

HEALTH EDUCATION IN THE PREVENTION OF WORM INFESTATION USING BOOKLETS FOR TODDLERS

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Received: 24/12/2025

Revised: 17/02/2026

Accepted: 19/02/2026

Abstract. In Indonesia, soil-transmitted worm infestation remains a serious public health problem, especially for young children. The high incidence of worms increases the risk of stunting, anemia, and malnutrition in children. Prevention efforts are hampered by low public awareness and the belief that worms are not a serious disease. The objective of this community service project is to educate mothers of toddlers and Integrated Health Post cadres about worm prevention. Counselling and health education through booklets are among the techniques used at integrated health post Kemuning A, Ratu Jaya Community Health Center. Participants in this activity consisted of 17 mothers of toddlers and 9 cadres from the integrated health post. On December 17, 2025, the activity was carried out through counselling, discussions, and a question-and-answer session. The results of a qualitative evaluation showed that mothers' awareness of risk factors and how to prevent worms had increased, as had the cadres' knowledge, awareness, and confidence in educating the community. It was concluded that by using Integrated health post-based education strategies, this program succeeded in empowering the community to prevent worms in toddlers.

Keywords: health education, integrated health posts, toddlers, worms

Abstrak. Di Indonesia, infestasi cacingan yang ditularkan melalui tanah masih menjadi masalah kesehatan masyarakat yang serius, terutama bagi anak-anak kecil. Tingginya kejadian cacingan meningkatkan risiko stunting, anemia, dan malnutrisi pada anak-anak. Upaya pencegahan terhambat oleh rendahnya kesadaran masyarakat dan kepercayaan bahwa cacingan bukanlah penyakit serius. Tujuan proyek pengabdian masyarakat ini adalah untuk mengedukasi ibu-ibu balita dan kader Pos Kesehatan Terpadu (Posyandu) tentang pencegahan cacingan. Konseling dan pendidikan kesehatan melalui booklet merupakan salah satu teknik yang digunakan di Posyandu Kemuning A, Puskesmas Ratu Jaya. Peserta kegiatan ini terdiri dari 17 ibu balita dan 9 kader dari Posyandu. Pada tanggal 17 Desember 2025, kegiatan dilaksanakan melalui penyuluhan, diskusi, dan sesi tanya jawab. Hasil evaluasi kualitatif menunjukkan bahwa kesadaran para ibu tentang faktor risiko dan cara mencegah cacingan telah meningkat, begitu pula pengetahuan, kesadaran, dan kepercayaan diri para kader dalam mengedukasi masyarakat. Disimpulkan bahwa dengan menggunakan strategi pendidikan berbasis Posyandu, program ini berhasil memberdayakan masyarakat untuk mencegah cacingan pada balita.

Kata Kunci: balita, cacingan, edukasi kesehatan, posyandu

How to Cite: Riadi, D., Hadiwiardjo, Y. H., Hasibuan, S. R., Pradnyani, P. E., Kristanti, M., Saputra, D. A. Y. & Aprilicia, G. (2026). HEALTH EDUCATION IN THE PREVENTION OF WORM INFESTATION USING BOOKLETS FOR TODDLERS. *Mitra Mahajana: Jurnal Pengabdian Masyarakat*, 7(1) 18-25. doi: <https://doi.org/10.37478/mahajana.v7i1.7435>

INTRODUCTION

According to data from the World Health Organization (WHO), more than 1.5 billion individuals worldwide were infected with soil-transmitted helminths in 2015 (Kamil, 2019). Data on helminth infections from the Ministry of Health shows that 36.97 million children received Mass Drug Administration (MDA) in 2021. According to a post-treatment evaluation survey conducted between 2017 and 2021, the prevalence of worms was below 5% in 66 districts and cities and above 10% in 26 districts and cities (Indonesian Ministry of Health, 2023). Eleven of the twenty categories of neglected tropical diseases (NTDs) in Indonesia involve worms (Edy et al., 2024). If worm infections are left untreated, they will cause persistent infections that will eventually lead to malnutrition and anemia, which will interfere with children's growth and development (Syaputri et al., 2025). Compared to toddlers without a history of worm infections, children who have been infected with worms are 3.2 times more likely to experience stunting (Eldrian et al., 2023a).



The disease known as “worm infection” is caused by worm infections in the human body that spread through the soil (Ministry of Health Regulation Number 15 of 2017 on Worm Infection Control, 2017). Soil-transmitted helminths (parasitic worms transmitted through soil) are intestinal nematodes that spread through soil and cause worm infestation (Kamil, 2019). The risk factors for worm infestation in children include a) child-related factors such as poor nail hygiene, not washing hands before eating, consuming unhygienic food, b) parental factors, such as not washing food like fruits and vegetables before eating, weak habits of cleanliness and healthy living for children, lack of parental knowledge, and c) environmental factors, such as availability of clean water, toilet ownership, and dirty household environments (Syaputri et al., 2025).

Symptoms of intestinal worm infection can be identified through several common gastrointestinal complaints. Individuals who are infected may experience persistent stomachache or abdominal discomfort, diarrhoea, nausea, vomiting, decreased appetite, and unexplained weight loss (Bharti et al., 2018). In some cases, sufferers may also appear weak, fatigued, or pale due to nutritional deficiencies caused by the worms absorbing nutrients from the body (Shaxnoza, 2025). If the infection persists for a long period, it can interfere with growth and development in children, reduce concentration, and lower overall immunity (Edy et al., 2024).

Prevention of intestinal worm infection requires consistent personal hygiene and proper environmental sanitation practices. Several preventive measures can be implemented in daily life to reduce the risk of transmission. Washing hands regularly with soap and clean water is essential, especially after using the toilet, after changing baby's diaper, before preparing food, and before eating, as proper handwashing is one of the most effective ways to break the transmission cycle. Raw meat and fish should be stored properly to avoid contamination and cooked thoroughly to ensure that any worm eggs or larvae are destroyed before consumption. Fruits and vegetables must be washed carefully under running water before eating, particularly when consumed raw, to remove soil or contaminants that may contain worm eggs. Providing regular deworming medication to pets, such as cats and dogs, is also important because animals can act as carriers and contribute to environmental contamination.

In addition, children should receive deworming medication routinely, ideally every six months, as recommended by health authorities, especially in areas with a high prevalence of worm infections (Luong, 2003). It is also advisable to avoid walking barefoot on soil or sand and to use gloves when gardening or handling soil, since certain worm larvae are able to penetrate the skin. Maintaining proper nail hygiene by trimming nails regularly and avoiding nail-biting is equally important, as dirt containing worm eggs can accumulate under the nails and enter the body through the mouth (Edy et al., 2024). By consistently applying these preventive measures, the risk of intestinal worm infection can be significantly reduced, thereby improving overall health and quality of life.

The general public believes that worm infections are harmless. In fact, worm infections can cause malnutrition if left untreated (Fauziah et al., 2022). Anaemia and a weakened immune system can result from persistent worm infections (Syaputri et al., 2025). Worm infections are usually not very noticeable if the child is in good health; they are only visible in physical growth. Worms will continue to develop if left untreated, which can cause children to become malnourished (Eldrian et al., 2023). Therefore, to reduce the likelihood of toddlers contracting worm infections, it is necessary to educate the public about the disease and how to prevent it.

METHOD

This community service project used a cadre counselling strategy at the Kemuning A Integrated health post, the operational area of the Ratu Jaya Community Health Center, and community education on science and technology. Nine cadres and seventeen mothers of toddlers who visited the Integrated Health Post participated in this program. The preliminary stage, which included obtaining permission from the Ratu Jaya Community Health Center, was completed before the community service activities began. After the permission was granted, the

Ratu Jaya Community Health Center informed the cadres about the activities. The community service project was then implemented and evaluated (Figure 1). The Ratu Jaya Community Health Center assisted in gathering the nine cadres.

On Wednesday, December 17, 2025, activities carried out included counseling through pamphlets on the prevention of intestinal worms in toddlers, discussion sessions, and question and answer sessions. The purpose of this review and discussion process was to determine the benefits of this community service effort. This community service activity aimed to increase the knowledge of cadres and mothers with young children to reduce the risk of worm infections (Ngowi et al, 2017). The cadres and mothers of toddlers received education and training on how to prevent worm infections in their children easily and effectively. The information in the brochure covered the prevalence, causes, risk factors, symptoms, and treatment of worm infections in toddlers.

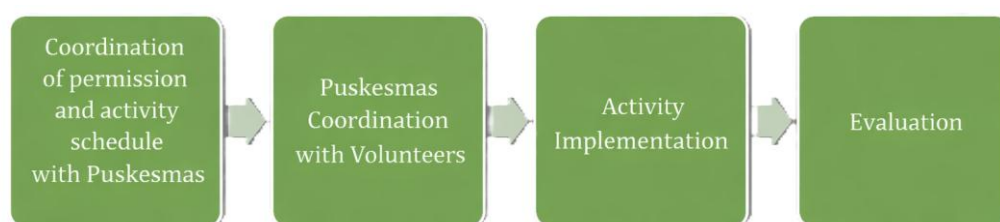


Figure 1. Activity implementation flow

RESULT AND DISCUSSION

To obtain permission and schedule this community service project, the Ratu Jaya Community Health Center (Puskesmas Ratu Jaya) was consulted. After that, the Community Health Center coordinated community service activities with cadres. Because the integrated health post was a suitable location for this activity, it was chosen. One of the Community-Based Health Efforts (UKBM) is the Integrated Service Post, which is a type of health service run by, for, and from the community (Fitrianingsih et al., 2025). Integrated Health Post is a government initiative to facilitate access to maternal and child health services for the Indonesian community (Simanjuntak et al., 2023).

The recommended Integrated Health Post cadre is the Kemuning A Integrated Health Post cadre in the Mekarmukti Community Health Center area, because Kemuning A Integrated Health Post has a high number of mothers with toddlers, and the area still has many locations with dirt roads or no asphalt. The cadres participating in the activity are expected to be able to provide the information they have obtained after participating in community service to the community around the Kemuning A Integrated Health Post. Cadres are members of the community who have direct relationships with residents. To improve maternal and child health, health cadres are very important (Indahwati et al., 2023). To address health issues, village health cadres must take the initiative. Health cadres should help the community in addressing health issues, but they often lack the knowledge and experience needed to do so (Dewi et al., 2022).

This community service activity represents a form of direct community empowerment as well as the practical implementation of academic knowledge for the benefit of society (Kruahong et al., 2023). Through this program, knowledge that has been developed in the academic setting is transferred and applied directly to the community to address real health problems (Wilson et al., 2010). The activity was designed not only to provide information but also to strengthen the capacity of community members so that they are able to recognize, prevent, and manage health issues independently (Ma et al., 2023). By involving local health cadres and mothers of toddlers, this initiative aimed to create a sustainable impact that extends beyond the duration of the program.

The activity began with counselling sessions for health cadres, who play an important role as community health facilitators. Strengthening the knowledge and skills of cadres is essential because they act as intermediaries between health professionals and the community. After the

cadre counselling sessions, health education was provided to mothers of toddlers who were visiting the health center (Antarsih et al., 2021). The education sessions utilized booklets as the main educational media (Figures 2 and 3), allowing participants to receive structured and easy-to-understand information.



Figure 3. Cover of the booklet on preventing intestinal worms in toddlers

A booklet is a type of printed educational material in the form of a small book with a hard cover. Generally, a booklet contains a minimum of five pages and no more than forty-eight pages. The content presented in a booklet must be clear, concise, and written in simple language so that it can be easily understood by readers from various educational backgrounds. To increase its attractiveness and effectiveness, the material is usually supported by relevant illustrations or pictures. The visual elements help readers better understand the information and maintain their interest throughout the reading process (Dey & Munshi, 2025). In addition, booklets are practical and easy to carry due to their compact size, enabling readers to take them home and reread the information whenever needed (Figrani et al., 2023).



Figure 3. Contents of the booklet on preventing intestinal worms in toddlers

The use of booklets as a health education medium is effective in improving knowledge and awareness. Printed media such as booklets allow information to be delivered in a structured manner and provide an opportunity for repeated exposure to key messages. Participants can review the material after the education session, which reinforces understanding and retention of information. Previous studies have indicated that the use of booklets in health promotion activities can significantly increase knowledge levels among target groups (Apriani et al., 2023).

Therefore, integrating booklet-based education into community service activities is a strategic approach to enhancing health literacy and promoting sustainable behavioural change within the community (Novitasari & Hasanah, 2025).

A person can be transformed from ignorance to knowledge through counseling, which is equivalent to providing a wealth of health information. This makes counseling an important tool for changing attitudes or teaching ideas (Woolf et al., 2018). Ultimately, a person's behavior is determined by their attitude or level of knowledge. Based on what they know, people are more likely to take action related to a problem or object. New knowledge about a topic offers a fresh cognitive basis for action (Abadi et al., 2023).

Lecturers from the Faculty of Medicine at the Veteran National Development University (UPN) Jakarta discussed data on worm infection cases, the impact of worm infection on children, the causes of worm infection, risk factors for worm infection, and worm infection prevention (Figure 3). This information was conveyed through booklets and verbal counseling for community service projects. The goal of health education is to encourage behaviors that support health in the community (Glanz, et al., 2008). This shows that the community is aware of or skilled in maintaining health and avoiding or preventing behaviors that are harmful to health (Sulastri & Astuti, 2020).



Figure 3. *Handing over the booklet on preventing intestinal worms to participants*

After the educational session, a discussion and question-and-answer session was held. Regarding the timing of deworming medication and the risks of playing barefoot for toddlers, participants actively asked a number of questions about the information provided. During the training, the cadres' understanding of how to prevent children from becoming infected with worms was assessed qualitatively (Rwamwejo et al., 2023). The evaluation findings showed that the activity increased the cadres' knowledge. The majority of cadres reported feeling more concerned and confident in educating the community about worm prevention in toddlers because they were able to qualitatively understand the risk factors for worms and how to prevent them in toddlers. This process used a qualitative approach, which does not use a population because the research began with one or more examples of individuals or groups in a particular social situation, and the findings were limited to that social situation itself (Jayadi, 2024). During the training, mothers' knowledge about worm infections in children was assessed qualitatively. According to the evaluation results, the mothers' knowledge increased after the program (Al-Shatari & Shaker Mahmood, 2023). A. Most mothers of toddlers reported feeling alert to the risk factors that can cause worms in toddlers and were able to understand the risk

factors and how to prevent worms in toddlers qualitatively. This activity was met with enthusiasm from both the mothers of toddlers and the cadres.

CONCLUSION

The knowledge and awareness of Integrated Health Post cadres and mothers of toddlers regarding risk factors, consequences, and prevention efforts for worm infestation were successfully improved through community service activities in the form of worm prevention education for toddlers at the Kemuning A Integrated Health Post. It was proven that the use of pamphlets combined with counselling and interactive conversations increased participants' understanding of the subject matter. Mothers of toddlers became more aware of behavioural and environmental factors that put children at risk of worm infection, while Integrated health post cadres showed greater confidence in relaying information back to the community. As a result, this activity served as a form of community empowerment that can help prevent worm infection and improve toddler health in the long term. It is hoped that Integrated health post and Puskesmas will routinely provide education on worm prevention, especially in areas with a high risk of worm infection. In order to routinely provide health education to the community, Integrated health post cadres must continue to receive training and guidance. Mothers who care for toddlers are expected to maintain a clean and healthy lifestyle and follow the schedule for administering worm medication to their children.

REFERENCES

- Abadi, D. S., Suhartini, T., & Supriyadi, B. (2023). Pengaruh Penyuluhan Rujukan Terencana terhadap Sikap Kader dalam Pendampingan Ibu Hamil Resiko Tinggi. *Jurnal Penelitian Perawat Profesional*, 5(3). <https://doi.org/10.37287/jppp.v5i3.1760>
- Al-Shatari, S. A., & shaker Mahmood, M. (2023). Knowledge and Practice of Mothers About Pinworm Infestation and its Prevention in Their Children: Online Survey in Baghdad, 2020. *Karbala Journal of Medicine*, 16(1). DOI: <https://doi.org/10.70863/karbalajm.v16i1.1185>
- Antarsih, N. R., Yantina, D., & Aticeh, A. (2021). Empowering Health Cadres as a Toddler Posyandu Team to Improve the Knowledge and Skills of Cadres Through Counseling and Training. *Engagement: Jurnal Pengabdian Kepada Masyarakat*, 5(2), 283-296.
- Apriani, A., Widyastuti, D. E., Andhikatis, Y. R., & Mareta, M. Y. (2023). Upaya Peningkatan Pengetahuan dan Motivasi Stimulasi Dini Tumbuh Kembang dengan Booklet pada Ibu Hamil di Puskesmas Jaten I Kab. Karanganyar. *Jurnal Pengabdian Masyarakat Progresif Humanis Brainstorming*, 6(2). <https://doi.org/10.30591/japhb.v6i2.3485>
- Bharti, B., Bharti, S., & Khurana, S. (2018). Worm infestation: diagnosis, treatment and prevention. *The Indian Journal of Pediatrics*, 85(11), 1017-1024. <https://doi.org/10.1007/s12098-017-2505-z>
- Dewi, V., Handayani, G. L., & Junita, J. (2022). Pembinaan Kader Kesehatan Dalam Pembentukan Remaja Sadar Gizi di Posyandu Remaja. *Jurnal Pengabdian Meambo*, 1(1). <https://doi.org/10.56742/jpm.v1i1.9>
- Dey, A., & Munshi, S. A. (2025). Fun with images: an analysis of the role of visual literacy in facilitating easy and enjoyable learning with a focus on future prospects. *Libri*, 75(2), 109-127. <https://www.degruyterbrill.com/document/doi/10.1515/libri-2024-0143/html>
- Edy, J., Pakpahan, S., Munir, C., Aceh, A. R., Aldoran, J., Damanik, D. H., & Situmorang, S. H. (2024). Pencegahan Cacingan pada Anak Balita di Kelurahan Sempakata Kecamatan Medan Selayang. *Jurnal Pengabdian Kepada Masyarakat*, 1(2). <https://journal.medicpondasi.com/index.php/pkm/article/view/32>
- Eldrian, F., Karinda, M., Setianto, R., Dewi, B. A., & Guzmira, Y. H. (2023a). Hubungan Riwayat Penyakit Infeksi Dengan Kejadian Stunting Pada Balita di Puskesmas Cipadung Kota Bandung. *Jurnal Manajemen Kesehatan*, 9(1), 80-89. DOI: <https://doi.org/10.56338/mppki.v7i2.4928>

- Fiqriani, R. A., Halang, B., & Mahrudin, M. (2023). Pengembangan Bahan Ajar Berbentuk E-Booklet Keanekaragaman Famili Cyprinidae Sebagai Bahan Pengayaan Konsep Animalia Di SMA. *JUPEIS: Jurnal Pendidikan Dan Ilmu Sosial*, 2(1). <https://doi.org/10.57218/jupeis.vol2.iss1.410>
- Fitrianingsih, A. D. R., Rizkika, M. A., Musyaropah, N., & Anggrahini, S. G. (2025). PENINGKATAN KETERAMPILAN PENGUKURAN ANTROPOMETRI KADER POSYANDU SEBAGAI UPAYA DETEKSI DINI STUNTING. *GEMAKES: Jurnal Pengabdian Kepada Masyarakat*, 5(2). <https://doi.org/10.36082/gemakes.v5i2.2062>
- Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2008). *Health behavior and health education: theory, research, and practice*. John Wiley & Sons.
- Indahwati, L., Dewi, M., Fatmawati, F., Gayatri, M., Dewi, T. S., Sari, M. H., & Savitri, M. E. (2023). Optimalisasi peran kader posyandu dalam peningkatan kesehatan ibu dan anak. *Jurnal Inovasi Hasil Pengabdian Masyarakat (JIPEMAS)*, 6(2). <https://doi.org/10.33474/jipemas.v6i2.19713>
- Jayadi, R. (2024). Upaya Meningkatkan Literasi Inklusi Masyarakat melalui Pojok Baca untuk Mendukung Program SDGs di Desa Sepadu Kabupaten Sambas Kalimantan Barat. *Jurnal Edukasi*, 1(3). <https://doi.org/10.60132/edu.v1i3.157>
- Kamil, R. (2019). STUDI DESKRIPTIF TINGKAT PENGETAHUAN IBU TENTANG ASCARIASIS (CACINGAN) PADA BALITA DI WILAYAH KERJA PUSKESMAS SIWULUH KABUPATEN BREBES TAHUN 2019. *Jurnal Ilmu Kesehatan Bhakti Husada: Health Sciences Journal*, 10(2), 115–121. <https://doi.org/10.34305/jikbh.v10i2.101>
- Kruahong, S., Tankumpuan, T., Kelly, K., Davidson, P. M., & Kuntajak, P. (2023). Community empowerment: A concept analysis. *Journal of advanced nursing*, 79(8), 2845-2859. <https://doi.org/10.1111/jan.15613>
- Luong, T. V. (2003). De-worming school children and hygiene intervention. *International Journal of Environmental Health Research*, 13(sup1), S153-S159. <https://doi.org/10.1080/0960312031000102912>
- Ma, C., Qirui, C., & Lv, Y. (2023). “One community at a time”: promoting community resilience in the face of natural hazards and public health challenges. *BMC Public Health*, 23(1), 2510. <https://doi.org/10.1186/s12889-023-17458-x>
- Menteri Kesehatan Republik Indonesia. (2017). Peraturan Menteri Kesehatan Republik Indonesia Nomor 15 tahun 2017 tentang Penanggulangan Cacingan. In *Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2013 Tentang Penyelenggaraan Imunisasi*. <https://peraturan.bpk.go.id/Details/111981/permenkes-no-15-tahun-2017>
- Ngowi, H., et al. (2017). Development of a health education intervention strategy using an implementation research method to control taeniasis and cysticercosis in Burkina Faso. *Infectious diseases of poverty*, 6(1), 95. <https://doi.org/10.1186/s40249-017-0308-0>
- Novitasari, A., & Hasanah, N. (2025). Empowering Cadres to Increase Parental Awareness of Tuberculosis (TB) in children Prevention in Pacarkembang District, Surabaya. *Frontiers in Community Service and Empowerment*, 4(4). <https://ficse.ijahst.org/index.php/ficse/article/view/111>
- Rwamwejo, F., Ndatinya, G. I., Mkata, M. I., Blauman, A., Regnier, D., & Lackner, S. C. (2023). Assessing the knowledge, attitudes, practices, and perspectives of stakeholders of the deworming program in rural Rwanda. *PLOS Neglected Tropical Diseases*, 17(8), e0010759. <https://doi.org/10.1371/journal.pntd.0010759>
- Shaxnoza, X. (2025). WORMS (HELMINTHIASIS)—TYPES, SYMPTOMS, COMPLICATIONS, TREATMENT, PREVENTION. *Introduction of new innovative technologies in education of pedagogy and psychology*, 2(5), 179-181. <https://incop.org/index.php/int/article/view/1579>
- Simanjuntak, A., Sitorus, M. E. J., & Hakim, L. (2023). Faktor Yang Berhubungan Dengan Keaktifan Kunjungan Ibu Yang Mempunyai Balita Ke Posyandu Di Puskesmas Lumban Sinaga Kab. Tapanuli Utara. *BEST Journal*, 6(2), 289-295. DOI: <https://doi.org/10.30743/best.v6i2.7685>

- Sulastri, E., & Astuti, D. P. (2020). PENDIDIKAN KESEHATAN UNTUK MENINGKATKAN PENGETAHUAN DAN SIKAP REMAJA TENTANG KESEHATAN REPRODUKSI DAN PENYAKIT MENULAR SEKSUAL. *Jurnal Ilmiah Kesehatan Keperawatan*, 16(1). <https://doi.org/10.26753/jikk.v16i1.427>
- Syaputri, K. H., Muthia, O., Riduan, A., & Muslimawati, K. (2025). Peningkatan Pengetahuan Dalam Upaya Pencegahan Penyakit Cacingan pada Anak di Posyandu Balita Kartika. *Jurnal Pelayanan Dan Pengabdian Kesehatan Untuk Masyarakat*, 2(3), 98–103. <https://doi.org/10.52643/jppkm.v2i3.5395>
- Wilson, M. G., Lavis, J. N., Travers, R., & Rourke, S. B. (2010). Community-based knowledge transfer and exchange: Helping community-based organizations link research to action. *Implementation Science*, 5(1), 33. <https://doi.org/10.1186/1748-5908-5-33>
- Woolf, S. H., et al. (2005). Promoting informed choice: transforming health care to dispense knowledge for decision making. *Annals of internal medicine*, 143(4), 293-300. <https://doi.org/10.7326/0003-4819-143-4-200508160-00010>