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Description of Soil Transmitted Helminths (STH) Worms Infection in Coconut Farmers in Guntung Village, Batu Bara District, North Sumatra, Indonesia

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Abstract: ***Worms or often calledSoil Transmitted Helminths (STH) is a disease of the human body caused by intestinal nematode worm infection. One of the transmission of this worm is generally through soil media. STH species include roundworms, whips, mines. Farmers as one of the professions in the community have a great risk of being infected with STH, which is more than 70%. The majority of agricultural land in Guntung Village supports working as a farmer. Factors that cause helminth infections are related to poor environmental hygiene and unhealthy lifestyles. This study aims to determine the description of infection with Soil Transmitted Helminths (STH) infarmer coconut inGuntung Village, Batu Bara District. This study uses observational research methods (non-experimental) with descriptive research criteria. The number of samples is 50 faeces fromfarmer in Guntung Village, Batu Bara District. The results of the stool examination by the flotation method found that 12 respondents (24%) were positively infected with STH, namely hookworm eggs. The conclusion of this study is the possibility of farmers who are positive because they come from other environments, not from agricultural land and soil in their home environment. Therefore suggestions for the community or farmers can increase knowledge about the transmission and prevention of STH infections, increase awareness to carepersonal hygiene as well as sanitation of the surrounding environment and being able to take deworming medication for treatment of STH-infected farmers.***

Keywords: Soil Transmitted Helminths ; farmer ; Soil Transmitted Helminths Infection

I. INTRODUCTION

An infectious disease that is a public health problem in Indonesia, especially among the economically weak population with a risk of contracting around 40-60%, is worm infection.[1] Worms or often called Soil Transmitted Helminths (STH) is an infectious disease in the human body caused by intestinal nematode worms). One of the transmission of this worm is generally through soil media. In a long time, if there is a continuous infection it can cause health problems such as the body's lack of red blood cells, growth and intelligence are also disrupted. STH species that are always found to infect the human intestine include roundworms, whipworms, and hookworms.[2]

Worm infections are common in hot climates with poor environmental hygiene.[3] The prevalence of Soil Transmitted Helminths (STH) in Indonesia is high due to its tropical climate and high humidity. Generally, rural areas are dominated by paddy fields and plantations so that it supports the growth of STH worms to become an infective stage. One of the professions in the community, namely farmers who have a great risk of being infected with STH because their work directly touches the ground so that they get an infection risk of more than 70%. In addition, risk factors for STH infection include farmers at work not wearing personal protective equipment (PPE), the habit of not washing their hands before eating.[4,5]

Guntung Village is one of the villages in Batubara District, North Sumatra, Indonesia. The condition of the land in the village makes it mostly in the form of coconut plantation land so it can support the population of the area to work as a majorityfarmer coconut. A review conducted by researchers in February 2023 proved that the majority farmer Guntung village does not wear personal protective equipment (PPE) when doing activities in the fields. In addition to personal hygiene farmer still not enough. Look at the habitsfarmer who, after carrying out activities in the paddy fields, the farmers do not wash their hands before eating. This habit supports the risk of worm infection.[6]

The purpose of this research is to see the description of infection with Soil Transmitted Helminths (STH) padal worms farmer in Guntung Village.

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The benefit of this research is to add insight and data to the regional health office regarding the transmission and infection of STH worms, provide information about the dangers of STH infection to farmers in Guntung Village, providing information on various behaviors that are at risk of causing STH infection to farmers in Guntung Village.

II. METHOD

This research uses observational research with descriptive research criteria. The approach used in this research is cross sectional. The number of samples obtained was 50 samples using random sampling technique. The variable of this study uses a single variable, namely intestinal wormsfarmer in Guntung Village, District of Lima PuluhDistrict of Batubara. Research variable which is used by describing the elements in each symptom in that variable.

The technique for collecting data used primary data taken by examining STH worm eggs in stool samples using microscopic examination with eosin staining at the Parasitology Laboratory, Faculty of Medicine, Islamic University of North Sumatra. The research began with informed consent beforehand to be willing to be a respondent and then fill out a questionnaire. The collected data was processed to describe infection with STH worm eggs infarmer in Guntung Village. Examination result data is displayed descriptively, in the form of percentage diagrams and frequency distribution tables.

III. RESULTS

STH infection research conducted forfarmer in the village of Guntung with a sample of 50 respondents. This research was carried out on February 10, 11, 12 and 13, 2023. The research process began with giving informed consent to be willing to become respondents and filling out a questionnaire. In this study, faecal specimens were preserved using 10% formalin and then STH worm eggs were examined through microscopic observation.

A. Gender

Based on Figure 1, of the 50 samples, 35 were male and 15 were female.

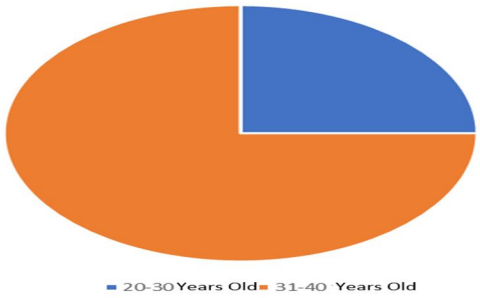


Figure 1. Diagram of the percentage of research samples based on gender

B. Age

The majority of farmer respondents in Guntung Village are older, so they are susceptible to infection because their metabolism and immunity in old age decrease so that the degree of infection is more severe (Ni Luh Putu, 2020)

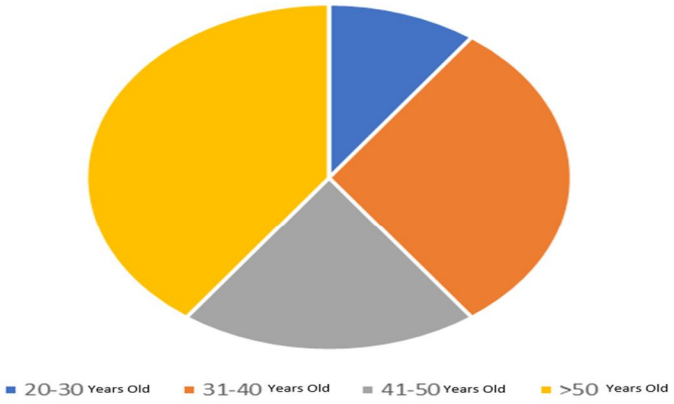


Figure 2. Diagram of the percentage of research samples by age

C. Degree of Personal Hygiene

Degree of personal hygiene onfarmer in Guntung Village can be observed in table 1 as follows:

Table 1. The degree of personal hygiene in the research sample in Guntung Village

Category	Good	Bad	Total
Amount	13	37	34
Percentage (%)	26	74	100

Based on table 1, it was found that the degree of personal hygiene in the 50 samples was mostly not good.

D. Infeksi Soil Transmitted Helminths (STH)

Worm infection can be said to be positive in the results if eggs or larvae of STH worms (Ascaris lumbricoides, Trichuris trichiura, Hookworm) are found. Distribution of the frequency of STH worm egg infections and types of STH worm eggs infarmer in Guntung Village can be observed in table 2 and table 3 as follows:

Table 2. Distribution of the frequency of sth worm egg infections infarmer in Guntung Village

Category	Frequency	Percentage (%)
Positive	12	24
Negative	38	76
Amount	50	100

Based on table 2, it was found that on microscopic examination of faecal samples, from 50 samples, 12 samples (24%) were positive for STH eggs.

Table 3. Distribution of the frequency of sth worm eggs infarmer in Guntung Village

Worm Infection	n	%
Ascaris lumbricoides	3	25
Trichuris trichiura	0	0
Hook worm	8	75
total	12	100

Based on table 3 it can be seen the type of STH that infectsfarmer in Guntung Village, out of 12 positive samples, 75% (8 samples) were hookworm eggs.

Based on the results of the questionnaire that was distributed to 50 respondents, it was found that the factors that can influence the incidence of STH infection are as follows:

1) Distribution of Respondents based on the habit of washing hands before and after eating with clean water and using soap

Table 4. Distribution of respondents based on hand washing habits in the research sample in Guntung Village in 2022

HabitWashing hand	Worm Infection					
	Negative		Positive		Total	
	n	%	n	%	n	%
of	35	70	0	0	35	70
No	3	6	12	24	15	30
amount	38	76	12	24	50	100

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Based on table 4, it can be seen that of the 50 respondents, most of them had the habit of washing their hands, while of the 15 respondents (30%) who did not have the habit of washing their hands, there were 12 respondents (24%) who had worm infections.

2) Distribution of respondents based on the routine habit of cutting nails

Table 5. Respondents based on their routine habit of cutting their nailsfarmer in Guntung Village in 2022

Habitnail clippers		Worm Infection					
		Negative		Positive		Total	
		n	%	n	%	n	%
	of	30	60	2	4	32	64
	No	8	16	10	20	18	36
amount		38	76	12	24	50	100

Based on table 5, it can be seen that of the 50 respondents, most of them had the habit of clipping their nails, while of the 12 respondents (24%) who did not have the habit of cutting their nails, 10 respondents (20%) had worm infections.

3) Distribution of respondents based on eating habits using cutlery at work

Table 6 Distribution of respondents based on eating habits using cutlery on the spot work onfarmer in Guntung Village in 2022

eating habits using cutlery at work		Worm Infection					
		Negative		Positive		Total	
		n	%	n	%	n	%
	of	8	16	0	0	8	16
	No	30	60	12	24	42	82
amount		38	76	12	24	50	100

Based on table 6, it was found that out of 50 respondents, who had the habit of using cutlery at work, only 8 respondents (16%) did not use cutlery while eating.

4) The distribution of respondents is based on the habit of using PPE (boots) when working in the fields

Table 7. Distribution of respondents based on the habit of using personal protective equipment (boots) when working in the fieldsfarmer in Guntung Village in 2022

the habit of using PPE (boots) while working		Worm Infection					
		Negative		Positive		Total	
		n	%	n	%	n	%
	of	3	6	0	0	3	6
	No	35	70	12	24	47	82
amount		38	76	12	24	50	100

Based on table 7, the results obtained were that of the 50 respondents, who had the habit of using PPE (boots) while working, only 3 respondents (6%) the rest did not use PPE (boots) while working.

5) The distribution of respondents is based on their habit of defecating in the latrines

Table 8. Distribution of respondents based on defecation habits (chapter) in the latrinefarmer in Guntung Village in 2022

the habit of defecating in the toilet		Worm Infection					
		Negative		Positive		Total	
		n	%	n	%	n	%
	of	35	70	5	10	40	80
	No	3	6	7	14	10	20
amount		38	76	12	24	50	100

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Based on table 7, it was found that out of 50 respondents, the majority had defecation habits (BAB) in latrines as many as 40 respondents (80%) the rest did not defecate (BAB) in latrines.

IV. DISCUSSION

Based on table 1, it shows that the degree of personal hygiene in research samples that are positively infected with STH has poor personal hygiene, this is in line with Adiningsih (2018) that the degree of personal hygiene is related to the epidemiology of helminth infections so that if personal hygiene is poor it is easy to cause helminth infections or experience positive worm infection.[7]

The results of stool examination on 50 respondentsfarmer in the village of Guntung shown in table 2 and table 3 it was found that as many as 3 respondents found hookworm eggs. This is consistent with the statement that the highest incidence of hookworms is found in plantation work groups such asfarmer whose activities are in direct contact with the ground.[8]

Based on simple observations made by researchers in the field, respondents who were positively infected with STH often worked in the fields without wearing footwear (boots) so that they were in constant direct contact with the ground. This is in accordance with Wijaya's research (2016) that risk factors such as the habit of not using footwear cause worm eggs or larvae to enter through intermediaries on the skin of the feet.[9]

In this study, most of the samples had a good habit of washing their hands before eating. However, it was known that respondents who did not have the habit of washing their hands before and after eating had worm infections. This is in line with Nurijah et al (2017) that STH infection has a 1.672-fold greater risk for respondents who have bad hand washing habits than respondents who have these good habits. The habit of washing hands and using soap is a behavior that needs to be applied to prevent the spread of infection.[10]

Most of the samples in this study had the habit of regularly cutting their nails, but most of those infected with worms did not have the habit of cutting their nails. Obtaining these results is in line with the statement that if a person does not have the habit of routinely cutting nails, there is a risk of worm eggs sticking to the nails, then respondents who come in direct contact with the soil, it is possible that within 1-2 days the worm eggs will become an infective stage, namely filariform larvae so that they can infect through the foot.[11]

Based on table 6 shows that eating habits using cutlery at work onfarmer in Guntung Village is not good, because most of them have the habit of eating without cutlery. Most of the samples that identified worms did not have the habit of using cutlery. The results obtained are inconsistent with the statement that having the habit of eating using a spoon is related to preventing the incidence of infection because eating food with a spoon can avoid STH egg infection but infection comes from ingesting eggs into the mouth.[12]

The results obtained in table 7 show that most of the people in Guntung Village do not use adequate footwear when working in the gardens. Farmers have reasons for not having this habit because they feel uncomfortable when using footwear while working in the fields as they feel heavy when walking. This is in line with someone's statement that the use of PPE in a complete and regular manner can break the chain of helminthic infections transmitted through soil media. If this is not accompanied, it will facilitate the entry of infective eggs through the feet, hands or mouth.[13]

Based on table 8, it shows that most of the people in Guntung Village already have good habits in defecating. However, the samples identified as suffering from helminthiasis did not have good habits in defecating. Research conducted by Maryanti (2006) states that open defecation behavior is a risk factor for worm infection. Soil media is a source of development of worm eggs to become infective. In the feces of patients who have open defecation habits, they are prone to being contaminated with worms, thereby increasing the risk of worm infection.[14]

Farmers' incompatibility with the degree of poor personal hygiene is caused by STH using soil media as a source of transmission so that the soil becomes a source of STH egg pollution which can lead to STH infection. There are 2 types of sources of pollution, namely soil originating from agricultural land and soil in the home environment. However, judging from the habit of defecating in the latrines, most of the respondents have this habit, so the source of infection is likely not from these 2 sources of pollution, but may be from other environments or outside. these two sources

V. CONCLUSION

Examination of feces using the flotation methodfarmer In Guntung Village, the results showed that 3 respondents (8.82%) were infected with STH with hookworm eggs found and 31 respondents (91.18%) were negative. Respondents who were positive for STH infection were probably caused not by pollution from agricultural land and soil in their home environment but from environments other than the two sources of pollution.

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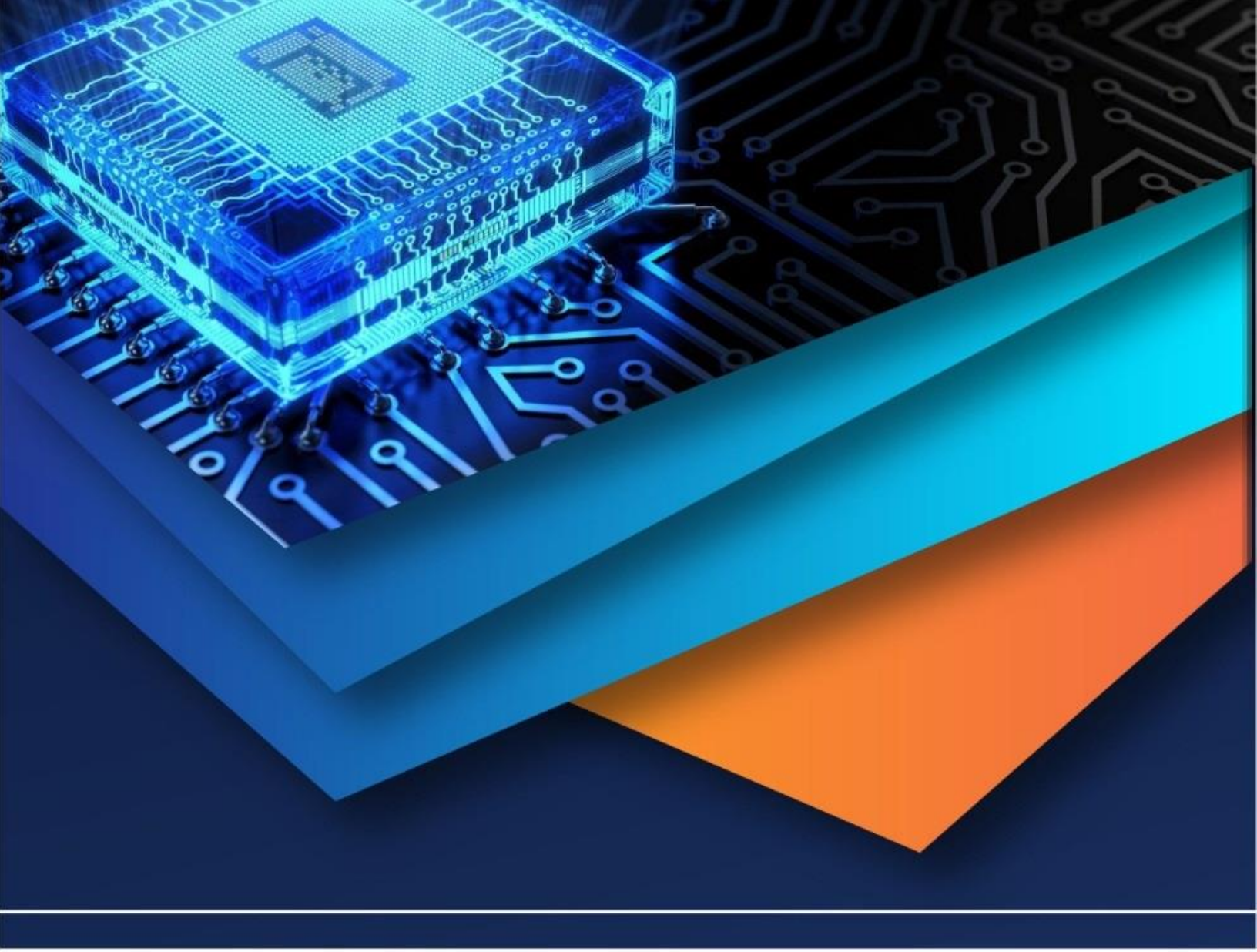
VI. SUGGESTION

Forfarmer Coconuts or the community are expected to be able to add insight regarding the transmission and prevention of STH infection, increase awareness to care about personal hygiene and sanitation of the surrounding environment in daily life, be able to take deworming for farmers infected with STH. For future researchers, it is hoped that they will be able to further increase their insight and skills, especially in the field of parasitology and be able to conduct research not only in Guntung Village, , Batubara Regency.

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