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Original Article

A prevalence study of intestinal parasites in humans at Lifuleo Village, Kupang District, Indonesia

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ABSTRACT

Worm infection is the most common infectious disease worldwide and occurs in developing and poor countries. Indonesia as a developing country still faces the problem of high prevalence of infectious diseases, especially related to poor hygiene and environmental sanitation conditions. The overall prevalence of intestinal worm infection in Indonesia was found to be 2.5-62%. High prevalence worm infection depends on the presence of the worm eggs in the ground. Poor knowledge of personal hygiene which includes wash hands with clean water and soap might be one of the causes for intestinal worm infections. The aim of this research is to achieve the prevalence number of intestinal parasites in humans at Lifuleo Village, Kupang District, Indonesia. This research is an analytical study with a cross-sectional approach using 199 fesses samples. The study was conducted in Lifuleo Village, Kupang District in August–September 2019. There were 12 positive samples infected with worms from 199 stool samples examined and there were 20 positive samples infected with protozoa from 198 stool samples examined.

Keywords: Infection, Kupang, tropic, worm

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INTRODUCTION

Intestinal parasitic infections are classified by the WHO as a Neglected Tropical Diseases.[1] This infection is the cause of the high morbidity and mortality rates in sub-tropical and tropical countries, including Indonesia. This infection is caused by protozoa or worms that infect the human gastrointestinal tract. This intestinal parasite has infected more than 1 billion people in the world. This infection is related to the availability of clean water facilities (water), inadequate sanitation (sanitation), and poor hygiene (known as wash). Infections due to intestinal worms that are often found are soil transmitted helminth (STH) include *Ascaris lumbricoides* (roundworms), *Trichuris trichiura* (whipworms), and *Ancylostoma duodenale*, *Necator americanus* (hookworms). As for other intestinal worms such as *Taenia* spp., *Fasciolopsis* sp., and Enterobiusvermicularis were reported that its prevalence numbers are not as high as STH mentioned above. Intestinal protozoa that often infect humans include *Giardia intestinalis*, *Entamoeba histolytica*, *Cyclospora cayetanenensis*, and *Cryptosporidium* spp. Various attempts have been made to eliminate infections caused by intestinal parasites, especially intestinal worms.[2-5]

Prevalence of worm infections in Indonesia was reported at 2.5–62% with the highest incidence occurred in the group of 3–8 years old, namely, toddlers and children in elementary schools (SD), especially in the region's countryside and slums urban. The high prevalence of worm infections might be due to the poor knowledge of healthy and hygienic living behavior. Several efforts have been made to eliminate STH by means of mass parasitic medication administration. In East Nusa Tenggara, mass treatment has been carried out twice a year for school-aged children. Apart from school age, they were given mass treatment along with taking filariasis medication for filariasis endemic areas.[6-8]

METHODS

This research is an analytical study with a cross-sectional approach using 164 fesses samples. This research was conducted in Lifuleo Village, West Kupang District in August–September

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2019. The inclusion criteria include an age limit of 2–70 years and willingness to become research subjects by signing an informed consent or on a child whose informed consent has been signed by a parent or guardian. The exclusion criterion was consuming deworming medicine in the past 3 months.

Feces taken were feces from spontaneous defecation in the morning, not mixed with toilet water or urine or soil, when collected, the feces were given 10% formalin solution until submerged. Feces were examined using 1% lugol. The results were recorded on the case report form using the numbers according to the collection.

RESULTS

It is shown from Table 1, the number of worm-infected found was 12 samples from total of 199 stool samples examined.

Based on Table 2, the number fesses infected with protozoa are 20 out of 198 stool samples examined. One sample was damaged during storage thus 198 samples were examined.

Table 3 has shown that the number of respondents who have a good level of knowledge of risk factors of parasitic infection is 86 of the total respondents who answered the questionnaire.

DISCUSSION

Indonesia as a developing country still faced a high prevalence problem mainly related to infectious diseases. This is highly related to the poor hygienic and sanitary conditions. Causes of worm infection on humans are most often by the nematodes (intestinal worms) which are divided into two groups, namely, STH and the non-STH.[9]

Table 1: Prevalence of worm infection worm infected (%)

Worm infected	*n* (%)
Yes	12 (6)
No	187 (94)

Table 2: Prevalence of protozoa infection protozoa N infection (%)

Protozoa infected	*n* (%)
Yes	20 (10.1)
No	178 (89.4)

Table 3: Knowledge level of risk factors

Knowledge level	*n* (%)
Poor	112 (56.3)
Adequate	86 (43.2)

Lifuleo Village is located at Kupang Regency, East Nusa Tenggara. This village is listed as one of the villages in the area for taking filariasis medicine. In 2017–2018, six people were found to have complaints of worms along with their feces. In addition, residents of Lifuleo Village have a high potential for infection with intestinal parasites. This is due to the minimal availability of clean water facilities, living coexist with infectious vectors, use animal waste as fertilizer, and eat uncooked food. Until now, data on the prevalence of intestinal parasite infections, both intestinal worms and protozoa, for Lifuleo Village have never been done. The high prevalence of worm infections might be due to the poor knowledge of healthy and hygienic living behavior. Several efforts have been made to eliminate STH by means of mass parasitic medication administration.[10]

CONCLUSION

There were 12 positive samples infected with worms from 199 stool samples examined and there were 20 positive samples infected with protozoa from 198 stool samples examined.

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CONFLICTS OF INTEREST

There are no conflicts of interest during this study.

REFERENCES

1. London School of Hygiene and Tropical Medicine. Global Atlas of Helminth Infections. Available from: http://www.thiswormyworld.org/worms. [Last accessed on 2019 Feb 25].
2. World Health Organization. Technical Report of the TDR Disease Reference Group on Helminth Infections; 2012. Available from: https://www.apps.who.int/iris/bitstream/handle/10665/75922/WHO_TRS_972_eng.pdf?sequence=1. [Last accessed on 2021 Jan 12].
3. Centers for Disease Control and Prevention. Soil-Transmitted Helminth Disease. Available from: https://www.cdc.gov/parasites/children.html. [Last accessed on 2019 Feb 24].
4. World Health Organization. Soil Transmitted Helminths. Available from: https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections. [Last accessed on 2019 Feb 25].
5. Kumar BH, Jain K, Jain R. A study of prevalence of intestinal worm infestation and efficacy of anthelminthic drugs. Med J Armed Forces India 2014;70:144-8.
6. Steinbaum L, Njenga SM, Kihara J, Boehm AB, Davis J, Null C, *et al*. Soil-transmitted helminth eggs are present in soil at multiple locations within households in rural Kenya. PLoS One 2016;11:e0157780.

7. Steinbaum L, Kwong LH, Ercumen A, Negash MS, Lovely AJ, Njenga SM, *et al*. Detecting and enumerating soil-transmitted helminth eggs in soil: New method development and results from field testing in Kenya and Bangladesh. PLoS Negl Trop Dis 2017;11:e0005522.
8. Fabrizio B. Helminth Infection and their Impact on Global Public Health. Berlin, Germany: Springer; 2014. p. 202.
9. Aung AK, Spelman DW. Taenia solium taeniasis and cysticercosis in Southeast Asia. Am J Trop Med Hyg 2016;94:947-54.
10. Castro GA. In: Baron S, editor. Medical Microbiology. 4th ed. Galveston, TX: University of Texas Medical Branch at Galveston; 1996.