

The Factors That Influence the Incidence of Infection of Intestinal Worms in Children Under Five with the Problem of Nutritional Stunting in the South Timor Timor District (TTS)

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Abstract

The problem of nutritional stunting or child short is the condition of failure to thrive in infants (0-11 months) and young children (12–59 months) as a result of chronic malnutrition, especially in the first 1000 days of life so that the child is too short for her age. One of the factors that affect the nutritional problems in children toddlers is an infection of intestinal worms. The purpose of the research was to analyze the factors that condition the incidence of infection of intestinal worms in children toddlers with nutritional problems stunting.

This research method is quantitative research with Cross-Sectional Study. Observations between risk factors hygiene individual and environmental sanitation have an effect on the Infection of intestinal Worms in children under five with the Problem of Nutritional Stunting. This research was conducted in March – September 2021. Place of sampling in 8 Villages located in the working area of Puskesmas Nule District of Molo District North of the TTS, with a large sample of 230 children toddlers and sampling techniques random sampling simple. The independent variable is Environmental Sanitation and Hygiene of the individual and the dependent variable is the infection of intestinal worms in child centers this, is how data collection is done by interview, observation, and examination of toddler stool and analyzed in a Bivariate Chi-Square and Multivariate namely Logistic Regression.

The results showed the incidence of Infection of intestinal worms in children under five with the problem of nutritional stunting is influenced by factors Jamban type (Spicy). Floor (Land), a Means of Waste Disposal, habits of big water, habits of playing on earth, and habits of snacking simultaneously.

Keywords: helminth infections, hygiene, environmental sanitation

1. Introduction

Nutritional problems in children toddlers include the low nutritional status of both malnutrition and bad, obesity, and stunting. *Stunting* or short is the condition of failure to thrive in infants (0–11 months) and toddlers (12–59 months) because of chronic malnutrition, especially in the 1,000 days of life so that the child is too short for her age. Malnutrition occurs when the baby is in the womb and the early days after the baby is born, but the condition of stunting is new look after a child aged 2 years (Ramayulis Rita et al., 2018).

One of the factors that affect the problem of stunting in a toddler is a child suffering from worm infestation (infection of intestinal worms). Helminthiasis is an infectious disease caused by parasitic worms that can harm health. The disease helminthiasis which often infects with an extremely adverse impact is a worm infection transmitted through the soil or often called the “Soil-Transmitted Helminths (STH)”.

Helminth infections in children under five are generally influenced by the behavior of the child. The habit of playing with soil contaminated by the eggs of worms means fewer children get the attention of parents, poor *hygiene* of the individual, and environmental sanitation conditions are poor. An environment that does not meet the standard of health was a risk factor for the onset of the disorder of public health. Environmental problems include the lack of clean water supply, excreta disposal in random places such as inland, gardens, rivers, ponds, and others, the state of the house that is not healthy, garbage disposal, and sewage in residential areas that are less good are the causal factors of helminthiasis in children/toddlers (Rawina et al., 2012).

The results of research in Kupang Regency shows the Prevalence of infection of intestinal worms in children with

problematic nutrition (the status of malnutrition and poor nutritional status) in Kupang regency as many as 34 people (42%) and 46 people (56%) no infection of intestinal worms. Types of worms that are found based on the results of examination of br (79.4%) is *Ascariasis Lumbricoides*, *Trichuris Trichura* and *Enterobius Vermicularis* each of 5.9% and *Ancilostomi Duadenale*, Mix (*Ascariasis Lumbricoides* & *Eneterobius Vermicularis*) and mix (*Ascariasis Lumbricoides* & *Necator Americanus*) each of 2.9% (Olin & Paun, 2021).

2. Methods

This type of research is quantitative with Cross-Sectional Study. Observations between risk factors hygiene individual and environmental sanitation have an effect on the Infection of intestinal Worms in children under five with the Problem of Nutritional Stunting. This research was conducted in March – September 2021. Place of sampling in 4 Villages located in the working area of Puskesmas Nule Kecobserations Molo District North of the TTS, with a large sample of 230 children under five, based on the results of the calculation of a population of 710 toddlers with stunting and sampling techniques random sampling simple. The independent variable is environmental sanitation and hygiene of the individual, and the dependent variable is the infection of intestinal worms in children under five with the problem of nutritional stunting.

Procedure the study begins with the collection of secondary data about the nutritional problems that stunting in the region of Puskesmas Nulle, followed by measurement of weight and height of children toddlers and determines the problem of stunting in children under five. Parents of Children under five who are stunted conducted interviews and observation using a questionnaire about the individual child and the environmental hygiene, as well as a pot of feces in the elderly and collected back the pot of feces tomorrow morning and then performed the examination of the stool in the laboratory. Data have been obtained for further processing and analysis of Bivariate upgrade using the formula of Chi-square and multivariate analysis with the formula of Logistic Regression.

3. Results

The results of the research indicate the sex of the toddler most (of 53.5%) were male and the rest are female is a matter of nutrition (stunting). The results of the examination of the feces of 230 children under-five children with nutritional problems obtained 26 (11.3 percent) positive infections of intestinal worms. Type of infection of intestinal worms in children toddlers with nutritional problems most (61.5%) is Hookworm and Asc. Lumbricoides (23.1%) and Ancylostomiasis (15.4%) and the most attacked children under five in the village Tubulopo much is 61.5%.

The results of the analysis of bivariant related factors affecting the infection of intestinal worms in children under five with the problem of nutritional stunting are as follows:

Table 1. The influence of Environmental Sanitation on the incidence of Infection of Worms Intestines in Children under five with the Problem of Nutritional Stunting

Environmental sanitation	Infection of Intestinal Worms		Amount	P-Value
	Positive	negative		
Latin				
- No	8 (30.8%)	8 (3.9 Percent)	16 (7.0%)	0.000
- No	18 (69.2%)	196 (96.7%)	214 (To 93.0%)	
Total	26 (100%)	204 (100%)	230 (100)	
Types of Latrines				
- Spicy	16 (84.2%)	93 (47.4%)	109 (50.7% is)	and 0.003
- Septic tank/gooseneck	3 (15.8%)	103 (of 52.6%)	106 (49.3%)	
Total	19 (100%)	196 (100%)	215 (100%)	
Animals/Livestock				
- There is	18 (69.2%)	151 (95.5%)	169 (95.0%)	0.321
- No	8 (30.8%)	45 (22.1%)	53 (23.0%)	
Total	26 (100%)	204 (100%)	230 (100%)	

Animal/Livestock					
-	No	18 (100%)	151 (95.0%)	169 (95.5%)	1,000
-	No	0 (0.0%)	8 (5.0%)	8 (4.5%)	
Total		18 (100%)	159 (100%)	177 (100%)	
The source of the Water					
-	Times/Brackish	5 (19.2%)	58 (at 28.4%)	63(27.4%)	0.322
-	Wells/TAPS	21 (80.8%)	146 (71.6%)	167(72.6%)	
Total		26 (100%)	204 (100%)	230 (100%)	
House Floor					
-	Land	16 (61.5%)	87(42.6%)	103(44.8%)	0.192
-	Board/stage	0 (0.0%)	2(1.6%)	2(0.9%)	
-	/Cement Tiles	10 (38.5%)	115(56.4%)	125 (54.3%)	
Total		26 (100%)	204 (100%)	230 (100%)	
The Condition Of The Floor					
-	Is Dirty	16 (61.5%)	67 (32.8%)	83(To 36.1%)	0.004
-	Clean	10 (38.5%)	137 (67.2%)	147 (63.9%)	
Total		26 (100%)	204 (100%)	230 (100%)	
Trash					
-	No	26 (100%)	163 (79.9%)	189 (82.2%)	0.006
-	There is	0(0.0%)	41 (Up 20.1%)	41 (17.8%)	
Total		26 (100%)	204 (100%)	230 (100%)	
Means Pemb. Waste					
-	No	26 (100%)	177 (87.2%)	203 (of 88.3%)	0.051
-	there is	0 (0.0%)	27 (13.2%)	27 (11.7 percent)	
Total		26 (100%)	204 (100%)	230 (100%)	
of Agricultural Land					
-	There is	25(to 96.2%)	167(of 81.9%)	192(83.5%)	0.089
-	No	1(3.8%)	37(18.1%)	38(16.5%)	
Total		26(100%)	204(100%)	230(100%)	
Distance to Agricultural Land					
-	< 50 meters	22(88.0%)	148(of 88.6%)	170(to 88.5%)	0.927
-	> 50 meters	3(12.0%)	19(11.4 percent)	22(11.5 percent)	
Total		25(100%)	167(100%)	192(100%)	

The table above shows among children under five with the problem of nutritional stunting the infection of intestinal worms (30.8%) did not have a latrine family, 69.2% have latrines have family latrines. The results of the statistical test Chi-Square p-value $0.000 < 0.05$, thus there is the influence of the ownership of the family latrines against infection of intestinal worms. The type of latrine used in the family of the child with an infection of intestinal worms in general (84.2%) is spacy and the rest kind of neck goose/Sampti tank. The results of the statistical test Chi-Square p-value $0.003 < 0.05$, then there is the influence of the type of family latrines against infection of intestinal worms in children under five with the problem of nutritional stunting.

The ownership of animal/livestock pets, most of the population (95.0%) had cattle, but there are 69.2% of families have farm animals with kids toddlers with infection of intestinal worms, and the 30.8% of children under five positive infections the intestinal worms in the family that no farm animals. The results of the test statistic

Chi-Square p-value $0.321 < 0.05$, then there is no influence of the ownership of livestock/animals against infection of intestinal worms in children under five with the problem of nutritional stunting. Ownership of livestock/animals, there is 169 family of children under five who does not have a cage kid/pet and 18 (100%) children from families who do not have the enclosure of livestock infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $1,000 > 0.05$, then there is no influence of cattle against infection of intestinal worms in children under five with the problem of nutritional stunting

The source of drinking water used for family child toddlers in general (72.6%) using water PAM/water well will trap most (80.8%) are children with a positive infection of intestinal worms. The results of the statistical test p-value $0.322 > 0.05$, then there is no influence of the source of the water against the infection of intestinal worms in children under five with the problem of nutritional stunting

The floor of the house with a toddler with issues stunting in general (54.3%) tiles/cement and 44.8% floor well, there is 61.5% of children under five positive infected with intestinal worms on child's family and toddlers with a home water floor the ground. The results of statistical tests fisher's Exact test p-value $0.192 > 0.05$, then there is no influence of the floor of the house against the infection of intestinal worms in children toddlers with nutritional stunting problems, while the condition of the floor most of them (63.9%) are clean, but from the story dirty, most of them (61.5%) positive infection of intestinal worms. The results of the Chi-Square statistical test showed a p-value of $0.004 < 0.05$, then there is the influence of the condition of the floor against intestinal infections in children under five with the problem of nutritional stunting.

Landfills in family child toddler majority (82.2%) no and there are 26 (100%) children under five positive infections intestinal worms don't have trash. The results of statistical tests fisher's Exact test p-value of $0.006 < 0.05$, then there is the influence of landfills against infection of intestinal worms in children under five with the problem of nutritional stunting.

The means of disposal of Waste Water (SPAL) family child toddler in general (of 88.3%) did not exist, among them, there are 26 (100%) children under five positive infections intestinal worms no SPAL. The results of statistical tests fisher's Exact test p-value $0.051 > 0.05$, then there is no influence of SPAL against infection of intestinal worms in children under five with the problem of nutritional stunting.

The agricultural land around the home family child toddler majority (83.5%) there is agricultural land, of which there are 25(to 96.2%) children under five positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $0.089 > 0.05$, then there is no influence of agricultural land against infection of intestinal worms in children toddlers with nutritional problems. While the agricultural land with houses for kids toddlers in general (to 88.5%) < 50 meters, among them there are 88.0% of children under five positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $0.927 > 0.05$, then there is no influence of the distance of agricultural land with the house against infection of intestinal worms in children toddlers with nutritional problems.

Table 2. The influence of hygiene Individuals on the Incidence of Infection of Intestinal Worms in Children Toddlers with Problem Nutritional Stunting

The behavior	Infection of Intestinal Worms		Amount	P-Value
	Positive	negative		
Habits CHAPTER				
- Any place	23 (to 88.5%)	83 (of 40.7%)	106 (to 46.1%)	0.000
- Toilet/WC	3 (11.5%)	121(59.3%)	124(53.9%)	
Total	26 (100%)	204 (100%)	230 (100)	
Habit of wearing Sandals				
- is Not/Rarely	23 (to 88.5%)	98 (48.0%)	121 (of 52.6%)	0.000
- Yes	3 (11.5%)	106 (52.0%)	109 (47.4%)	
Total	26 (100%)	204 (100%)	230 (100%)	
Eating Habits				
- is Not cooked	4 (15.4%)	34 (16.7%)	38 (16.5%)	1,000
- Cooked	22(84.6%)	170 (83.3%)	192 (83.5%)	
Total	24 (100%)	206 (100%)	230 (100%)	

Habit of Drinking Water					
-	is Not cooked	4 (15.4%)	34 (16.7%)	38 (16.5 In)	1,000
-	Cooked	22(84.6%)	170 (83.3%)	192 (83.5)	
Total		26 (100%)	204 (100%)	230 (100%)	
Habitual Play Ground					
-	Yes	26 (100%)	162 (79.4%)	188 (81.7%)	of 0.006
-	No	0 (0.0%)	42 (20.6%)	42 (18.3 percent)	
Total		26 (100%)	204 (100%)	230 (100%)	
Custom suction fingers					
-	Yes	26 (100%)	167 (of 81.9%)	193 (83.9%)	0.011
-	No	0 (0.0%)	37 (18.0%)	37 (16.7%)	
Total		24 (100%)	206 (100%)	230 (100%)	
The Habit of Taking Medication					
-	No	18 (69.2%)	144 (70.6%)	162 (70.4%)	0.886
-	Yes	8 (30.6%)	60 (29.4%)	68 (29.6%)	
Total		26 (100%)	204(100%)	230 (100%)	
Habit Of Eating Snacks					
-	Yes	25 (To 96.2%)	106 (52.0%)	131(of 57.0%)	0.000
-	No	1 (3.8%)	98 (48.0%)	99 (43.0%)	
Total		26 (100%)	204 (100%)	230 (100%)	
How to Store food					
-	Open	23(to 88.5%)	96(47.1%)	119(to 51.7%)	0.000
-	Closed/Wardrobe	3 (11.5%)	108(52.9%)	111 (48.3%)	
Total		26 (100%)	204 (100%)	230(100%)	
Snack often eaten					
-	Sugar	6(23.1%)	57(27.9%)	63 (27.4%)	Of 0.600
-	Cakes/Fritters	20(76.9%)	147(72.1%)	167(72.4%)	
Total		26 (100%)	204(100%)	230 (100%)	
The desire to eat after a snack					
-	is not	26(100%)	149(73.0%)	175(76.1%)	0.002
-	Yes	0 (0.0%)	55 (27.0%)	55(23.9%)	
Total		26 (100%)	204 (100%)	230(100%)	

The table above shows the habit of the child and toddlers in general defecation (BAB) (53.9%) in the TOILETS/Latrines Family and 46.1% in the opposite place, but among the defecation, mostly (to 88.5%) positive intestinal infection worms. The results of statistical tests fisher's Exact test p-value $0.000 < 0.05$, then there is the influence of the habit of wasting water to the infection of intestinal worms in children under five with the problem of nutritional stunting.

Habit kid toddler wearing footwear/slippers in general (of 52.6%) no/rare, among them the most (to 88.5%) children under five positive intestinal worm infections. The results of statistical tests fisher's Exact test p-value $0.000 < 0.05$, then there is the influence of the habit of wearing footwear/sandals against the infection of intestinal worms in children toddlers with the problem of nutritional stunting.

Child's habit of eating most food (83.5%) cooked, including most (84.6%) children under five positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $1.000 > 0.05$, then there are no influence eating habits against infection of intestinal worms in children under five with the problem of nutritional stunting.

Drinking habits toddlers in general (83.5%) cooked, including most (84.6%) children under five positive infection

of intestinal worms. The results of statistical tests fisher's Exact test p-value $1.000 > 0.05$, then there are no influence drinking habits against infection of intestinal worms in children under five with the problem of nutritional stunting. The habit of drinking water that is not cooked chance of contaminated eggs of intestinal helminths on the Contrary

The habits of the child toddler play/activities with the land in general (81.7%), including 100% positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value of $0.006 < \alpha 0.05$, then there is the influence of the habit of children's play/activities with ground against the infection of intestinal worms in children under five with the problem of nutritional stunting.

Child's habit of inserting fingers into the mouth/thumb sucking generally (83.9%), including 100% positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $0.011 < 0.05$, then there is the influence of habit toddlers push fingers/suction thumb against the infection of intestinal worms in children under five with the problem of nutritional stunting.

Habit kid toddler drink/swallow anthelmintic in general 162 (70.4%) no, but there are some great (69.2%) children under five positive infection of intestinal worms. The results of the statistical test Chi-Square p-value $0.886 > 0.05$, then there is no influence of the habits of the child toddler drink/swallow anthelmintic against infection of intestinal worms in children under five with the problem of nutritional stunting.

Habit kid toddler meal snack portion (of 57.0%) sports snacks, including most (to 96.2%) children under five positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value $0.000 < 0.05$, then there is the influence of habit snack to infection of intestinal worms in children under five with the problem of nutritional stunting.

The type of Snack that is often eaten in general (72.4%) is cakes/fried foods, including most (76.9%) children under five with positive infection of intestinal worms. The results of the statistical test Chi-Square p-value of $0.600 > 0.05$, then there is no influence of the type of snack to infection of intestinal worms in children toddlers with nutritional problems. The desire/ appetite toddlers once snack in general (76.1%) did not like, then all children (100%) of children toddlers positive infection of intestinal worms. The results of statistical tests fisher's Exact test p-value = $0.002 < \alpha 0.05$, then there is the influence of desire/appetite after snacks to infection of intestinal worms in children under five with the problem of nutritional stunting

How to store food family cook toddler portion (to 51.7%) open, including most (to 88.5%) children under five positive infection of intestinal worms. The results of the test statistics, fisher's Exact test p-value $0.000 < 0.05$, then there is the influence how to store food against the infection of intestinal worms in children under five with the problem of nutritional stunting. (Table 3)

Table 3. Model the Incidence of Helminthiasis in children under five with the problem of Nutrition (Stunting)

No	Variable	B	P-Value	OR	95% CI	
					Low	Upper
1	Type of Latin(spicy)	1,600	0.019	4,953	1,303	18.836
2	Floors (ground)	2,220	of 0.009	9,205	1,731	48,951
3	SPL	1,803	0.002	6,068	1,992	18,482
4	Habits CHAPTER	-1,696	0.006 to	0.183	0.055	0.610
5	Playground	1,824	0.003	6,197	1,882	20.407
6	Habits Snack	-1.905	0.002	to 0.149	0.045	0.48

Above the table the results of the statistical test of Logistic Regression the influence of the type of latrine p-value $0.019 < 0.05$ then there is the influence of the type of latrine significantly on the infection of intestinal worms in children toddlers. Value OR 4,955 then type drop toilet has opportunities incidence of infection of intestinal worms in children under five with the problem of nutritional stunting 4,955 times than other types of latrines gooseneck/septic tank.

The influence of the floor of the house on the incidence of infection of intestinal worms, the results of the statistical test of Logistic Regression p-value of $0.009 < 0.05$, the significant influence of the floor of the house on the incidence of infection of intestinal worms. Value OR 9.205 then the floor of the house from the ground have the

opportunity 9.205 times the incidence of infection of intestinal worms compared with cement floor/tiles.

The influence of the Means of Disposal of Waste Water (SPAL) on the incidence of infection of intestinal worms, the results of the statistical test of Logistic Regression $p\text{-value} = 0.002 < 0.05$, then there is a significant influence of SPAL on the incidence of infection of intestinal worms. Value OR 6,068 then chances no SPAL on the incidence of infection of intestinal worms 6,068 times than there SPAL.

The influence of bowel habits on the incidence of infection of intestinal worms, the results of the statistical test of Logistic Regression $p\text{-value} < 0.006 < 0.05$, then there is the influence of bowel habits on the incidence of infection of intestinal worms. Value OR 0.183 then in bowel habits are not at risk on the incidence of infection of intestinal worms on the Contrary, if the custom of children defecates in latrines/toilets likely not an infection of intestinal worms 5.5 times ($1/0.183$)/compared with defecation any place.

The influence of the habit of playing the land on the incidence of infection of intestinal worms, the results of the statistical test of Logistic Regression $p\text{-value} 0.003 < 0.05$, then there is the influence of the habit of playing the land on the incidence of infection of intestinal worms. Value OR 6,197 then the habit of playing the land at risk of the incidence of infection of intestinal worms 6,197 times.

The influence of habit snacks on the incidence of infection of intestinal worms, the results of the statistical test of Logistic Regression $p\text{-value} 0.003 < 0.05$, then there is the influence of habit snacks on the incidence of infection of intestinal worms. Value OR to 0.149 then the habit snack is not likely on the incidence of infection of intestinal worms on the contrary if the custom of the child is not/subtract snack at risk of not happening infection of intestinal worms 6.7 times ($1/0.149$) compared with the habit of eating snacks.

4. Discussion

4.1 *The Incidence of Infection of Intestinal Worms*

The epidemiology of Infection of Intestinal Worms on the general type of Soil-transmitted helminth (STH) related to the theory of the triangle or Triad of Causes of the Disease are the host, agent, environment, and the process of the onset of the disease caused by the interaction between the agent (the cause of the disease), human as the host (hosts), and environmental factors that support (environmental). The third of these factors in influencing health does not stand alone, but each affects the other. Interactions can occur if the agent or cause of the disease contact humans as hosts who are vulnerable and supported by the state of the environment. To realize the health status of these three factors must be balanced (Budiarto et al, 2002).

According to Bethany, said that Soil-transmitted helminth (STH) is a group of nematode parasites that cause infections in humans through contact with parasite eggs or larvae that develop in the soil is warm and moist countries of the tropical and subtropical regions of the world (Bethony et al., 2006).

STH live in the cavity of the intestine and the eggs come out with feces that can infect other people. If someone who is infected performs defecation, the feces of the infected containing the eggs of worms, and will be ripe in the land, and then back infect humans. A person infected with STH at first has no symptoms, but severe infections can lead to health problems such as abdominal pain, diarrhea, loss of blood protein, prolapse of the rectal, and growth disorders (CDC, 2013).

The incidence of this type of infection of intestinal worms in children under five with the problem of nutritional stunting in the District of TTS is 11.3% and the majority (61.5%) is Hookworm and *Asc. Lumbricoides* (23.1%) and Ancylostomiasis (15.4%). Research is different from the results of the research in the SBD district where the results of the examination of feces in primary school children with positive STH is 42 (of 40.0%) and negative 63 (60.0). Types of worms STH known *Ascaris lumbricoides* (31.0%), *Trichuris trichiura* 9 (21.4%), Hookworm *Ancylostoma duodenale* 1 (2.4%), Hookworm *Necator americanus* 3 (7.1%), mix AL and TT 16 (38.1%) (Paun et al., 2019). Different research on Elba Fardila was done in Kecamatan Pamulihan Sumedang District where the incidence of intestinal worms in children under five dropped by 1.1%, of which 0.56 percent is an infection of intestinal worms in children under five stunting and all of the helminth infections of *Ascaris*. (Elba Fardila, 2021)

4.2 *The influence of Environmental Factors on Infection of Intestinal Worms in Children under Five Stunting*

Environmental factors can be divided into three components, namely the physical environment such as geography and the state of the season, the biological environment, ie all living creatures are around us that can transmit the disease, as well as the social environment of the economy, can be in the form of jobs, economic development, and others that can influence the behavior in the community (Notoatmodjo, 2010).

Environmental factors that influence the infection of Soil-Transmitted Helminths are the factors of the physical environment and the social economy. Physical environmental factors such as climatic conditions, namely the

tropical and subtropical climate, humidity, altitude areas, the condition of the floor of the house, ownership of latrines, and other others. While the factor of the social environment of the economy can be in the form of employment, education, and income. The results of the research show the ownership factor of the family toilets, types of toilets, the condition of the floor, and landfills significantly influence the incidence of infection of intestinal worms. Do not have a latrine family favors kids toddlers large wastewater of any result in soil contamination. Soil pollution is the cause of the occurrence of the transmission of helminth eggs from the ground and then goes into the mouth with food (Irianto, 2009). Research by Fitri et al. (2012) in Angkola Timur District indicates that the toilets give a significant influence on the incidence of helminthic infections. Obtained p value=0.000 and OR value=16,349, where houses with latrines that do not meet the health requirements are likely 16.349 times infected with helminthiasis compared to houses with latrines that meet the health requirements. Types of drop toilets are types of latrines that do not meet the terms health, physical open so an equally harmful crowd of flies that can then alighted on toddler food. The condition of the floor of the house is dirty and there are no landfills in the waste discarded later became the source of a crowd of flies.

4.3 The Influence of Factors Hygiene Individuals against Intestinal Worm Infection in Children under Five Stunting

Personal hygiene is an action to maintain the cleanliness and health of a person for the welfare of the physical and psychic. Personal hygiene here, among others, includes the cleanliness of the skin, the cleanliness of the hair, teeth and mouth care, hand hygiene, nail care foot and hand, the use of footwear, the cleanliness of the clothes, food, and shelter (Tarwoto, 2003). The results showed the influence of bowel habits, use of slippers, playground, finger sucking habit snack for significant effect against infection of intestinal worms in children under five with the problem of nutritional stunting. The habit of wasting great just in a lot of flies swarming, the ground around the house is tainted eggs of worms, if the child rarely or do not use footwear when out of the house and the habit of playing the land, then easily the feet and hands of a child polluted worm eggs.

4.4 Research Ethics

This research was initiated asked the consent of the child's parents a toddler to be a research subject, maintaining confidentiality, without a name, and asking for approval from the committee of research ethics Health Polytechnic of the Kupang Ministry of Health.

5. Conclusion

The results of the research in the South Central Timor regency can be summarized as follows:

- 1) The incidence of this type of infection of intestinal worms in children under five with the problem of nutrition in the District of TTS is 11.3% and the majority (61.5%) is Hookworm and Asc. Lumbricoides (23.1%) and Ancylostomiasis (15.4%).
- 2) The influence of environmental factors on the incidence of infection of intestinal worms in children under five in the district of TTS are the factors of ownership and type of latrine spacy, internal floor ground, four garbage disposal te infection of intestinal worms in children under five with the problem of nutritional stunting.
- 3) Behavioral factors affecting the infection of intestinal worms in children with nutritional problems in the District of TTS is the habit of children under five are generally defecation (BAB) carelessly, for the most part, the child's Habit of your toddlers wearing footwear/slippers, the Habits of the child toddler play/activities with the land, the Habit of the child put the finger hand into the mouth/sucking of the thumb, a Habit toddler meal snack, the Type of Snack that is often eaten cake/fried foods, and How to keep food cook family against infection of intestinal worms in children under five with the problem of nutritional stunting

A Model of infection of intestinal worms in children toddlers with nutritional problems in the District TTS is influenced by the type of household toilets, the floor of the house, the availability of the means of disposal of wastewater, bowel habits, playground, and habits snack simultaneously.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

References

- Bethony, J., Brooker, S., Albonico, M., Geiger, S. M., Loukas, A., Diemert, D., & Hotez, P. J. (2006). Soil-transmitted helminth infections: ascariasis, trichuriasis, and hookworm. *The lancet*, 367(9521), 1521-1532. [https://doi.org/10.1016/S0140-6736\(06\)68653-4](https://doi.org/10.1016/S0140-6736(06)68653-4)
- Budiarto, E., & Anggraeni, D. (2002). *Introduction to Epidemiology* (2nd ed.). Jakarta: EGC.

- CDC. (2013a). Parasites-trichuriasis. Retrieved 18 September, 2015, from <http://www.cdc.gov/parasites/whipworm/>
- CDC. (2013b). Parasites-hookworm. Retrieved 18 September, 2015, from <http://www.cdc.gov/parasites/hookworm/>
- Elba Fardila. (2021). The factors of the Incidence of intestinal Worms In Toddlers Stunting in Pamulihan District, Summedang Kabupaten. *Journal of Healthy Masada*, 15(1). January 2021
- Fit et al. (2012). Analysis of the Factors, the Risk of Infection Helminthiasis Pupils of the School Base in the District of AngkolaTimur, South Tapanuli Regency in 2012. *Journal of the Science of the Environment*, University of Riau.
- Irianto, Kus. (2009). *Infections with Soil-Transmitted Helminths (STH) with Preustasi Children's learning SDN 169 in the village of Gandus Kecamatan Gandus*.
- Notoatmodjo, S. (2010). *Health promotion Theory and Applications* (Revised ed.). Jakarta: Rineka Cipta.
- Olin, W., Paun, R., & Niron, M. F. V. D. (2021). Incidence Model of Intestinal Helminthiasis Infections in Toddler with Nutritional Problems in Central Kupang District, Kupang Regency. *Global Journal of Health Science*, 13(4), 1-62. <https://doi.org/10.5539/gjhs.v13n4p62>
- Olin, W., Paun, R., & Rindu, Y. (2019). Behavior Model of Prevention of Soil Transmitted Helminth (Sth) in Elementary School Student in the District of Northwest Sumba. *International Journal of Medicine, Health and Food Sciences*, 3(1), 1-9.
- Palgunadi. (2010). *The Factors That Influence the Incidence of Helminthiasis Caused By Soil-Transmitted Helmint in Indonesia* (Wijaya Kusuma University, Surabaya).
- Paun, R., Olin, W., & Tola, Z. (2019). The impact of soil transmitted helminth (STH) towards anemia case in elementary school student in the district of Northwest Sumba. *Global Journal of Health Science*, 11(5), 117-117. <https://doi.org/10.5539/gjhs.v11n5p117>
- Ramayulis, R., Maya, K., Sri, I., & Nur'aini, S. R. (2018). *Stop the Problem of Nutrition with Nutrition Counseling. Diffuser Plus'* (Penbar Swadaya)
- Tarwoto. (2003). *Basic Human Needs and the Nursing Process*. Jakarta : Salemba Medika

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