

## EVALUATION OF THE DEWORMING MEDICATION PROGRAM FOR SCHOOL-AGED CHILDREN IN SIMPANG IV SIPIN PUBLIC HEALTH CENTER

Evy Wisudariani<sup>1</sup>, Arnati Wulansari<sup>1</sup>, Ahmad Thohir Hidayat<sup>1</sup>, Zahra Frizki Asty<sup>2</sup>

<sup>1</sup>Departement Public Health, Faculty of Medicine and Health Sciences, Universitas Jambi

<sup>2</sup>Department of Medicine, Faculty of Medicine and Health Sciences, Universitas Jambi

### Abstract

Neglected Tropical Diseases (NTDs) remain a public health concern in Indonesia. STH infections are among the neglected tropical diseases that continue to pose a significant public health problem, particularly in areas with poor sanitation and low levels of hygiene. School-aged children (5–14 years) are especially vulnerable, as they are often exposed to environments contaminated with parasitic worm eggs. The objective of this study is to evaluate the implementation and effectiveness of the deworming program and to formulate improvement recommendations. Qualitative research design using evaluation model approach (input, process, output, and outcome) was employed. Data collection techniques were carried out by indepth interviews, document review and observation. Validity test of data was done using triangulation source, method, and theory. Data processing was descriptively. The program officer responsible for the deworming program at Simpang IV Sipin PHC has a background in a three-year Diploma of Midwifery and has 15 years of work experience. It is noted that the officer has never received any specific training related to this program. The program coverage and achievement targets have been fully attained, with the number of children receiving deworming medication meeting the established goals. There is a persistent deficiency in the conduct of regular monitoring and evaluation. Simpang IV Sipin Primary Health Center should strengthen coordination with schools to ensure timely implementation of the preventive deworming schedule, conduct systematic monitoring and evaluation to maintain high program coverage and adherence to medication, and provide age-appropriate educational materials to enhance children's awareness of helminth infection prevention.

**Keywords:** Neglected disease, Helminth, Evaluation, Program

Article Received : October 15, 2025

Article Revised : November 27, 2025

Article Published : November 31, 2025

Corresponding Author : Evy Wisudariani

Email: [evywisudariani@unja.ac.id](mailto:evywisudariani@unja.ac.id)

## INTRODUCTION

Neglected Tropical Diseases (NTDs) remain a significant public health problem. In Indonesia, several NTDs are prioritized, including filariasis, soil-transmitted helminthiasis, schistosomiasis, leprosy, rabies, and yaws. NTDs are diseases caused by various pathogens, including viruses, bacteria, protozoa, and parasitic worms (1).

Soil-transmitted helminthiasis (STH), or intestinal worm infection, is one of the neglected tropical diseases that continues to pose a public health challenge in Indonesia, particularly in areas with poor sanitation and low standards of personal hygiene. School-aged children (5–14 years) are among the most vulnerable groups due to frequent exposure to environments contaminated with helminth eggs. Intestinal helminth infections, such as *Ascaris lumbricoides*, *Trichuris trichiura*, and *Ancylostoma duodenale*, can lead to various adverse effects in children, including anemia, malnutrition, impaired growth and development, and decreased learning concentration. These conditions ultimately affect the quality of future human resources (2).

According to World Health Organization (WHO) data in 2023, more than 1.5 billion people, or approximately 24% of the global population, were infected with soil-transmitted helminths, including 260 million preschool-aged children and 654 million school-aged

children. Helminthiasis remains a neglected disease and is responsible for more than 500,000 deaths annually. It is most prevalent in developing countries, with approximately 70% of STH infections occurring in Asia, particularly in Southeast Asia. Helminths consume host iron and protein by feeding on host tissues, including blood. Anemia, for example, can result from chronic blood loss caused by hookworm infections in the intestine. Helminths also interfere with proper nutrient absorption. Additionally, certain soil-transmitted helminths cause loss of appetite, leading to reduced nutritional intake and physical fitness. In roundworm infections, parasites compete with the host for vitamin A in the intestine (3).

According to data from the 2021 Indonesian Nutrition Status Survey (SSGI) by the Ministry of Health, the prevalence of helminth infection among children under five was 2.8%, with national prevalence ranging from 2.5% to 62% and affecting all age groups, with rates between 40% and 60%. The prevalence of helminthiasis can reach up to 80%, particularly in areas with poor sanitation. Approximately 60% of cases occur among children aged 5–14 years, with 21% affecting elementary school children. In Jambi City, helminthiasis cases in 2023 remained one of the most common environmentally based diseases, ranking fourth among other diseases, including cases within the working area of Simpang IV Sipin Primary Health Center.

To address this issue, the Indonesian government, through the Ministry of Health, has implemented a Mass Preventive Chemotherapy Program (POPM) for deworming among elementary school-aged children and equivalent groups, conducted twice a year. This program aims to reduce the prevalence of helminth infections and prevent the long-term consequences of these infections in children (4).

Although implemented nationwide, the program faces several challenges, including limited coverage in remote areas, resistance from certain communities, and inadequate routine monitoring and evaluation. Furthermore, the success of the program depends not only on drug distribution but also on improvements in hygiene behavior and environmental sanitation. Therefore, a comprehensive evaluation of the deworming program is needed to assess its effectiveness, identify existing barriers, and formulate more appropriate improvement strategies. This evaluation is also essential as a basis for policy decision-making to strengthen helminth control programs in Indonesia, particularly in Jambi City (5).

The study was conducted at Simpang IV Sipin Primary Health Center due to its large coverage area and numerous schools, providing an ideal setting for evaluating the deworming program. The health center implements deworming through a structured schedule and zoned coverage, with staff maintaining regular communication with school personnel to ensure medication distribution and adherence. Monitoring is performed systematically, including coverage recording, follow-up visits, assessment of health education effectiveness, and identification of implementation challenges. This approach allows for a comprehensive evaluation of program performance across diverse school settings. Enhancing integrated health management necessitates improving staff performance, fostering effective collaboration, and establishing strong leadership, all of which are critical for ensuring coordinated service delivery, optimizing program implementation, and achieving improved community health outcomes (6,7).

This study employed a problem-solving approach by evaluating the program through input, process, output, and outcome aspects to assess implementation effectiveness, identify obstacles, and formulate appropriate improvement strategies. The evaluation also supports the

development of control efforts for other neglected tropical diseases, such as leprosy, yaws, filariasis, and helminthiasis, followed by more specific development and long-term evaluation of implemented interventions. The objective of this study is to evaluate the implementation of the deworming program based on input, process, output, and outcome variables in order to assess the effectiveness of the program, identify the challenges encountered, and formulate more targeted improvement recommendations.

## **METHODS**

The evaluation was conducted based on four variables input, process, output, and outcome of the preventive deworming drug program for school aged children at Simpang IV Sipin Primary Health Center, Jambi City, from June to October 2025. Qualitative research design using the evaluation model approach (input, process, output, and outcome) was employed. Data collection techniques were carried out by indepth interviews, document review and observation. Validity test of the data was done using triangulation technique source, method, and theory. The informants in this study consisted of three informants, a deworming program officer (ab), a child health program coordinator (ij) and the head of administration at the Simpang IV Sipin Public Health Center (rk). Informants were selected using purposive sampling due to their direct roles and involvement in the implementation of the program. Data credibility was ensured through source and method triangulation by comparing data obtained from in-depth interviews, field observations, and document reviews related to the deworming program for school-aged children. (8–10).

This study evaluated the deworming program at Simpang IV Sipin Primary Health Center using the Input, Process, Output, and Outcome. The input dimension assessed human resources, including officers responsible for neglected tropical disease control, particularly those in helminth infection prevention, based on their educational background, relevant training, work experience, and multiple task assignments. It also examined available facilities, such as operational field transportation and recording tools, as well as funding allocated for the operational activities of the helminth infection prevention program (11). The process dimension included planning, defined as the development of work plans for program activities; implementation, encompassing all officer activities in executing program tasks; supervision, referring to monitoring activities conducted throughout implementation; and evaluation, which involved assessing program activities and analyzing supervision and monitoring results. The output dimension focused on case detection, defined as the number of helminth infection cases identified and treated at health service facilities, and service coverage, calculated as the proportion of individuals receiving services relative to the predetermined target. Finally, the outcome dimension was defined as the expected reduction in the incidence of helminth infections within the working area of Simpang IV Sipin Primary Health Center, Jambi City. This structured evaluation framework allowed for a comprehensive assessment of program implementation, effectiveness, and areas for improvement (12,13).

## **RESULTS**

The results of the evaluation of the helminth prevention program at Simpang IV Sipin Primary Health Center are presented below.

## 1. Input

The inputs assessed in this study included human resources, facilities, and funding. Based on indepth interviews with health workers at Simpang IV Sipin Primary Health Center, it was found that the officer responsible for the helminthiasis program had never received specific training related to helminth infection prevention. This was reflected in the following interview excerpt:

“I have never attended any training related to helminthiasis.” (ab)

Regarding the adequacy of human resources, the program was considered sufficient because implementation activities were supported by other health personnel.

*“There is only one person in charge of the deworming program. However, field activities are supported by environmental health officers, health promotion staff, and other public health personnel.” (ij)*

Concerning facilities and infrastructure, interview results indicated that the available resources were still inadequate. Transportation for field activities relied on personal vehicles, and health promotion media such as posters, leaflets, and educational booklets related to helminth infection were not yet available. This is illustrated by the following statements:

*“Facilities and infrastructure can be said to be incomplete. Official vehicles are only available for general disease prevention programs, often used during immunization activities. There is no specific official vehicle for the deworming program, so officers still use personal vehicles when visiting schools.” (ij)*

*“There are no leaflets or printed materials to introduce helminthiasis to schoolchildren at the health center. Usually, we only provide direct education during counseling sessions, which are conducted simultaneously with immunization schedules. The focus is more on injections, fever medicine, and deworming tablets.” (ab)*

The availability of deworming drugs at Simpang IV Sipin Primary Health Center was considered sufficient and aligned with requests submitted to the Jambi City Health Office. Informants explained:

*“Before going to the field, we report the number of elementary school students in our working area to the Health Office, and the drugs are provided according to the reported numbers.” (ab)*

Funding for the deworming program at Simpang IV Sipin Primary Health Center originated from the Health Operational Assistance. However, informants reported limited knowledge regarding the exact amount of funding, as most facilities and supplies were directly provided by the Health Office.

*“The deworming program has a budget from BOK, but I do not really remember the exact amount.” (rk)*

## 2. Process

The process of the deworming program consisted of planning, implementation, supervision, and evaluation. Based on in-depth interviews, the planning phase began after

receiving directives from the Jambi City Health Office, typically communicated via WhatsApp messages. Planning was conducted collaboratively with environmental health officers, health promotion staff, and other public health personnel.

*“For program planning, after receiving information from the Health Office, usually through whatsapp, we coordinate with environmental health, health promotion, and other public health staff. After discussions, we set the schedule for school visits within the health center’s working area.” (ab)*

Regarding implementation, interview results indicated that program activities were conducted according to established guidelines.

*“The Health Office first informs us about drug availability. Then I report the number of elementary school students, and the Health Office provides the drugs based on that number. After receiving the drugs, we coordinate with health promotion, environmental health, and other public health staff to visit schools. At schools, health promotion officers provide education about helminthiasis in each classroom. If a student is absent, the deworming tablet is entrusted to the teacher to be given later or to the student’s parents.” (ij)*

The deworming program was implemented twice a year, in February and August, and had been carried out consistently according to the predetermined schedule.

*“Deworming is conducted twice a year, in February and August. So far, the implementation has followed the established schedule.” (ab)*

Health education or counseling related to helminthiasis was provided to schools before drug administration.

*“When we visit schools, we provide counseling about helminthiasis in every class from grade one to grade six. After the counseling session, we distribute the deworming tablets.” (ab)*

Technical guidelines for program implementation were delivered by the Health Office through WhatsApp messages. Although formal guideline manuals were not available, officers reported that the instructions provided were clear and understandable.

*“There are no official guideline books from the Health Office, but instructions are sent via WhatsApp messages, and in my opinion, they are sufficiently clear and easy to understand.” (ab)*

School stakeholders, including principals, teachers, and students, actively participated and supported program implementation, contributing to smooth execution.

*“The participation of schools, teachers, and students was good. They were cooperative during the program implementation.” (ab)*

Program recording and reporting were conducted routinely, and follow-up monitoring related to program outcomes was also carried out.

*“There is recording and reporting for the deworming program, and we submit reports to the Health Office.” (ij)*

*“For monitoring, we usually follow up with schools. If there are complaints related to taking the deworming tablets, the school reports them to the health center.” (ij)*

Overall, no significant obstacles were encountered during program implementation.

*“I think there were no major obstacles during field implementation because activities were conducted together with environmental health, health promotion, and other public health staff. Task distribution was clear, and we also provided counseling and checked students’ and school environmental hygiene.” (ab)*

### 3. Output

The outputs of the deworming program included case detection and service coverage, defined as the proportion of target children receiving deworming medication. Interview data indicated that over the past three years, program coverage and achievement targets had reached 100%, and the number of children receiving deworming drugs met the predetermined targets.

*“Coverage and achievement targets have reached 100%, because the drugs provided by the Health Office match the number of elementary school students in our working area. During field visits, I distribute the medication to all students from grade one to grade six.” (ab)*

### 4. Outcome

The expected outcomes of the deworming program implementation include a reduction in morbidity due to helminth infections and a decrease in the prevalence of malnutrition among elementary school-aged children in the working area of Simpang IV Sipin Primary Health Center and Jambi City.

## DISCUSSION

According to the World Health Organization (WHO), evaluation is a systematic process of learning from experience aimed at improving program achievement, implementation, and planning through careful consideration of available alternatives for future application. Program evaluation can be classified into three main types formative, process (or promotive), and summative evaluation. Formative evaluation is conducted at the early stage of a program to ensure that planned activities are appropriate for the identified problems and can effectively address them. Process evaluation is carried out during program implementation, aiming to assess whether the program is executed as planned and to identify any deviations that may hinder its objectives. Summative evaluation is conducted after program completion, primarily to measure program outputs and assess its overall impact. The scope of program evaluation can further be categorized into four components: input, which involves assessing the utilization of resources such as funding, human resources, and facilities; process, which focuses on whether program implementation follows the predetermined plan, encompassing all administrative stages from planning and organization to execution; output, which evaluates the immediate results achieved through program activities; and outcome, which examines the effects or impacts resulting from program implementation. Together, these evaluation types and

components provide a comprehensive framework for assessing program performance, identifying areas for improvement, and informing evidence based decision making.

The officer responsible for the deworming program at Simpang IV Sipin Primary Health Center holds a Diploma in Midwifery (D3) and has 15 years of work experience. Although only one officer is formally assigned to the program, field activities are supported by staff from Environmental Health, Health Promotion, and other Public Health divisions. Interview findings revealed that the officer had never received specific training related to the deworming program. Furthermore, no official technical guidelines were available, and information from the Health Office was communicated solely through WhatsApp messages. Nevertheless, the instructions provided were considered clear and easy to understand.

According to the 2017 Minister of Health Regulation, the control of helminth infections requires human resources, pharmaceutical supplies, medical devices, consumable medical materials, and funding. Nursing service quality refers to professional nursing care that adheres to five dimensions of service quality: reliability, tangibles, assurance, responsiveness, and empathy. Therefore, training is essential to enhance knowledge, skills, and attitudes, enabling individuals to become more competent and capable of performing their responsibilities in accordance with established standards (14,15).

The control of helminth infections is planned collaboratively with the Public Health Efforts team before being incorporated into the primary health center's annual program plan, which is conducted once a year between December and January. The output of this planning process is documented in the Activity Implementation Plan. The results of the planning are then presented during a mini workshop attended by all primary health center staff, ensuring that screening officers are informed of the targets, objectives, and strategies for program implementation. The planning of helminth control activities at the primary health center is carried out in accordance with the 2016 Minister of Health Regulation No. 4 on primary health center management guidelines, which states that before preparing the Activity Implementation Plan the health center must conduct a situational analysis by collecting relevant data (16).

The coverage and target achievement of the deworming program reached 100%. However, cooperation from schools remains essential, particularly in reminding students and parents to ensure that the medication is taken according to the recommended dosage. The program was implemented twice a year in accordance with the national schedule, using Albendazole 400 mg. Although interview results indicated that the program achieved 100% of its target, some schools did not implement the program consistently due to delays in drug distribution. In addition, some children refused to take the medication because of its unpleasant taste and concerns about potential side effects.

Several challenges were identified in the field, including the lack of direct socialization or education from the health center to parents regarding the importance of preventive deworming and the occurrence of mild side effects such as nausea and dizziness among some children. Process-related aspects of implementation included the availability of helminthiasis management flowcharts, diagnostic recording in inpatient and outpatient medical records, and routine reporting of disease control programs to the Health Office. Based on interviews, helminthiasis management flowcharts were not available at the health center due to the absence of distribution from the Jambi City Health Office. In response, health center staff independently developed simplified flowcharts.

Significant progress has been made in preventive chemotherapy coverage for controlling STH infections, particularly among school-aged children, though less so among preschool aged children. Intensified efforts and strong multisectoral collaboration among governments, school, parents such coordinated action will support the elimination of STH as a public health problem and ensure more efficient resource allocation and sustained impact (17,18).

The recording and reporting system at the primary health center has not been fully optimized, as not all relevant data are systematically documented. Health personnel primarily focus on recording the administration of deworming drugs, while other important program indicators such as monitoring of adverse effects, follow up coverage, and health education activities receive limited attention. These findings are consistent with the study by Isma (2018), which also reported that recording and reporting processes were suboptimal due to limited staff initiative and engagement. Accurate and systematic record keeping is essential for identifying the true number of helminth infection cases, which allows health authorities to implement targeted interventions to prevent helminth-related diseases such as anemia. Effective monitoring and documentation not only help in reducing the burden of parasitic infections but also contribute to improving the overall health and quality of life of children by ensuring timely treatment, follow-up, and evaluation of program outcomes (19,20).

Recording and routine reporting of the deworming program were carried out by all health centers. Weekly reports (W2) were consistently submitted on time via WhatsApp. However, written reports and monthly recap reports were often submitted late, occasionally exceeding the scheduled deadlines. Monitoring activities in the form of supervision by helminthiasis officers from the Health Office had been conducted. However, feedback on reporting results had not been systematically provided to the health center. Based on interviews, supervision activities were incidental rather than conducted on a regular or scheduled basis.

## **CONCLUSION AND RECOMMENDATION**

The officer responsible for the deworming program at Simpang IV Sipin Primary Health Center holds a Diploma in Midwifery (D3) and has 15 years of work experience. Although only one officer is officially assigned to the program, field activities are supported by staff from Environmental Health, Health Promotion, and other Public Health divisions. Interview findings indicated that the officer had never received specialized training related to the program. The program coverage and achievement targets have been fully attained, with the number of children receiving deworming medication meeting the established goals. Nevertheless, there is a persistent deficiency in the conduct of regular monitoring and evaluation. In addition, no formal technical guidelines were available, and information from the Health Office was delivered solely through WhatsApp communication, although the instructions were considered clear and understandable. For Simpang IV Sipin Primary Health Center must strengthen coordination with schools to ensure timely implementation of the preventive deworming schedule, Conduct regular monitoring and evaluation to maintain high program coverage and ensure children's adherence to medication and provide engaging and age-appropriate educational materials to increase children's awareness of the importance of helminth infection prevention.

**REFERENCES**

1. Siti Nadia Tarmizi ME. Sejumlah Penyakit Tropis Ini Harus Diwaspadai [Internet]. 2023 Jan [cited 2025 May 23]. Available from: <https://kemkes.go.id/id/sejumlah-penyakit-tropis-ini-harus-diwaspadai>
2. Zubaidi MM, Hariyanto T, Ardiyani VM. Hubungan personal hygiene (cuci tangan menggunakan sabun) dengan kejadian penyakit cacangan pada anak kelas I-VI MI Nahdlatul Wathan (NW) Bimbi Desa Rensing Raya Kec. Sakra Barat Kab. Lombok Timur. *Nursing News: Jurnal Ilmiah Keperawatan*. 2017;2(3).
3. Armajin L, Darmayanti D, Buyung S, Hidayat R. Faktor-Faktor yang Berhubungan dengan Risiko Kecacangan pada Anak Sekolah Dasar di Kota Ternate. *Malahayati Nursing Journal*. 2023;5(8):2486–98.
4. Kompas. Lebih dari 58 Juta Anak Jadi Sasaran Minum Obat Cacing [Internet]. 2023 Aug [cited 2025 May 23]. Available from: [https://www.kompas.id/baca/humaniora/2023/08/22/lebih-dari-58-juta-anak-jadi-sasaran-minum-obat-cacing?utm\\_source=chatgpt.com](https://www.kompas.id/baca/humaniora/2023/08/22/lebih-dari-58-juta-anak-jadi-sasaran-minum-obat-cacing?utm_source=chatgpt.com)
5. Kebijakan Pembangunan B, Kementerian K, Ri K. Dalam Angka Tim Penyusun Ski 2023 dalam Angka Kementerian Kesehatan Republik Indonesia.
6. Sulastriningsih K, Novita A. Pengaruh kemampuan dan motivasi kerja petugas kesehatan terhadap kinerja dalam penerapan program manajemen terpadu balita sakit di puskesmas pasar minggu. *Jurnal Akademi Keperawatan Husada Karya Jaya*. 2016;2(1):3–12.
7. Kurniawan DT, Lestari S, Lubis YEP. Analysis of factors related to the performance of health Workers at the Royal Prima Medan General Hospital in 2022. *International Journal of Health and Pharmaceutical (IJHP)*. 2023;3(2):391–401.
8. Suhardi M. Buku ajar Dasar Metodologi Penelitian. Penerbit P4I; 2023.
9. Yusanto Y. Ragam pendekatan penelitian kualitatif. *Journal of scientific communication (jsc)*. 2020;1(1).
10. Pahleviannur MR, De Grave A, Saputra DN, Mardianto D, Hafrida L, Bano VO, et al. Metodologi penelitian kualitatif. Pradina Pustaka; 2022.
11. Muharika D. Metodologi penelitian evaluasi program. Alfabeta; 2019.
12. Divayana DGH, Kom S, Kom M. Evaluasi Program. PT. RajaGrafindo Persada; 2018.
13. Murray NG, Low BJ, Hollis C, Cross AW, Davis SM. Coordinated school health programs and academic achievement: a systematic review of the literature. *Journal of school health*. 2007;77(9):589–600.
14. Kementerian Kesehatan RI. Peraturan Menteri Kesehatan Republik Indonesia. 2017.
15. Tahu NSK, Kep M. Standar Profesional dalam Pelayanan Keperawatan. Ilmu Keperawatan Dasar. 2022;31.
16. Kementerian Kesehatan RI. Peraturan Menteri Kesehatan Republik Indonesia. 2016.
17. Freeman MC, Akogun O, Belizario Jr V, Brooker SJ, Gyorkos TW, Imtiaz R, et al. Challenges and opportunities for control and elimination of soil-transmitted helminth infection beyond 2020. *PLoS Negl Trop Dis*. 2019;13(4):e0007201.
18. Krolewiecki AJ, Lammie P, Jacobson J, Gabrielli AF, Levecke B, Socias E, et al. A public health response against *Strongyloides stercoralis*: time to look at soil-transmitted helminthiasis in full. *PLoS Negl Trop Dis*. 2013;7(5):e2165.

19. Amran P. Prevalensi Penyakit Kecacingan dan Hubungannya Dengan Anemia Pada Anak Sekolah Dasar Yang Ada Di Kota Makassar. *Jurnal Media Analisis Kesehatan*. 2017;8(02):59–66.
20. Isma SL, Sudaryanto S, Halleyantoro R. Evaluasi program pemberantasan kecacingan pada siswa sekolah dasar di Puskesmas Rowosari Kecamatan Tembalang Semarang. *Jurnal Kedokteran Diponegoro (Diponegoro Medical Journal)*. 2018;7(2):551–61.