RELATIONSHIP BETWEEN PERSONAL HYGIENE AND *ASCARIS LUMBRICOIDES*INFECTION

ABSTRACT

Background and Objective:Worm infection is a disease caused by parasitic worms transmitted through soil, known as Soil Transmitted Helminths (STH). Ascaris lumbricoides is one of the worms that causes this infection. These worms can infect humans through direct contact with worm eggs that live in moist and warm soil. In Indonesia, STH infection is a health problem with a prevalence rate between 45% and 65%, and the prevalence can reach up to 80% in areas with poor sanitation. This study aims to determine whether personal hygiene is associated with Ascaris lumbricoides worm infection.**Method**:This study uses a quantitative descriptive approach with secondary data analysis obtained from public datasets. The data were analyzed using the Mann-Whitney statistical test to determine if there is a significant relationship between personal hygiene and Ascaris lumbricoides infection.**Results:**The study found that personal hygiene is significantly associated with Ascaris lumbricoides infection. The Mann-Whitney test results showed a significance value of 0.031, indicating a significant difference between individuals with good personal hygiene and those with poor hygiene concerning the level of worm infection**.Conclusion**:Personal hygiene is significantly associated with Ascaris lumbricoides infection. Individuals with poor hygiene are more susceptible to this infection. Therefore, improving personal hygiene can help reduce the prevalence of STH infections, particularly those caused by Ascaris lumbricoides

Keywords: *Worm Infection, Ascaris lumbricoides, Personal Hygiene, Soil Transmitted Helminths*

1. INTRODUCTION

Worm infection is a disease caused by worm parasites then transmitted through soil media in other words STH (*Soil Transmitted Helminths)*. [1]One of the worms that cause it is *Ascaris lumbricoides. Ascaris lumbricoides* worms are classified as STH worms that can infect humans through direct contact with worm eggs that live in moist and warm soil. [2]Helminthiasis is a health problem that arises in communities in both tropical and subtropical regions, but the treatment of helminthiasis is still lacking attention. Helminthiasis does not cause sudden outbreaks, but it can slowly jeopardize human health such as decreased intelligence, permanent disability, and death.[3]

Worm infections are still a global challenge today. The World Health Organization (WHO) states that 24% of the world's population is infected with STH which spreads in subtropical and tropical regions.[4]The number of confirmed STH helminthiasis in 2015 was 711,000,000 (150 million early childhood and 561 million school-age children). In Indonesia, a tropical country, STH infection is a health problem with a prevalence of 45% - 65%. The prevalence is even found to be 80% in areas with poor

sanitation.[5]

Factors that can influence the high incidence of worm infections include poor personal hygiene behaviors and inadequate sanitation. Personal hygiene behaviors include washing hands with soap before eating, cleaning and trimming nails regularly, and washing hands with soap after defecation. Good personal hygiene reflects a healthy environment and lifestyle.[6][7] A study confirmed that 23.3% of poor personal hygiene allowed the presence of Ascaris lumbricoides worm eggs in fishermen's nail specimens. Another study also indicated that personal hygiene is related to helminthiasis in garbage collectors in the BLH Yogyakarta area. [8]Personal hygiene habits, such as washing hands, can lead to the entry of eggs or larvae into the body, either with or without food intermediaries, if the eggs or larvae are attached to nails and hands. Therefore, the aim of this study is to determine whether personal hygiene is related to Ascaris lumbricoides worm infection.[9]The objective of this study is to determine whether personal hygiene is associated with Ascaris lumbricoides worm infection.

2. RESEARCH METHODS

The procedure used a quantitative descriptive study of secondary data, namely public datasets regarding the relationship between personal hygiene and *Ascaris lumbricoides* worm infection sourced from[10] . The dataset consists of 80 data items and has 5 variables, namely personal hygiene variables including washing hands before and after eating, bathing habits per day, eating habits using hands and *Ascaris lumbricoides* worm detection variables.[11]The analysis applied in the study was univariate and bivariate analysis. In univariate analysis displayed with frequency distribution, bivariate analysis used *Mann-Withney* test.

3. RESULTS

The statistical results of the 80 data items that have been analyzed univariately can be displayed as follows.

Table 1. Frequency Distribution of Demographic and Hygiene Variables in Relation to Ascaris lumbricoides Infection

Variables	**Category**	**F**	**%**
Gender	Male	28	35.0
	Female	52	65.0
Total		80	100.0
Education	Not in school	10	12.5
	SD	18	22.5
	SMP	25	31.3
	HIGH SCHOOL	18	22.5
	S1	9	11.3
Total		80	100.0
Income	Not yet earning	11	13.8
	Above minimum wage	12	15.0
	Below the minimum wage	57	71.3
Total		80	100.0
Age Category	Teens	8	10.0
	Adults	72	90.0

Total		80	100.0
Wash hands before eating	Yes	24	30.0
	No	56	70.0
Total		80	100.0
Washing hands after eating	Yes	39	48.8
	No	41	51.2
Total		80	100.0
Daily bathing habits	1	17	21.3
	2	43	53.8
	>2	20	25.0
Total		80	100.0
The habit of eating with your hands	Yes	18	22.5
	No	62	77.5
Total		80	100.0
Ascaris lumbricoides worm detected	Yes	14	17.5
	No	66	82.5
Total		80	100.0

Source: Secondary data, 2024

Seen from Table 1. 65% of study participants were female with an education level of 31.3% graduated from junior high school. Respondents in this study mostly have an income below the minimum wage as much as 71.3% with an age dominated by adulthood as much as 90.0%. As for personal hygiene, it consists of several variable items, namely as many as 70.0% of respondents do not wash their hands before eating and 51.2% of respondents do not wash their hands after eating. As many as 53.8% of respondents have the habit of bathing 2 times a day and 77.5% do not have the habit of eating with their hands. Then for the *Ascaris lumbricoides* worm detection variable, 82.5% of respondents did not detect the presence of *Ascaris lumbricoides* worms. While the statistical results of the bivariate analysis are presented as follows.

Table 2. Ranks of Ascaris lumbricoides Detection Based on Personal Hygiene

	Ascaris lumbricoides detection	N	Mean Rank	Sum of Ranks
Personal hygiene	Yes	14	28.71	402.00
	No	66	43.00	2838.00
	Total	80		

According to Table 2. the results of the analysis stated that respondents who were not detected with *Ascaris lumbricoides* worm infection had the habit of maintaining personal hygiene as evidenced by the mean rank of 43.00.

Table 3. Statistical TestResults of Mann-Whitney U Test

	Personal hygiene
Mann-Whitney U	297.000
Wilcoxon W	402.000
Z	-2.155
Asymp.Sig (2-tailed)	.031

According to table 3. the results of the study stated the sig value. 0.031 <0.05 then the conclusion is

drawn between personal hygiene is significantly related to *Ascaris lumbricoides* worm infection.

4. DISCUSSION

This research states that personal hygiene is related to*Ascaris lumbricoides* worm infection. The high and low frequency of worm infection in this study is closely related to the living habits practiced by respondents. The higher the respondent's habit of maintaining personal hygiene, the lower the chance of being infected *with Ascaris lumbricoides worms.* [12][13]Several previous studies have also suggested a relationship between personal hygiene and the presence of hookworm eggs. The number of hookworm eggs found is 2.5 times higher in people with poor personal hygiene[14]The study is in line with Mulasari et al, that *personal hygiene* is related to worm infections in the BLH Yogyakarta City Work area in garbage collectors[15]However, this is not in line with previous research which revealed that there was no relationship between the two personal hygiene (especially hand washing variables) with helminthiasis in brick makers[16].Not in line with Saftarina's research, that in addition to the practice of hand washing, nail clipping, there are other practices such as defecation in latrines and ownership of latrines that are factors related to personal hygiene with the incidence of helminth infection.(10)

Personal hygiene is strongly associated with Ascaris lumbricoides infection This infection generally occurs when worm eggs found in contaminated soil or surfaces enter the body through hands, food, and even contaminated water. The practice of washing hands before eating with soapand after defecation, keeping nails clean are important steps in preventing the transmission of *Ascaris lumbricoides* worm infection. Worm eggs are easily attached to the hands, especially under the nails. If hands are not cleaned properly, the eggs can be swallowed and cause infection.[17]This study shows that with poor hygiene behavior, the prevalence of worm infections is much higher. In addition, densely populated environments with poor sanitation can also increase the spread of worm eggs. Under such conditions, not only adults but children are often at high risk as they interact more frequently with the surrounding environment without paying attention to the hygiene of their surroundings[18]

CONCLUSIONS

The conclusion of this study is that Personal hygiene is significantly related to *Ascaris lumbricoides* worm infection 0.031. So that when respondents are higher in the habit of maintaining personal hygiene, the lower the level of probability of being infected *with Ascaris lumbricoides worms.*

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

The authors hereby state that no generative AI tools such as large language models (ChatGPT, COPILOT, etc.) or text-to-image generators were utilized in the creation or editing of this work.

DATA AVAILABILITY

All relevant data are included in the paper and its supporting information files. This study will assist researchers in identifying critical areas for Relationship Between Personal Hygiene And Ascaris Lumbricoides Infection

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