

Analysis Of Mothers' Knowledge Level Regarding Helminthiasis In Children Aged 1–10 Years In Kemurang Wetan Village, Brebes Regency, Indonesia

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A B S T R A K

Pendahuluan: Helminthiasis masih menjadi salah satu penyakit infeksi parasit yang paling umum terjadi di negara-negara berkembang, termasuk Indonesia. Anak-anak usia 1–10 tahun sangat rentan terhadap infeksi *Soil-Transmitted Helminths* (STH) karena praktik kebersihan diri yang kurang memadai dan seringnya terpapar lingkungan yang terkontaminasi. Ibu memiliki peran penting dalam mencegah helminthiasis melalui penerapan perilaku hidup sehat dan pemeliharaan praktik kebersihan yang baik pada anak. Oleh karena itu, pengetahuan ibu yang memadai sangat penting untuk mengurangi risiko infeksi STH. **Tujuan:** Penelitian ini bertujuan untuk mengetahui tingkat pengetahuan ibu mengenai helminthiasis pada anak usia 1–10 tahun di Desa Kemurang Wetan, Kabupaten Brebes. **Metode:** Penelitian ini menggunakan metode deskriptif yang melibatkan 30 ibu yang memiliki anak usia 1–10 tahun. Responden dipilih menggunakan teknik *total sampling*. Data primer dikumpulkan melalui kuesioner terstruktur dan dianalisis secara deskriptif menggunakan distribusi frekuensi dan persentase. **Hasil:** Hasil penelitian menunjukkan bahwa sebagian besar responden memiliki tingkat pengetahuan yang baik mengenai helminthiasis, yaitu sebanyak 23 responden (77%). Sebanyak 4 responden (13%) memiliki tingkat pengetahuan sedang, sedangkan 3 responden (10%) memiliki tingkat pengetahuan kurang. **Kesimpulan:** Sebagian besar ibu di Desa Kemurang Wetan memiliki tingkat pengetahuan yang baik mengenai helminthiasis pada anak usia 1–10 tahun. Meskipun demikian, masih terdapat sebagian ibu yang memiliki tingkat pengetahuan sedang dan kurang. Pendidikan kesehatan secara berkelanjutan dan program promosi kesehatan berbasis masyarakat direkomendasikan untuk meningkatkan pengetahuan ibu serta memperkuat upaya pencegahan helminthiasis pada anak.

Kata Kunci: Pengetahuan Ibu, Helminthiasis, Cacing Yang Ditularkan Melalui Tanah, Anak-Anak, Promosi Kesehatan.

A B S T R A C T

Introduction: Helminthiasis remains one of the most common parasitic infectious diseases in developing countries, including Indonesia. Children aged 1–10 years are particularly vulnerable to *Soil-Transmitted Helminths* (STH) infection due to inadequate personal

hygiene practices and frequent exposure to contaminated environments. Mothers play a crucial role in preventing helminthiasis by promoting healthy behaviors and maintaining proper hygiene practices among their children. Therefore, adequate maternal knowledge is essential to reduce the risk of STH infection. Objective: This study aimed to identify the level of mothers' knowledge regarding helminthiasis among children aged 1–10 years in Kemurang Wetan Village, Brebes Regency. Methods: A descriptive study was conducted involving 30 mothers who had children aged 1–10 years. Respondents were selected using the total sampling technique. Primary data were collected through a structured questionnaire and analyzed descriptively using frequency and percentage distributions. Results: The findings showed that most respondents had a good level of knowledge regarding helminthiasis, accounting for 23 respondents (77%). Four respondents (13%) had a moderate level of knowledge, while three respondents (10%) demonstrated a poor level of knowledge. Conclusion: Most mothers in Kemurang Wetan Village had a good level of knowledge regarding helminthiasis among children aged 1–10 years. Nevertheless, a proportion of mothers still demonstrated moderate and poor knowledge. Continuous health education and community-based health promotion programs are recommended to improve maternal knowledge and strengthen helminthiasis prevention efforts among children.

Keywords: *maternal knowledge, helminthiasis, Soil-Transmitted Helminths, children, health promotion.*

PENDAHULUAN

Helminthiasis remains one of the major infectious diseases affecting public health, particularly in developing countries with tropical and subtropical climates, including Indonesia. The disease is caused by parasitic worm infections that generally occur chronically and often present with nonspecific clinical manifestations, resulting in delayed diagnosis and treatment. Nevertheless, helminth infections can substantially affect health status by causing malnutrition, anemia, impaired physical growth and cognitive development, as well as reduced learning ability and productivity, especially among children (1).

Among the parasitic worms infecting humans, Soil-Transmitted Helminths (STH) are the most prevalent. These include *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworms (*Ancylostoma duodenale* and *Necator americanus*). STH infections are transmitted through soil contaminated with infective eggs or larvae due to inadequate environmental sanitation and poor personal hygiene practices (2). Children aged 1–10 years are particularly vulnerable because they frequently play on contaminated soil, have not yet developed proper handwashing habits, and often demonstrate inadequate personal hygiene practices (3).

According to the World Health Organization (WHO), approximately 1.5 billion people, representing about 24% of the global population, are infected with STH. More than 260 million preschool-aged children and 654 million school-aged children live in endemic areas and require periodic deworming and preventive interventions to reduce the burden of infection (4). In Indonesia, helminthiasis remains classified as a neglected tropical disease, with reported prevalence ranging from 2.5% to 62%, depending on environmental sanitation, socioeconomic conditions, and community hygiene behaviors (5). Brebes Regency, located in Central Java Province, is one of the endemic areas where helminthiasis continues to pose a public health challenge, emphasizing the need for effective prevention and control strategies.

In addition to environmental factors, the occurrence of helminth infections among children is strongly influenced by hygiene and sanitation practices within the household. Mothers play a central role as primary caregivers in establishing healthy behaviors in children, including regular handwashing with soap, routine nail trimming, wearing footwear during outdoor activities, and maintaining food and environmental hygiene. Adequate maternal knowledge regarding helminthiasis is expected to influence positive attitudes and preventive behaviors, thereby reducing the risk of infection among children (6). Conversely, limited maternal knowledge may lead to poor implementation of preventive measures and increase children's susceptibility to STH infection.

Previous studies have demonstrated a significant relationship between maternal knowledge and helminthiasis prevention among children. Triyana et al. reported that mothers' knowledge, attitudes, and practices were significantly associated with the occurrence of STH infections among elementary school children (7). Other studies have also shown that personal hygiene behaviors, which are strongly influenced by maternal knowledge, contribute to reducing the risk of STH infection in children (8). However, most previous studies were conducted in urban settings or focused primarily on hygiene practices without specifically evaluating maternal knowledge in rural communities, where the risk of STH infection remains relatively high. Furthermore, information regarding mothers' knowledge of helminthiasis among children aged 1–10 years in Kemurang Wetan Village, Brebes Regency, is still limited. This lack of evidence represents a research gap that should be addressed to support the development of effective community health education programs.

Preliminary observations conducted in Kemurang Wetan Village revealed that many children still played barefoot on the ground, failed to wash their hands before eating, and demonstrated poor personal hygiene practices. In addition, some mothers perceived helminthiasis as a minor illness, resulting in insufficient implementation of preventive measures. These findings

highlight the importance of improving maternal knowledge as an essential strategy for preventing helminth infections among children.

Therefore, this study aimed to assess the level of mothers' knowledge regarding helminthiasis among children aged 1–10 years in Kemurang Wetan Village, Brebes Regency, Indonesia. The findings are expected to provide baseline information for designing community health promotion and educational programs to improve maternal knowledge and strengthen preventive efforts against Soil-Transmitted Helminth infections among children.

METODE

Study Design

This study employed a quantitative descriptive research design to assess the level of mothers' knowledge regarding helminthiasis among children aged 1–10 years. The study was conducted in Neighborhood Unit (RW) 06, Kemurang Wetan Village, Brebes Regency, Central Java, Indonesia, from June to July 2024.

Data Source and Sampling Technique

Primary data were collected directly from respondents using a structured questionnaire. The study population consisted of all mothers with children aged 1–10 years residing in Kemurang Wetan Village, Brebes Regency, totaling 30 individuals. Since the population size was relatively small, a total sampling technique was employed, resulting in 30 respondents.

The inclusion criteria were mothers who had children aged 1–10 years, were willing to participate in the study, were able to read and write, and resided in Kemurang Wetan Village. The exclusion criteria included mothers who declined to participate, did not complete the entire study procedure, or were unable to participate due to physical or other conditions.

Study Variables

The primary variable in this study was the mothers' level of knowledge regarding helminthiasis among children aged 1–10 years. Knowledge was assessed based on respondents' understanding of the definition, causes, risk factors, signs and symptoms, health impacts, and preventive measures of helminthiasis. Respondent characteristics, including age, educational level, and occupation, were also collected.

Knowledge scores were classified into three categories based on the percentage of correct answers: good ($\geq 76\%$), moderate (56–75%), and poor ($\leq 55\%$).

Data Collection

Data collection was conducted after obtaining permission from the local village authorities. Before completing the questionnaire, all respondents received an explanation regarding the

objectives and procedures of the study and were asked to provide written informed consent. The respondents completed the questionnaire independently, with assistance from the researchers when necessary. After all questionnaires had been collected, data completeness was checked before data processing and analysis.

Research Instrument

Data were collected using a structured questionnaire developed based on the literature on helminthiasis. The questionnaire consisted of two sections: respondent characteristics and 15 knowledge-related questions concerning helminthiasis.

Each correct response was assigned a score of one (1), while each incorrect response received a score of zero (0). Prior to data collection, the questionnaire underwent validity and reliability testing. The validity test indicated that all questionnaire items had a calculated correlation coefficient ($r_{\text{calculated}}$) greater than the critical value ($r_{\text{table}} = 0.361$), indicating that all items were valid. Reliability testing using Cronbach's Alpha yielded a coefficient of 0.693, demonstrating acceptable internal consistency of the instrument.

Ethical Considerations

This study was conducted after obtaining permission from the Government of Kemurang Wetan Village. All respondents received complete information regarding the objectives and benefits of the study and provided written informed consent prior to participation. Respondents' identities were kept confidential, and all collected data were used solely for research purposes. If ethical approval was obtained from an Institutional Review Board or Ethics Committee, the name of the ethics committee and the approval number should be included in this section.

Data Analysis

The collected data were checked for completeness (editing), coded, entered into Microsoft Excel, and analyzed using descriptive statistical methods. The findings are presented as frequency distributions and percentages to describe the level of mothers' knowledge regarding helminthiasis among children aged 1–10 years.

HASIL DAN PEMBAHASAN

Respondent Characteristics

A total of 30 mothers with children aged 1–10 years participated in this study. Most respondents were aged 26–35 years (43.3%), followed by those aged 36–45 years (40.0%), ≥45 years (13.3%), and 17–25 years (3.3%). Regarding educational attainment, nearly half of the respondents had completed elementary school (46.7%), while junior high school and senior high school graduates each accounted for 26.7% of the respondents. In terms of occupation,

the majority were housewives (76.7%), followed by self-employed workers (16.7%) and agricultural laborers (6.6%).

Table 1. Characteristics of the Respondents

Characteristics	n	%
Age		
17–25 years	1	3,3
26–35 years	13	43,3
36–45 years	12	40,0
≥45 years	4	13,3
Education		
Elementary School	14	46,7
Junior High School	8	26,7
Senior High School	8	26,7
Occupation		
Housewife	23	76,7
Self-employed	5	16,7
Agricultural Laborer	2	6,6

Mothers' Knowledge of Helminthiasis

The findings indicated that most respondents had a good level of knowledge regarding helminthiasis. Of the 30 respondents, 23 (77%) demonstrated good knowledge, 4 (13%) had a moderate level of knowledge, and 3 (10%) had poor knowledge.

Table 2. Mothers' Level of Knowledge Regarding Helminthiasis

Knowledge Level	n	%
Good	23	77
Moderate	4	13
Poor	3	10
Total	30	100

PEMBAHASAN

These findings can be further explained using the PRECEDE–PROCEED Model developed by Green, which classifies the determinants of health behavior into three categories: predisposing factors (knowledge, attitudes, beliefs, and values), enabling factors (availability of facilities, infrastructure, and access to health services), and reinforcing factors (support from family members, community leaders, and healthcare professionals) (9)(10). Within this framework, maternal knowledge regarding helminthiasis functions as a predisposing factor that forms the basis for individuals' intentions and readiness to adopt healthy behaviors. However, the translation of knowledge into actual preventive practices depends on the availability of enabling factors, such as access to clean water, soap, and anthelmintic drugs, as well as reinforcement from the surrounding social environment. Therefore, the relatively high level of knowledge observed among mothers in Kemurang Wetan Village represents an important foundation for disease prevention but should be continuously supported by adequate facilities and sustained social reinforcement to ensure the consistent adoption of preventive behaviors in daily life (11).

The consistency of these findings with previous studies further supports the important role of maternal knowledge in controlling Soil-Transmitted Helminth (STH) infections among children. A study conducted in Seluma Regency, Bengkulu Province, reported that maternal educational attainment and knowledge were significantly associated with the occurrence of STH infections among elementary school children (12). Similarly, research conducted in Palu City demonstrated significant associations between knowledge, hygiene behavior, environmental sanitation, and the prevalence of helminthiasis among school-aged children (13). More recently, a study conducted at SD Negeri 23 Pasir Sebelah confirmed that mothers' knowledge, attitudes, and practices were consistently associated with the risk of STH infection in children (7). Likewise, research involving parents of students at SDN Ciberem, Banyumas, found that parental knowledge regarding helminthiasis and its treatment was significantly related to STH infection among their children (14). The consistency of these findings across different geographical areas and socio-demographic settings suggests that the association between maternal knowledge and STH prevention is robust rather than merely a localized phenomenon.

Regarding educational background, the present findings reinforce the evidence that formal education is one of the most consistent determinants of health literacy reported in the literature. Mothers with higher educational attainment generally possess better reading comprehension, critical thinking, and information-processing skills, enabling them to better understand and

evaluate health information obtained from healthcare professionals, mass media, and their social environment. Consequently, such information is more readily transformed into accurate health knowledge (8),(15). Conversely, limited formal education may hinder an individual's ability to comprehend medical terminology and interpret recommendations for disease prevention, thereby contributing to knowledge disparities, as observed among several respondents with only elementary school education in the present study.

Occupational characteristics may also contribute to differences in knowledge levels. Housewives are likely to have greater opportunities to access health information through integrated community health posts (Posyandu) and community-based health education programs. This assumption is supported by an intervention study conducted at Posyandu Baleagung, Magelang, which reported significant improvements in maternal knowledge following participation in community-based helminthiasis education sessions (16). Such community-based educational activities highlight the strategic role of Posyandu as an accessible platform for delivering continuous health promotion to mothers while reinforcing the contribution of regular exposure to primary healthcare services in improving health knowledge.

Although many respondents demonstrated good knowledge, approximately 23% still exhibited moderate or poor knowledge, indicating that health education efforts should be continuously strengthened. Indonesia remains one of the countries with a substantial burden of Soil-Transmitted Helminth infections among developing nations; therefore, health promotion initiatives should continue even when community knowledge appears relatively satisfactory (17). Poor personal hygiene practices—including infrequent handwashing with soap, long and unclean fingernails, and failure to wear footwear while walking or playing on contaminated soil—have consistently been identified as major risk factors for STH transmission among school-aged children in many developing countries, including Indonesia (18). Consequently, future health education programs should not only emphasize conceptual knowledge regarding the causes and consequences of helminthiasis but should also focus on practical preventive skills, including proper handwashing techniques according to the Indonesian Ministry of Health guidelines, routine nail trimming, consistent footwear use, and adherence to scheduled deworming programs (19).

Compliance with periodic deworming administration represents another important component of helminthiasis prevention that is closely associated with parental knowledge. A study conducted in Surabaya reported that parents with better knowledge were more likely to comply with the recommended schedule for administering deworming medication to their children

(20). This finding is consistent with the World Health Organization (WHO) strategy recommending periodic preventive chemotherapy through mass administration of anthelmintic drugs to at-risk populations in endemic areas without requiring individual diagnosis, as part of the global strategy for controlling STH infections (1). Nevertheless, this strategy should be integrated with continuous health education and improvements in environmental sanitation, as deworming alone without sustained behavioral change may result in rapid reinfection (21).

Taken together, the findings of the present study emphasize the importance of continuous and comprehensive health education programs that extend beyond one-way information delivery. Educational interventions involving Posyandu, community health volunteers, and user-friendly educational media tailored to mothers with diverse educational backgrounds are likely to be more effective in reaching all segments of the community, particularly those who still demonstrate moderate or poor knowledge regarding helminthiasis prevention (22),(23).

SIMPULAN

This study demonstrated that the majority of mothers with children aged 1–10 years in Kemurang Wetan Village, Brebes Regency, Indonesia, had a good level of knowledge regarding helminthiasis. This finding indicates that most respondents had a satisfactory understanding of the definition, causes, clinical manifestations, health consequences, and preventive measures related to helminthiasis in children. Nevertheless, a proportion of respondents still exhibited moderate and poor levels of knowledge, highlighting the need for continuous health education interventions.

Based on respondents' characteristics, good knowledge was more commonly observed among mothers aged 26–35 years, those with junior or senior high school education, and housewives. These findings suggest that age, educational attainment, and occupation may contribute to maternal knowledge regarding helminthiasis.

Therefore, continuous health promotion programs through community health education, Posyandu (integrated community health posts), and other educational media should be strengthened to improve maternal knowledge and encourage the adoption of clean and healthy lifestyle practices as an essential strategy for preventing Soil-Transmitted Helminth (STH) infections among children.

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