

## A small-scale survey of intestinal parasite infections among children and adolescents in Legaspi city, the Philippines

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**Abstract:** To determine the status of infection caused by intestinal parasites among children and adolescents living in Legaspi city, the Philippines, we performed a small survey by fecal examination for helminth ova and protozoan cysts with formalin-ether concentration method. Of the 64 examinees, the infection rate was 78.1%. The infection rates of primary school children, preschool children and adolescents were 95.5%, 64.7% and 87.5%, respectively. The infection rate in urban areas was 56%, and 92.3% in rural areas. The infection rates were 51% with *Trichuris trichiura*, 40% with *Ascaris lumbricoides*, 23.4% with hookworm, 15.6% with *Iodamoeba butschlii*, 14.1% with *Endolimax nana*, 9.4% with *Entamoeba coli* and 7.8% with *Giardia lamblia*. There were 33 cases with multiple infection (51.6%). Mixed infection with more than 3 parasites was observed in 15 cases, all of them being children and adolescents living in rural areas. By this survey, it was conjectured that helminthic infection is prevalent among children and adolescents in Legaspi, Philippines.

**Key words:** intestinal parasite, fecal examination, Philippines, Legaspi city

The Philippines has been known as an endemic area for malaria (Belizario et al., 1997), schistosomiasis japonicum (Mcgarvey et al., 1996) and intestinal capillariasis (Cross, 1992). The Philippines and Southeast Asia are reported as highly prevalent areas of intestinal helminthes as well (Carney et al., 1981; Chai and Hongvanthong, 1998).

The Philippines are divided into 3 large provinces, Luzon, Visayas, and Mindanao. Legaspi city is located in Visayas area, 544 km from Manila (Fig. 1).

To evaluate the status of intestinal parasites infection among children and adolescents in the Philippines, we visited Legaspi city,

Philippines, in December, 1998.

With the aid of a local missionary, fecal examination was performed on 64 cases of children and adolescents by formalin-ether concentration method. The age of the examinees ranged from 3 to 20 years old, and they were divided into two groups, rural and urban areas. The most of the rural examinees were farmers. The mean infection rate of 64 examinee was 78.1% for helminthes and protozoa. The infection rate of intestinal parasites in primary school children was 95.5% which was higher than the rates in preschool children or adolescents. The infection rate in rural area was 92.3% higher than that of urban area (56%). *Trichuris trichiura* (51%), *Ascaris lumbricoides* (40%) and hookworm (23.4%), were found to be highly prevalent intestinal helminthes in this study. Previous papers on the intestinal helminth

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**Table 1.** Infection status of intestinal parasites among 64 children and adolescents

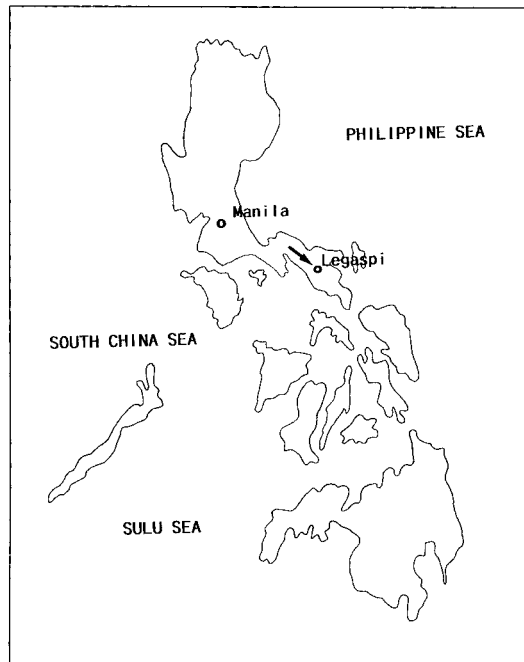
Parasite	No. positive (%)
<i>Ascaris lumbricoides</i>	26 (40.0)
<i>Trichuris trichiura</i>	33 (51.0)
Hookworm	15 (23.4)
<i>Giardia lamblia</i>	5 (7.8)
<i>Entamoeba coli</i>	6 (9.4)
<i>Iodamoeba butschlii</i>	10 (15.6)
<i>Endolimax nana</i>	9 (14.1)

infection in the Philippines reported that *Trichuris trichiura* (12%), *Ascaris lumbricoides* (32%) and hookworm (44%) were prevalent in 1981, while *Trichuris trichiura* (25.2%), *Ascaris lumbricoides* (34.8%) and hookworm (34.8%) were prevalent in 1987 (Carney et al., 1981; Oberst and Alquiza, 1987).

The rate of multiple infections with more than 2 parasites was 51.6%, and more than 3 parasites were found in 15 cases in rural areas. Five cases were infected with more than 4 parasites. The most prevalent intestinal protozoa was *Giardia lamblia* (7.8%). However, *Entamoeba histolytica* was not detected. Non-pathogenic protozoa such as *Entamoeba coli*, *Iodamoeba butschlii*, *Endolimax nana*, were also observed (Table 1).

The infection rates are thought to be influenced by the warm and humid climate, difference of socioeconomic status between rural and urban areas, and food eating habits like avoiding the consumption of raw fresh water fish. Also, the custom of not using toilet papers in sanitary facilities may have affected the result. In rural areas, sanitation and economic conditions influenced the infection status of parasites. These conditions such as no use of shoes, poor water supply and drainage systems make the local residents susceptible to various types of intestinal helminths.

After the survey, we treated all of the examinee and their families with albendazole (400mg per one tablet) without further examination. It is not easy for the infected person to obtain antihelminthics in rural areas, because the price is too high for them to afford. In urban areas, however, it is relatively easy to buy antihelminthic drugs; however, it



**Fig. 1.** Map of the Philippines, and the surveyed area (arrow: Legaspi city).

is difficult for them to properly diagnose with helminth infection, because the fecal examination is not readily available.

This survey showed a high prevalence of intestinal nematode infection in Legaspi city. Previous studies have reported that the most prevalent parasitic diseases in the Philippines were schistosomiasis, intestinal capillariasis and malarial infection. Therefore, a periodic survey on intestinal nematode infection, treatment of the infected cases, and the improvement of the environmental sanitation are highly recommended in Legaspi city, Philippines.

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