



## Examination for worms soil transmitted helminths with the influence of PHBS on children in Karadenan village, Bogor reGENCY

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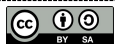
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### Abstract

**Background:** Worms are a parasitic infection in the form of worms entering the human body. One of the factors that causes worms is personal hygiene. The aim of the research is to study the relationship between risk factors and the effects of worms on children's health. **Objectives:** One place that has a risk of worms is the village of Keradenan, Bogor district, because the condition of the village is slum. **Materials and Methods:** This type of research is analytical with a cross sectional research design. The sample in this study was 96 people who met the inclusion and exclusion criteria using a purposive sampling technique. Data collection was carried out by filling out questionnaires and checking for worms (soil transmitted helminths) using native methods. Data processing uses statistical software with the Chi square test. **Results:** The incidence of worms was 13.54% of the 96 samples of the type of Soil Transmitted Helminthes worm that infects children, namely *Ascaris Lumbricoides*. **Conclusions:** Based on the results of the research, there is an influence on clean and healthy living behavior on the children of the village of Keradenan, the result of worm examinations is that the number of worms has decreased.

### Keywords

*Ascaris lumbricoides*, Infection, Soil transmitted helminths, Worms.



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## 1. Introduction

Worms are a parasitic infection in the form of worms entering the body humans, causing various functional and anatomical abnormalities in the human body (Setyowatiningsih & Surati, 2017) (Humaedi & Kurniawan, 2022) ( et al., 2021). Worms that often infect the human body consist of two large groups, namely the *Platyhelminthes* and *Nemathelminthes phyla*. The *Platyhelminthes phylum* consists of two classes, namely the *Cestoda worms* and the *Trematoda* class. Meanwhile, the *Nemathelminthes phylum* consists of the tissue nematode and intestinal nematode classes. (Lalangpuling et al., 2018) (Moser et al., 2017).

Data from the World Health Organization (WHO) in 2023 shows that the estimated number of people in the world infected with *Soil Transmitted Helminths* is more than 1.5 billion people, or 24% of the entire world population. The estimated incidence of *Ascaris lumbricoides* ranges between 807 million - 1.2 billion, *Trichuris trichiura* between 604 - 795 million, Hookworm ranges between 576 - 740 million. Indonesia has around 73 million people, and Bogor Keradenan has 630 - 670 thousand people (Muslimah et al., 2020).

Clean and Healthy Living Behavior (PHBS) is a form of awareness of a person or group in behaving to create conditions that are conducive for individuals, families and community groups to maintain, maintain and improve their health levels (Kurniawan & Pramitaningrum, 2022; Septiani et al., 2021). The level of awareness of clean and healthy living behavior is very much needed, this is related to the level of risk of individuals or groups being exposed to various diseases, including being infected with *Soil Transmitted Helminths* (STH), which can be related to clean and healthy living behavior such as washing hands, contact with soil, and nail cleanliness (Saskyarasmi et al., 2021).

The main factor in the transmission of worm eggs to humans is poor hygiene. Unhealthy lifestyle behaviors such as not washing hands, not wearing footwear, and not cutting nails can be a source of entry of worms into the body (Kusumawardani, 2018) (Wiryadana et al., 2018). Worm eggs found under the nails can enter the mouth with food and infective worm larvae can penetrate human skin if they come into direct contact with the soil (Lalangpuling et al., 2018). Low socio-economic conditions such as slum housing, low education, low family income, crowded housing, and poor access to clean water can increase the risk of worms (Gordon et al., 2017; Kartini et al., 2017).

The problem in this research is identifying the type of Soil Transmitted Helminths eggs in children in Karadenan village, Bogor district. The results of research in monitoring the incidence of anemia show that there is no relationship between Soil Transmitted Helminth status and the incidence of anemia in elementary school students, with a statistical test value ( $p < 0.05$ ) (Ibrahim & Ibrahim, 2013). The difference between previous research was on the incidence of anemia in elementary school students, whereas this research focuses on identifying types of worm eggs in children through clean and healthy living behavior (PHBS).

Several domestic animals, namely cows, buffalo and goats, have shown that they can help

the spread of *Ascaris*, *Ancylostoma* and *Trichiuris* eggs mechanically. Other factors that can influence the transmission of STH eggs include employment in agriculture, ownership of livestock, and consumption of raw fresh vegetables using human feces as fertilizer (Mala Mustria, 2022; Muslimah et al., 2020).

This research aims to study the relationship between risk factors and the effects of worms on children's health. The urgency of conducting research in Karadenan Bogor is because it is a slum area, sanitation is not good and cleanliness is lacking. Previous research conducted by Setiawan found 30% of *Ascaris* worm eggs in children, the difference in examination methods using native methods and worm results in this study was smaller (Anwar et al., 2018; Pradinata et al., 2019). The urgency of this research must be carried out because based on field observations, many symptoms of the disease were found, so that it does not spread, it is necessary to carry out worm examinations and preventive measures for parents and their children.

## 2. Materials and Methods

### 2.1. Type of research

This research uses analytical research, with a cross-sectional research design, which studies the relationship between risk factors and effects in the form of health problems or disease. This research will be held in Gang Kaumhandap, Karadenan Village, Cibinong District, Bogor Regency, West Java Province, while laboratory examinations will be carried out at the Binawan University Laboratory.

### 2.2. Research Method

The samples used were 96 samples consisting of feces from children aged 2 - 8 years, and hygiene in Kaumhandap Alley, Karadenan Village, Cibinong District, Bogor Regency. The sampling technique uses purposive sampling and uses the Slovin formula. The research stages are as follows, prepare a clean glass object, add 1 drop of 2% eosin solution, add 1 drop of feces to the glass object, homogenize the 2% eosin solution and feces with a toothpick, cover neatly with a cover glass and avoid any air bubbles (Lalangpuling et al., 2018). Examine under an Olympus CX 22 microscope with CX22 specifications using a built-in halogen bulb for bright illumination. The improved Siedentop binocular tube provides wider height adjustment from 378 mm to 428mm, 10x - 40x magnification and worm

proofing results.

Native methods are used to determine the type of protozoa that infects the digestive tract. The feces are placed on a glass object using a toothpick, then 2-3 drops of distilled water were added and homogenized. Next, it was covered with a cover glass and observed using a microscope with a magnification of 10x40. The next stage was that respondents were asked to fill out a questionnaire and fill out a consent form. The data was processed to identify the relationship between clean and healthy living behavior.

The data obtained will be processed and analyzed in tabular form. Using the Univariate test and Bivariate test to determine the relationship between variables and the statistical test used is the chi square test. This data will be processed in Microsoft Excel and SPSS 22 applications. This research has received Ethical Clearance approval from Budhi Asih Regional Hospital with Number 316/KEP-ETIK/VI/2021.

### 3. Results and Discussion

#### 3.1. Results

The research results are based on univariate and bivariate test statistics. The results of the univariate test showed that based on variable categorization, it showed that out of 96 respondents there were 13 respondents who were positively detected by worms (13.54%) and there were 83 respondents who were not detected by worms (86.46%).

Based on the results of the bivariate test, the relationship between washing hands before eating and the incidence of worms using the chi-square test at a confidence level of 25% found a value of  $p = 0.002$  because there was 1 cell that had the expected value ( $E < 5$ ), so the test was continued with Fisher's exact and the value was found.  $p = 0.011$  ( $p < 0.05$ ) so it is stated that there is a significant relationship between the habit of washing hands before eating and the incidence of worms in children, which can be seen in Table 1.

**Table 1.** Bivariate test of the relationship between hand washing and the incidence of worms

| Activity                                 | Negative Value | %    | Positive Value | %    | Results |
|--|----------------|------|----------------|------|---------|
| The habit of washing hands before eating | 79             | 95.2 | 9              | 69.2 | 0.011   |
| No Washing                               | 4              | 4.8  | 4              | 30.8 |         |

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|       |    |     |    |     |
|-------|----|-----|----|-----|
| Total | 83 | 100 | 13 | 100 |
|-------|----|-----|----|-----|

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Based on the results of the bivariate test, the relationship between washing hands after defecation and the incidence of worms using the chi-square test at a confidence level of 25% found a value of  $p = 0.528$  because there was 1 cell that had the expected value ( $E < 5$ ), so the test was continued with Fisher's exact and was found with  $p$  value = 0.621 ( $p > 0.05$ ) then it is stated that there is no significant relationship between the habit of washing hands after defecating and the incidence of worms in children.

Based on the results of the bivariate test, the relationship between washing hands after defecation and the incidence of worms using the chi-square test at a confidence level of 25% found a value of  $p = 0.528$  because there was 1 cell that had the expected value ( $E < 5$ ), so the test was continued with Fisher's exact and was found with  $p$  value = 0.621 ( $p > 0.05$ ) then it is stated that there is no significant relationship between the habit of washing hands after defecating and the incidence of worms in children

Based on the results of the bivariate test variable, the relationship between the habit of wearing footwear when leaving the house and the incidence of worms using the chi-square test at a confidence level of 25% found a value of  $p = 0.000$  because there was 1 cell that had the expected value ( $E < 5$ ), so the test was continued with Fisher's exact and found with a value of  $p = 0.001$  ( $p < 0.05$ ), it is stated that there is a significant relationship between the habit of wearing footwear when leaving the house and the incidence of worms in children. Based on the results of the bivariate test variable, the relationship between defecation in the toilet, not in the latrine/stream, and the incidence of worms.

Using the chi-square test at a confidence level of 25%, it was found that the value  $p = 0.015$  because there was 1 cell that had the expected value ( $E < 5$ ), so the test was continued with Fisher's exact and it was found with a value of  $p = 0.029$  ( $p < 0.05$ ), so it was stated There is a significant relationship between the habit of defecating in the toilet, not in the latrine/stream, and the incidence of worms in children. Based on the results of the chi-square statistical test analysis at a confidence level of 25%, the  $p$  value was found = 0.343 because there is 1 cell that has an expected value ( $E < 5$ ) then test followed by Fisher's exact and found with a value of  $p = 0.461$  ( $p > 0.05$ ), it was stated that there was no significant relationship between the habit of regularly cutting nails and the incidence of worms.

### 3.2. Discussion

Based on the research results, it is known that in the case group there were more respondents who washed their hands before eating, namely 88 respondents (91.6%) compared to the group who did not wash their hands before eating, namely 8 respondents (8.4%). The results of the chi square statistical test obtained a p value =  $0.011 < 0.05$ , which means that there is an influential relationship between the variable washing hands before eating and the incidence of worms. With correct use, all soaps have the same effectiveness in eliminating disease-causing germs.

Based on the research results, it is known that in the case group there were more respondents who washed their hands after defecating, namely 86 respondents (89.6%) than in the group who did not wash their hands after defecating, namely 10 respondents (10.4%). The results of the chi square statistical test obtained a p value =  $0.621 > 0.05$ , which means that there is no significant relationship between the variable washing hands after defecating and the incidence of worms. Based on the research results, it is known that in the case group there were more respondents who wore footwear when leaving the house, namely 81 respondents (84.4%) compared to the group who did not wear footwear when leaving the house, namely 15 respondents (15.6%).

The results of the chi square statistical test obtained a value of  $p = 0.001 < 0.05$ , which means that there is an influential relationship between the variable wearing footwear when leaving the house and the incidence of worms. By wearing footwear, you can break the connection between disease germs and germs in the body, so that worm infections can be avoided.

Based on the research results, it is known that in the case group there were more respondents who defecated in the toilet, namely 81 respondents (84.4%) compared to the group who defecated in the latrine/stream, namely 15 respondents (15.6%). The results of the chi square statistical test obtained a value of  $p = 0.029 < 0.05$ , which means that there is an influential relationship between the variable defecating in the toilet, not in the latrine or river, and the incidence of worms.

Based on the research results, it is known that in the case group there were more respondents who regularly cut their nails, namely 67 respondents (69.8%) compared to the

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group who did not regularly cut their nails, namely 29 respondents (30.2%). The results of the chi square statistical test obtained a value of  $p = 0.461 > 0.05$ , which means that there is no significant relationship between the variable of routinely cutting nails and the incidence of worms. Therefore, nails should always be cut short and kept clean using a nail cutter or if there is dry tissue around the nails, apply lotion or mineral oil, soak nails if they are thick and rough to avoid transmission of worm infections from hand to mouth. (Prabandari, et al. 2020) Based on the research above, one type of worm egg was found, namely *Ascaris lumbricoides*, which can be seen in Figure 1.

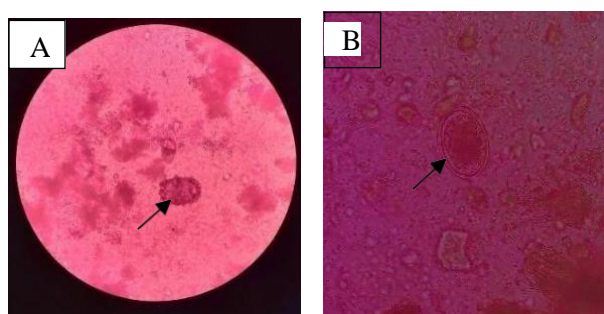


Figure 1. *Ascaris lumbricoides*. (A) Unfertile worm eggs. (B) Fertile.

#### 4. Conclusions

Based on the results of the research, there is an influence on the clean and healthy living behavior of children in the village of Keradenan, the results of worm examinations are decreasing in the number of worms

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**Author Contributions:** Muhammad Rizki Kurniawan: Conceptualization, Formal analysis, Investigation, Resources, Writing-Original Draft, Writing-Editing, Software, Project administration, Funding acquisition. Aturut Yansen: Validation, Supervision, Review. Rima Nirwana: Methodology, Data Curation, Visualization.

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