20-40) and Bad (score <20).

The test used is Chi Square. Chi Square is used to test whether there is a relationship between each variable.

## RESULTS AND DISCUSSION

### A. Descriptive Analysis

#### 1) Characteristics of Respondents based on General Characteristics

Based on the results of the study, it was found that the general characteristics of the respondents included age and sex of toddlers 0-59 months. The general characteristics of the respondents can be seen in Table 1.

**Table 1: Distribution of Respondents based on General Characteristics**

| Characteristics General | Total | |
|---|---|---|
| | n | % |
| **Age** | | |
| 0-12 months | 32 | 34,4 |
| 13-24 months | 28 | 30,1 |
| 25-36 months | 18 | 19,4 |
| 37-48 months | 11 | 11,8 |
| 49-59 months | 4 | 4,3 |
| **Amount** | **93** | **100** |
| **Gender** | | |
| Man | 35 | 37,6 |
| Woman | 58 | 62,4 |
| **Amount** | **93** | **100** |

Based on Table 1, the results show that most of the respondents are infants (0-12 months) that is as much as 34.4% and under-aged children (13-24 months) are 30.1%, and for gender the majority of respondents are women, namely 62.4%.

#### 2) Characteristics of Respondents based on Parenting Style, Anemia and Chronic Infection History

**Table 2: Distribution of Respondents based on Parenting Style, Anemia and Chronic Infection History**

| Parenting Style, Anemia and Chronic Infection History | Total | |
|---|---|---|
| | n | % |
| **Parenting** | | |
| Good | 34 | 36,6 |
| Currently | 55 | 59,1 |
| Bad | 4 | 4,3 |
| **Amount** | **93** | **100** |
| **Anemia** | | |
| Yes | 22 | 23,7 |
| No | 71 | 76,3 |

| | | |
|---|---|---|
| **Amount** | **93** | **100** |
| **Chronic infection history** | | |
| Yes | 37 | 39,8 |
| No | 56 | 60,2 |
| **Amount** | **93** | **100** |

Based on Table 2. shows the results that most of the respondents parenting style is 59.1%. Based on Table 2, the results show that most of the respondents did not experience anemia, namely 76.3%. Based on Table 4.6, the results show that most of the respondents did not have a history of chronic infection, namely 60.2%.

**3) Respondent Characteristics based on Anthropometric Index**

**Table 3: Distribution of Respondents based on Anthropometric Index**

| Anthropometric Index | Total | |
|---|---|---|
| | n | % |
| **TB/U** | | |
| Stunting | 52 | 55,9 |
| Not Stunting | 41 | 44,1 |
| **Amount** | **93** | **100** |
| **BB/TB** | | |
| Wasting | 58 | 62,4 |
| No Wasting | 35 | 37,6 |
| **Amount** | **93** | **100** |
| **LILA** | | |
| Normal | 58 | 62,4 |
| Malnutrition | 35 | 37,6 |
| **Amount** | **93** | **100** |

Based on Table 3, the results show that most of the respondents experienced stunting, namely 55.9%. Those who experienced wasting were as many as 62.4% and most of the respondents were normal, namely as many as 62.4%.

**B. Bivariate analysis**

**1) Correlation between parenting style and the anthropometric index of TB/U for toddlers 0-59 months**

**Table 4: The relationship between parenting style and the anthropometric index of height/age**

| Parenting | TB/U | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Stunting | | Not Stunting | | | |
| | n | % | n | % | n | 0.431 |
| Good | 22 | 42,3 | 12 | 29,3 | 34 | |
| Currently | 28 | 53,9 | 27 | 65,9 | 55 | |
| Bad | 2 | 3,8 | 2 | 4,8 | 4 | |
| **Amount** | **52** | **100** | **41** | **100** | **93** | |

Based on Table 4, the results show that the respondents who experienced the most stunting were respondents with moderate parenting styles, namely 53.9%. Based on the theory says that one of the factors that play an important role in the nutritional status of toddlers is parenting style. Nutritional problems, especially stunting, are influenced by many factors that influence each other in a complex manner. One that influences it is the mother or caregiver. Stunting is influenced by the mother's ability to provide adequate food for the child and parenting style which is influenced by factors of family income, education, behavior and number of siblings. Toddlers really need attention and affection from their parents, one of which is the pattern of food consumption [8].

The results of the chi-square statistical test showed that there was no significant effect ($p = 0.431 > 0.05$) between parenting style and the incidence of stunting. There is no relationship between parenting style and stunting because Stunting is influenced by many factors, namely low energy and protein intake, low economic status, low parental education and infectious diseases. Then, stunting can be affected by limited health services including health services for mothers during pregnancy, lack of household/family access to nutritious food and lack of access to clean water or sanitation [9].

In line with Winagun's research, *et al.,* (2019) stated that there is no relationship between maternal parenting and stunting because mothers with good

parenting tend to have toddlers with better nutritional status than mothers with poor parenting.

**2) Correlation between parenting style and anthropometric index of BB/TB for toddlers 0-59 months**

**Table 5: The relationship between parenting style and the anthropometric index of BB/TB**

| Parenting | BB/TB | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Wasting | | No Wasting | | | |
| | n | % | n | % | n | 0.581 |
| Good | 23 | 39,7 | 11 | 31,4 | 34 | |
| Currently | 32 | 55,1 | 23 | 65,7 | 55 | |
| Bad | 3 | 5,2 | 1 | 2,9 | 4 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 5, the results show that the respondents who experience the most wasting are those with parenting styles being with a percentage of 55.1%. Based on the theory it was found that Parenting style has a role in the incidence of wasting in toddlers due to food in take toddler completely controlled by his mother. Mothers with good parenting tend to have toddlers with better nutritional status than mothers with poor parenting styles. However, in this study, mothers with good parenting styles did not necessarily have toddlers with smaller wasting problems than mothers with poor parenting styles. This could be because even though the mother's parenting style is good, in poor families there are limitations in meeting their daily needs so that the mother's parenting style does not affect wasting. The problem of wasting in toddlers describes the nutritional deficiencies experienced by toddlers in a relatively short period of time. Wasting conditions can also be influenced by other factors, such as a history of infectious diseases and household food availability [10].

The results of the chi-square statistical test showed that there was no significant effect ($p = 0.581 > 0.05$) between parenting style and wasting. This is in line with the research of Ni'mah and Muniroh (2017) which states that there is no significant relationship between parenting style and wasting.

**3) Relationship between parenting style and LILA Toddlers 0-59 months**

**Table 6: Relationship between parenting style and LILA**

| Parenting | LILA | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Normal | | Malnutrition | | | |
| | n | % | n | % | n | 0.438 |
| Good | 24 | 41,4 | 10 | 28,6 | 34 | |
| Currently | 32 | 55,2 | 23 | 65,7 | 55 | |
| Bad | 2 | 3,4 | 2 | 5,7 | 4 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 6, it shows that the respondents who experienced the most malnutrition based on LILA were those with moderate parenting styles with a percentage of 65.7%. In this study, mothers with good parenting styles did not necessarily have children with less malnutrition problems than mothers with poor parenting styles. This could be because even though the mother's parenting style is good, there are limitations in meeting daily needs so that the mother's parenting style does not affect the occurrence of malnutrition [10].

Test results statistics chi-square showed that there was no significant effect ($p = 0.438 > 0.05$) between parenting style and the LILA index.

**4) The relationship between anemia and the anthropometric index of BB/TB under five 0-59 months**

**Table 7: The relationship between anemia and the anthropometric index of BB/TB**

| Anemia | BB/U | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Stunting | | Not Stunting | | | |
| | n | % | n | % | n | 0.348 |
| Yes | 17 | 32,7 | 5 | 12,2 | 22 | |
| No | 35 | 67,3 | 36 | 87.8 | 71 | |
| **Amount** | **52** | **100** | **41** | **100** | **93** | |

Based on Table 7, the results show that 32.7% of respondents experienced anemia and stunting. In addition to a lack of nutritional intake, anemia that occurs in children can be caused by other things, for example due to acute illness, chronic disease or failure of the bone marrow to produce red blood cells. Therefore, to find out the exact cause of anemia, further examination is needed [11].

The results of the chi-square statistical test showed that there was no significant effect (p = 0.348 <0.05) between anemia and stunting.

**5) Correlation between anemia and anthropometric indices of BB/TB in infants 0-59 months**

**Table 8: The relationship between anemia and the anthropometric index of BB/TB**

| Anemia | BB/TB | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Wasting | | No Wasting | | | |
| | n | % | n | % | n | 0.171 |
| Yes | 11 | 19 | 11 | 31,4 | 22 | |
| No | 47 | 81 | 24 | 68,6 | 71 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 8, the results show that the percentage of respondents who experienced anemia and wasting was 19%. The results of the chi-square statistical test showed that there was no significant effect (p = 0.171 > 0.05) between anemia and wasting. This research is in line with research conducted by Nirwanto, *et al.,* (2022) which stated that there was no relationship between children's hemoglobin levels and the incidence of stunting or wasting.

**6) The relationship between anemia and LILA Toddlers 0-59 months**

**Table 9: The relationship between anemia and LILA**

| Anemia | LILA | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Normal | | Malnutrition | | | |
| | n | % | n | % | n | 0.386 |
| Yes | 12 | 20,7 | 10 | 28,6 | 22 | |
| No | 46 | 79.3 | 25 | 71.4 | 71 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 9, the results show that the most respondents who experienced anemia and malnutrition were 28.6%. Although the growth rate (weight, height and high nutritional status) of malnourished children who are anemic is lower than that of malnourished children who are not anemic, statistically there is no significant difference in growth rates between malnourished anemic children and malnourished children who are not anemic [12].

The results of the chi-square statistical test showed that there was no significant effect (p = 0.873 > 0.05) between anemia and the LILA index.

**7) Correlation between History of Chronic Infection and Anthropometric Index of BB/U Toddlers 0-59 months**

**Table 10: Relationship between history of chronic infection and the anthropometric index of BB/U**

| Chronic infection history | TB/U | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Stunting | | Not Stunting | | | |
| | n | % | n | % | n | 0.021 |
| Yes | 20 | 38.5 | 17 | 41.5 | 37 | |
| No | 32 | 61.5 | 24 | 58.5 | 56 | |
| **Amount** | **52** | **100** | **41** | **100** | **93** | |

Based on Table 10, the results show that respondents who have a history of chronic infections who experience stunting are those with a percentage of 38.5%. Based on the theory, it says that babies under five who have a history of chronic infectious diseases are one of the causes of stunting. Infectious diseases are the dominant factor causing stunting in infants under five. Infectious diseases can be caused by inadequate nutritional intake in children and mothers during pregnancy and inadequate access to sanitation and clean water. Lack of access to sanitation and clean water as well as poor hygiene behavior in children can cause diarrhea resulting in malabsorption of nutrients and impact on growth [13].

The results of the chi-square statistical test showed that there was a significant effect (p = 0.021 <0.05) between a history of chronic infection and the

incidence of stunting. The results of this study are in line with research conducted by Desyanti and Nindya (2017) which stated that there was a significant relationship between a history of diarrheal disease and the incidence of stunting with a p-value = 0.025. The results of Yulnefia and Mega's research (2022) also show that there is a significant relationship between a history of infectious diseases and the incidence of stunting at the age of 24-36 months with a p-value = 0.001. This is because stunting is a linear growth disorder that can be caused by chronic malnutrition and recurring chronic infectious diseases. When the body has an infection [13].

In this study it was also found that there were children who did not have a history of chronic infection, but were stunted. This is because stunting can be influenced by other factors such as nutritional intake factors, namely malnutrition in infants and toddlers caused by the failure of exclusive breastfeeding, the process of stopping breastfeeding early, and not paying attention to the quality and quantity of complementary foods for breast milk (MPASI) given to children. Thus causing stunting. In contrast, this study also obtained infants under five who had a history of chronic infection, but did not experience stunting because stunting can be influenced by good nutrient intake during episodes of illness so that children's growth remains good, besides that parents are active in accessing health services, resulting in stunting. can be prevented early.

**8) Correlation between History of Chronic Infection and the anthropometric index of BB/TB in Toddlers 0-59 months**

**Table 11: Relationship between history of chronic infection and anthropometric index BB/TB**

| Chronic infection history | BB/TB | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Wasting | | No Wasting | | | |
| | n | % | n | % | n | 0.001 |
| Yes | 24 | 41,4 | 13 | 37,2 | 37 | |
| No | 34 | 58,6 | 22 | 62,8 | 56 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 11, the results show that 41.4% of respondents had a history of chronic infection and experienced wasting. Based on the theory it was found that the high prevalence of wasting is influenced by many risk factors such as nutritional intake, family income, history of infectious diseases, immunization status, and exclusive breastfeeding.

ISPA is an infectious disease that is closely related to nutritional problems. Signs and symptoms of ISPA vary, including coughing, difficulty breathing, dry throat, runny nose, fever and earache. ISPA is caused by more than 300 types of bacteria, viruses and rickettsiae. Various studies have shown that children lose weight every day during ISPA. It is estimated that the heat that accompanies ISPA plays an important role in reducing nutrient intake due to decreased appetite in children. Diarrhea is an important cause of malnutrition caused by anorexia in people with diarrhea, so that children eat less than usual and their ability to absorb nutrients is also reduced. On the other hand, the body's need for food increases as a result of infection. Any occurrence of diarrhea can lead to malnutrition, so if the occurrence is prolonged, the impact on children's growth will decrease. Infectious diseases such as diarrhea, pneumonia, and malaria are the major causes of death. Half of the 5.9 million children under five die from infectious diseases. Based on the results of the study, it was obtained from a total sample of underweight children under five, 76.7% of them had a history of infectious diseases in the last month with a diagnosis of ISPA and diarrhea. The results of multiple logistic regression conducted by Namangboling *et al.,* (2017) showed that the most dominant variable related to and having an influence on nutritional status was a history of infectious diseases (p=0.025, OR:2.38). Of the total sample, 58.6% of children who had a history of infectious diseases, such as diarrhea and ISPA, included in the sample group with the category of thin and very thin nutritional status [14].

The results of the chi-square statistical test showed that there was a significant effect (p = 0.001 > 0.05) between history of chronic infection and wasting. This research is in line with research conducted by Erika, *et al.,* (2020) where based on the results of multivariate analysis, a history of infectious diseases is the dominant factor influencing the incidence of wasting (skinny nutrition) in toddlers aged 6-59 months in the working area of the Penjaringan I Village Public Health Center. This is in line with research conducted by Rochmawati, *et al.,* (2016) Toddlers who experience infectious diseases have a 5,714 chance of experiencing wasting. Nutritional status with the incidence of infection has a close relationship. Children who have poor nutritional status are prone to infection, because children do not have sufficient immune system. On the other hand, children who suffer from infections do not have enough appetite, as a result, children are malnourished and fall into undernourished status. Infectious diseases can also be caused by a lack of public health services, unhealthy environmental conditions,

**9) Correlation between History of Chronic Infection and LILA in Toddlers 0-59 months**

**Table 12: Relationship between History of Chronic Infection with the LILA index**

| Chronic infection history | LILA | | | | Total | P-Value |
|---|---|---|---|---|---|---|
| | Normal | | Malnutrition | | | |
| | n | % | n | % | n | 0.179 |
| Yes | 20 | 34.5 | 17 | 48,6 | 37 | |
| No | 38 | 65.5 | 18 | 51,4 | 58 | |
| **Amount** | **58** | **100** | **35** | **100** | **93** | |

Based on Table 12, the results show that 48.6% of respondents had a history of chronic infection and experienced malnutrition. Based on the theory, it was found that a history of chronic infection and malnutrition were related. Infection can cause children to experience malnutrition because during illness / infection, children experience decreased food intake, malabsorption, increased catabolism, impaired defense and immune function. Likewise, malnutrition can make children more susceptible to infection due to decreased immune system.

The results of the chi-square statistical test showed that there was no significant effect ($p = 0.179 > 0.05$) between history of chronic infection and the LILA index.

# CONCLUSION

There is a relationship between a history of chronic infection and the anthropometric index of TB/A in toddlers 0-59 months ($p = 0.021$) and there is a relationship between a history of chronic infection and an anthropometric index of weight/height of children under five (0.001). The interventions carried out are providing education, counseling or leaflets to pregnant women, mothers who have babies under five regarding the problem of stunting and wasting, fostering Posyandu cadres to provide counseling on stunting, wasting, nutritional knowledge, maternal parenting and environmental hygiene and height measurement bodies routinely at posyandu activities every month to monitor the nutritional status of children at height/age on a regular basis.

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