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The Relationship Between Infectious Disease History and Toddler Development in the Batu-Batu Health Center Work Area, Sultan Daulat District, Subulussalam Regency in 2023	**Alummi Anak Ampun** e-mail:alummiampun@gmail.com **Yasrida Nadeak** e-mail:yasrida.nadeak@gmail.com Mitra Husada Health College

Abstract.
According to data from the World Health Organization (WHO, 2018), around 200 million infants and toddlers experience gross and fine motor disorders. (Ministry of Health of the Republic of Indonesia (Depkes RI), 2013) reported that 0.4 million (16%) of Indonesian infants and toddlers experience developmental disorders, both fine and gross motor development, hearing disorders, low intelligence, and speech delays. This study aims to determine the Relationship between Infectious Disease History and Toddler Development in the Batu-Batu Health Center Work Area, Sultan Daulat District, Subulussalam City in 2023. This study uses an observational/survey research method. The type of research is descriptive analytical with cross-sectional. The population in this study were 120 toddlers in the Batu-Batu Health Center Work Area, Sultan Daulat District, Subulussalam City in 2023. The sample in this study was 75 respondents with a purposive sampling technique. The research instrument used a questionnaire. The conclusion of this study shows that the majority of children with a history of infectious diseases were 52 respondents (52.6%) and the minority of children with no history of infectious diseases were 23 respondents (47.4%). The majority of children with appropriate development were 32 respondents (47.4%) and the minority of children with developmental deviations were 23 respondents (31%). And there is a relationship between a history of infectious diseases and child development at the Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023 where the p-value is 0.017 (p <0.05).

Keywords: History of Infectious Diseases, Toddlers

I. INTRODUCTION

According to data from the World Health Organization (WHO, 2014), around 200 million infants and toddlers experience gross and fine motor disorders. (The Ministry of Health of the Republic of Indonesia (Depkes RI), 2013) reported that 0.4 million (16%) of Indonesian infants and toddlers experience developmental disorders, both fine and gross motor development, hearing disorders, low intelligence, and speech delays.

National data according to the Indonesian Ministry of Health that in 2016 as many as 11.5% of toddlers in Indonesia experienced growth and development disorders (Ministry of Health of the Republic of Indonesia 2016). Disrupted child development will contribute to morbidity that occurs throughout the child's life cycle, the transmission of poverty between generations, and in the long term can hold back the pace of development of a country (Susenas and Riskesdas, 2018)

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Human development in Indonesia continues to progress, this is based on the results of the Central Statistics Agency (BPS) records. Where the achievement of 71.92 Human Development Index (HDI) in Indonesia, there was an increase of 0.53 points to grow by 0.74 percent compared to 2018. One indicator of the increase in HDI in Indonesia is its success, namely being able to suppress the incidence of infectious diseases such as Upper Respiratory Tract Infections (URTIs), Pneumonia, Pulmonary Tuberculosis, Hepatitis, Diarrhea and Malaria (BPS, 2020).

In 2011, globally there were around 101 million children under the age of 5 who were underweight and 165 million children experienced stunting. Based on the 2013 Basic Health Research (Riskesdas) data, there were 37.2% of toddlers in Indonesia experiencing stunting. This means that there was an increase compared to 2010, which was (35.6%) and 2007 (36.8%). Public health problems are considered severe if the prevalence of stunting is 30-39 percent and serious if the prevalence of stunting is ≥ 40 percent. Malnourished children tend to have an increased risk of morbidity and mortality and will often suffer from mental developmental delays, poor school performance and poor intellectual achievement.

There are 16% of Indonesian toddlers experiencing developmental disorders, both fine and gross motor development, hearing disorders, low intelligence and delays. The highest prevalence of developmental disorders occurs in language disorders (13.8%), followed by fine motor development disorders (12.2%). At the age of 4 years, children usually have mastered the basics of language development, but 5% to 8% of children experience language delays or disorders in preschool which may later be related to learning disorders, socio-emotional or behavioral problems until they are adults.

In North Sumatra in 2018, the number of toddler diarrhea sufferers served was 86,442 sufferers (33.07%). The highest cases of toddler diarrhea were in Toba Samosir Regency with 3,2426 sufferers or 99.39% and Mandailing Natal Regency with 6,124 sufferers or 70.14%. (Manalu, 2020).

Infection is one of the diseases that often occurs in toddlers, where one of the causes of infection is the poor nutritional status of toddlers, which is directly influenced by the lack of parental knowledge about nutritious food. One type of infectious disease in children that often occurs is diarrhea, the cause of which is 60-70% is rotavirus. Rotavirus is an infection that causes inflammation in the digestive tract so that it is susceptible to dehydration. Diarrhea is the leading cause of death in developing countries, the second cause of infant mortality worldwide and the number one cause of infant mortality worldwide. (Sumampow, 2017).

The morbidity and mortality rate due to diarrhea is still relatively high. Several surveys in Indonesia show that the morbidity rate of diarrhea for all ages is around 120-360 per 1000 population (12%-36%) and for toddlers suffering from one or two episodes of diarrhea each year, 76% of diarrhea deaths occur in infants and toddlers, especially in the first 2 years of age. (Hijriani, 2020)

Development is the process of increasing maturity and psychological function of humans. The quality of a child can be assessed from the growth and development process. The growth and development process is the result of the interaction of genetic factors and environmental factors. Genetic/hereditary factors are factors related to genes that come from the father and mother, while environmental factors include the biological, physical, psychological and social environment. Development depends on the maturity aspect of the human nervous system, namely the more perfect the maturity of the

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nerves, the more perfect the development pattern in children. The physical environment is one of the factors related to child development which is abiotic or water objects such as water, air, soil, weather, food, houses, heat, light, radiation and others. This physical environment interacts throughout time and plays an important role in the process of disease in society, for example, the lack of clean water supplies can especially cause diarrhea everywhere (Suamntri, 2017).

II. LITERATURE REVIEW

Infectious diseases are diseases caused by the entry and growth of microorganisms, a broad group of microscopic organisms consisting of one or many cells such as bacteria, fungi, parasites and viruses. Infectious diseases occur when interactions with microbes cause damage to the host body and the damage causes various symptoms and clinical signs. Microorganisms that cause disease in humans are called pathogenic microorganisms, one of which is pathogenic bacteria. Bacterial infections can occur in children and attack various organ systems in the child's body. Respiratory tract infections (27%) bacteria that often cause infection are Streptococcus pneumonia, Streptococcus group A and Haemophilus influenzae type B. Skin infections (7-10%) in children are usually caused by Staphylococcus aureus or Streptococcus group A. Gastrointestinal tract infections (5%) are often caused by Shigella, Escherchia coli, Camphylobacter. Urinary tract infections (0.7 -0.9%) are often caused by Escherchia coli, Klebsiella pneumonia, Proteus mirabilis. (Novard, 2016).

Lifestyle habits implemented by the community, especially in Indonesia, in suppressing positive cases of Covid-19 and to break the chain of transmission of this virus by getting used to wearing masks, washing hands with running water and maintaining distance from others, reducing travel outside the home, reducing direct meetings with others, increasing the body's immunity by regulating diet, consuming foods high in vitamins and minerals, consuming fruits and vegetables high in antioxidants, high in protein and amino acids, getting enough rest, not touching your face often, getting used to exercising regularly in open spaces and exposure to the morning sun and thinking positively about the things around us and living peacefully and happily (Purwanto, 2020).

The main clinical symptoms of Covid-19 are Fever, Cough, Shortness of Breath, Headache, Sore Throat and Rhinorrhea. Loss of smell or sense of smell was not among the common symptoms of Covid-19 until March 2020 when the pandemic began in western countries. However, with many cases worldwide until now, the general symptom that occurs in Covid-19 sufferers is loss of the sense of smell. According to Aziz et al. (2020) that dysfunction or loss of smell is a common symptom in Covid-19 patients, besides that with loss of smell it seems to have a milder disease course. (Marzuki, 2021)

III. RESEARCH METHODS

Types and Design of Research

This research method is observational/survey, namely data collected from respondents using questionnaires or surveys without intervening in the research subjects. The type of research is descriptive analytical with cross-sectional, namely studying the correlation between risk factors with effects in the form of certain diseases or health statuses. (Charsel, 2018).

Conceptual Framework

The conceptual framework of research is a description and visualization of the relationship or connection between one concept and another concept, between one variable and another variable of the problem to be researched (Notoadmojo, 2017).

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A concept is an abstraction formed by generalizing a concept. Therefore, the concept cannot be measured and observed directly, in order to be observed and measured, the concept must be described into variables and from these variables the concept can be observed and measured (Notoadmojo, 2017).

Location and Time of Research
Research Location
The location of this research is in the Working Area of Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023.
3.2.2 Research Time
This research was conducted from April – June 2023.

Population and Sample 3.4.1Population
The population of this study was 120 toddlers in the Batu-Batu Health Center Work Area, Sultan Daulat District, Subulussalam City in 2023.

Sample
The research sample was part of mothers and toddlers at the Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023. Meanwhile, the determination of the sample in this study was determined by purposive sampling and the Slovin formula with a margin of error set at 5% or 0.05 with the calculation being:
n = N/ (1+(N x e2))
So that
n = 120/ (1+(120 x 0.052))
n = 120/1.6
n = 75 people

Purposive sampling with a total of 75 respondents with the following inclusion criteria:
a. Age 0-23 months
b. Have a history of infectious diseases and have no history
c. Mother is willing to act as a respondent

Method of collecting data
Primary Data
Primary data collection is collected by researchers directly from data sources such as sample identity data (Name, Place and Date of Birth, Age) respondent data, infectious disease history data and child development data. Data collection by distributing questionnaires in the form of form links to respondents for them to fill out themselves by first explaining how to fill them out accompanied by researchers. Previously, the questionnaire had been tested first on a population that had almost the same characteristics in different places. For development data by collecting mothers and toddlers virtually or directly in the Batu-Batu Health Center Work Area, Sultan Daulat District, Subulussalam City in 2023.

Secondary Data
Secondary data for this study were taken from the Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023, as well as library studies (literature), and health journals related to this study.

IV. RESEARCH RESULTS AND DISCUSSION

Research result
Based on the results of the study entitled "The Relationship between History of Infectious Diseases and Child Development at Batu-Batu Health Center, Sultan Daulat District, Subulussalam City, the following results were obtained:
Table 4.1 Frequency Distribution Based on Child Age

No	Child Age	Amount	%
1	1-12 months	43	47.4
2	13-24 months	32	52.6
	Total	75	100

Based on table 4.1 above, it shows that the majority of children aged 13-24 months were 32 respondents (52.6%) and the minority aged 1-12 months were 43 respondents (47.4%).

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Table 4.2 Frequency Distribution Based on Child Order

No	What order do you come in your family	Amount	%
1	1st child	18	40.7
2	2nd child	26	41.8
3	3rd child	21	9.3
4	5th child	10	8.2
	Total	75	100

Based on table 4.2 above, it shows that the majority of children are 26 respondents (41.8%) and the minority are 5th, 10 respondents (8.2%).

Table 4.3 Frequency Distribution Based on Type of Infection

No	Infection History	Amount	%
1	There is a history of infection	44	52.6
2	No history of infection	31	47.4
	Total	75	100

Based on table 4.3 above, it shows that the majority of children with a history of infectious diseases were 44 respondents (52.6%) and the minority of children with no history of infectious diseases were 31 respondents (47.4%).

Table 4.4 Frequency Distribution Based on Child Development

No	Development	Amount	%
1	In accordance	32	47.4
2	Doubtful	20	36.4
2	Deviation	23	31.0
	Total	75	100

Based on table 4.4 above, it shows that the majority of children with appropriate development are 32 respondents (47.4%) and the minority of children with developmental deviations are 23 respondents (31%).

Based on the results of the study, it shows that the majority of children with a history of infectious diseases were 52 respondents (52.6%) and the minority of children with no history of infectious diseases were 23 respondents (47.4%). The majority of children with appropriate development were 32 respondents (47.4%) and the minority of children with developmental deviations were 23 respondents (31%). And there is a relationship between a history of infectious diseases and child development at the Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023 where the p-value is 0.017 ($p < 0.05$).

Infection is one of the diseases that often occurs in toddlers, where one of the causes of infection is the poor nutritional status of toddlers, which is directly influenced by the lack of parental knowledge about nutritious food. One type of infectious disease in children that often occurs is diarrhea, the cause of which is 60-70% is rotavirus. Rotavirus is an infection that causes inflammation in the digestive tract so that it is susceptible to dehydration. Diarrhea is the leading cause of death in developing countries, the second cause of infant mortality worldwide and the number one cause of infant mortality worldwide. (Sumampow, 2017).

Diarrhea is a major cause of morbidity and mortality in children in developing countries with an estimated 3-5 billion cases each year worldwide. Approximately 5-18 million deaths each year are caused by diarrhea. The main cause of death from diarrhea is dehydration as a result of loss of water and electrolytes through stool that is not replaced in balance. Diarrhea in its meaning is an increase in the amount and/or decrease in the consistency of stool that is excreted. Germs that cause diarrhea are usually spread through the fecal-oral route, including through

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food/drinks contaminated with feces and/or direct contact with the patient's feces. Several behaviors can cause the spread of enteric germs and increase the risk of diarrhea.

Acute respiratory tract infection (ARI) especially pneumonia is still the biggest cause of death in infants and toddlers, more than AIDS, malaria and measles. Even the World Health Organization (WHO) calls it "the forgotten killer of children". Pneumonia is said to be the main killer of toddlers in the world, based on WHO data from 6.6 million toddlers who died in the world, 1.1 million died from pneumonia in 2012 and 99% of childhood pneumonia deaths occurred in developing countries. While in Indonesia from the results of the 2012 SDKI it was stated that the toddler mortality rate was 40 per 1000. Toddler pneumonia is a disease that can be diagnosed and treated with technology and low cost, but if it is too late it will cause death in toddlers. (Directorate General of Disease Prevention and Control, 2018).

The morbidity and mortality rate due to diarrhea is still relatively high. Several surveys in Indonesia show that the morbidity rate of diarrhea for all ages is around 120-360 per 1000 population (12%-36%) and for toddlers suffering from one or two episodes of diarrhea each year, 76% of diarrhea deaths occur in infants and toddlers, especially in the first 2 years of age. (Hijriani, 2020).

Development is the process of increasing maturity and psychological function of humans. The quality of a child can be assessed from the growth and development process. The growth and development process is the result of the interaction of genetic factors and environmental factors. Environmental factors include biological, physical, psychological and social environments. Development depends on the maturity aspect of the human nervous system, namely the more perfect the maturity of the nerves, the more perfect the development pattern in children. The physical environment is one of the factors related to child development which is abiotic or water objects such as water, air, soil, weather, food, houses, heat, light, radiation and others. This physical environment interacts throughout time and plays an important role in the process of disease in society, for example, the lack of clean water supplies can especially cause diarrhea everywhere (Suamntri, 2017).

According to the researcher's assumption, children who have a history of infectious diseases such as diarrhea or ARI will affect the child's development, both social/language development, fine motor skills, gross motor skills and independence due to disturbances in nerve maturity caused by infections that occur in children.

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the results of the study, it shows that the majority of children with a history of infectious diseases were 52 respondents (52.6%) and the minority of children with no history of infectious diseases were 23 respondents (47.4%). The majority of children with appropriate development were 32 respondents (47.4%) and the minority of children with developmental deviations were 23 respondents (31%). And there is a relationship between a history of infectious diseases and child development at the Batu-Batu Health Center, Sultan Daulat District, Subulussalam City in 2023 where the p-value is 0.017 ($p < 0.05$).

Suggestion

For Research Locations

There are efforts to improve children's development through regular monitoring of children's development

For institutions

Mitra Husada Medan Health Sciences College provides knowledge to respondents about the Relationship between Infectious Disease

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History and Child Development through counseling.

For researchers
Researchers have a more optimal ability to examine the history of infections that are more related to child development.

For the community
People are taking better care of their children's health so that they do not get repeated infections so that children's development can proceed according to their age.

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