International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

# Intestinal Parasitic Infections Among Children in Barangay 890 and 891, Sta. Ana, Manila

**Mylene G. Dinglasan[1], Marie Ann Benette Clavio[2], Jennieva Gabarda[3], Marie Faye Fuertes[4]**

[1,2,3,4]Faculty and Staff of the College of Arts and Sciences, Philippine Christian University

**Abstract**

Intestinal parasite infections (IPIs) are among the most serious public health issues globally. The morbidity and mortality rates of patients infected with these parasites are substantial. Due to various environmental, social, and geographic factors, the main risk factors for spreading parasitic infections, particularly protozoan infection, intestinal parasite distribution, and prevalence vary throughout nations and even within regions. This study aimed to determine the prevalence of intestinal parasite infections in children residing in Barangays 890 and 891. Out of the 120 children who participated in the preliminary screening, only 16 provided stool samples for microscopic examination. The intestinal parasites found are *Ascaris lumbricoides* and *Trichuris trichiura*, with corresponding prevalences of 18.75% and 6.25%. The researchers administered deworming procedures that provided 120 children with vitamins, antihelminthic medications, and health education. Coordination with the barangay health professionals and social workers was suggested to motivate all target children to participate, particularly in providing stool samples.

**Keywords:** Ascaris lumbricoides, Deworming, Intestinal parasites, Prevalence, Trichuris trichiura

## Introduction

Intestinal parasite infections, primarily caused by hookworms, *Ascaris lumbricoides*, and *Trichuris trichiura*, affect approximately 24% (1.5 billion) of the global population, according to the report of the World Health Organization [1]. Intestinal parasite infections (IPIs) are among the most serious public health issues globally. The morbidity and mortality rates of patients infected with these parasites are substantial [2]. Despite being more prevalent in underdeveloped nations, IPIs are also becoming more widespread in developed countries due to migration, international travel, and food globalization. Due to various environmental, social, and geographic factors, the main risk factors for spreading parasitic infections, particularly protozoan infection, intestinal parasite distribution, and prevalence vary throughout nations and even within regions. In the Philippines, *Giardia duodenalis, Ancylostoma spp., Trichuris spp., Toxocara spp., Balantidium coli, Ascaris lumbricoides, Taenia spp.,* and *Enterobius vermicularis* are the most prevalent parasites [3] [4]. Transmission routes vary depending on the parasite. But most people get intestinal parasites by ingesting eggs that get passed along through poop. The eggs are microscopic, so there's no way to know you're swallowing them.

Intestinal worms are a common ailment that mostly affects impoverished and vulnerable groups worldwide. In places with inadequate sanitation, they are spread by eggs found in human feces that

contaminate the soil. Due to their disruption of the body's ability to absorb nutrients, intestinal worms pose a serious threat to public health since they stunt the growth and physical development of millions of children. Diarrhea, vomiting, blood loss, inflammation-induced impaired digestion and absorption, and decreased food intake are all consequences of intestinal parasite infections, which reside in the gastrointestinal tract (GIT), the site of nutrition digestion and absorption. Due to the possibility of iron deficiency, these infections are regarded as a serious public health risk. anemia, delayed childhood development, and many physical and mental health issues. These illnesses are very common, and they are closely linked to poverty, dirty environments, and inadequate healthcare

Schoolchildren in the Philippines are still frequently afflicted with soil-transmitted helminth (STH) infections. According to Mary Mationg et al. (2021), the prevalence of STH varies from 33.8 to 75.9 percent in different studies conducted around the nation [5]. To create an effective control measure, epidemiological data regarding the frequency of distinct intestinal parasite infections in various societal segments and geographical areas is crucial. In light of the circumstances, the goal of this study was to identify and determine the prevalence of intestinal parasites in Barangay 890 and 891, Sta. Ana Manila.

**Objectives of the Study**

The main objective of the study was to identify the intestinal parasitic infection among children in Barangay 890 and 891, Sta. Ana, Manila. Its prevalence was also determined and Deworming activities were conducted.

**Literature Review**

A paper published in Conference proceedings, entitled, “Survey of Intestinal Parasites Including Associated Risk Factors Among Food Vendors and Slaughterhouse Workers in Metro Manila, Philippines revealed the overall prevalence of parasitic infection was 90% with helminthic predominating protozoan infections. Eight (8) different intestinal parasites were identified: *Entamoeba histolytica/Entamoeba dispar* (15.6%), *Balantidium coli* (8.4%), *Giardia lamblia* (4.2%), *Ascaris lumbricoides* (30%), *Trichuris trichiura* (14.9%), *Ancyclostoma duodenale/ Necator americanus* (2.3%). *Taenia spp.* (2.4%), and *Enterobius vermicularis* (2.9%). Other amoeba-like protozoans (19.2%) were also observed suggestive of exposure to fecal materials. Based on the results obtained, there are high levels of parasitic infections among slaughterhouse workers and food vendors. Raising awareness on proper food handling, improved personal hygiene, and sanitation is needed to prevent further transmission of parasites to the public [6]

Another similar study entitled, Prevalence and Predictors of Intestinal Parasitic at King Abdulaziz University Hospital, Jeddah, Saudi Arabia, from 2019 to 2023:A Retrospective Study results revealed the prevalence of IP infection from 2019 to 2023 was 212/7673, with a percentage of 2.8%. Infected patients had a mean (SD) age of 37.68 (17.27) years. Most infected patients were females (61%) and from Saudi Arabia (37.1%). Most stool samples were brown (79.1%), and about half were soft (51.7%). 2019 had the highest number of infected cases (28.3%), while the number of cases decreased in 2023 (8.8%), the lowest during five years. The most predominant parasite among study subjects was *Blastocystis hominis* (48.11%) [7]. Comparable surveys conducted previously revealed a lower frequency of IP infection. The prevention and control of infections can be achieved by epidemiological surveillance, environmental sanitation improvement, and upholding personal cleanliness.

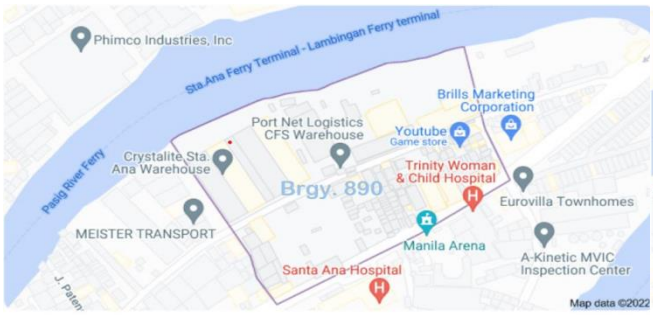
A study conducted by Siddig et. al, entitled, Prevalence of Intestinal Parasites among Selected Group of Primary School Children in Alhag Yousif Area, Khartoum, Sudan, aimed to estimate the distribution of

intestinal parasites among the school children in the study area. One hundred twenty stool samples were collected and analyzed by direct saline stool preparation and the Formol-Ether Concentration Technique. Results show that (84%) of stool samples were positive by the Formol-Ether Concentration technique. While (65%) were positive by the direct saline stool preparation. Intestinal parasites were more prevalent among the male students (80%) than the females (60%). Furthermore, they were more prevalent among the age group 5 to 7 years old (5%). The study concludes that intestinal parasites were more prevalent among male students and the age group 5 to 7 years old [8].

## Materials and Methods

### Study Site

The researchers selected this location to assess the level of intestinal parasitic infection in the area because it is often congested, with many people packed into small living spaces with inadequate housing and appalling living circumstances. Barangay 890 and 891 are a barangay in the city of Manila, under the administrative district of Santa Ana. Its population as determined by the 2020 Census was 1,049 and 760 respectively.




Brgy. 890
Santa Ana, Manila, Metro Manila


Brgy. 891
Santa Ana, Manila, Metro Manila

### Participants

The participants of the study were the children of Brgy. 890 and 891, ages 5-15 years old. A total of 120 children participated in the preliminary screenings which included demographic profile and Vital signs determination. However, only 16 children submitted their stools for microscopic examination. In the end, all 120 children participated in the deworming activities.

### Research Procedure

Preliminary Screening was conducted to determine the demographic profile. The weight and Height of the children were taken to calculate their Body Mass Index. Since only 16 submitted their stool only them will be reflected in the study. The study was conducted from April 2021 till December 2023.

### Microscopical examination of stool

Stool samples were collected in a sterile container following the quality control procedures. In a clean glass slide, all specimens were initially subjected to direct saline preparation. It was performed by suspending 2 to 5 mg (match-head size) of stool in a few drops of 0.9% Sodium Chloride solution and then 1-2 drops of 1% eosin solution were added to the suspension, if the consistency of the stool specimen was fluid. Otherwise, Lugol's iodine was added. Then, it is covered with a cover slip and examined under

the microscope using 10x eyepiece and 10x objective for screening, and then 40x objective for identification.
The prevalence was determined by dividing the number of infected hosts by the total host examined x 100.

**Deworming Activities**
Antihelminthic Drugs and vitamins were given to the 120 children. The children together with their parents received health education, particularly on proper hygiene and how intestinal parasites can be prevented. Feeding follows after the gift-giving activity.

**Results**
**Preliminary Screening**

**Table 1.1**
**Demographic profile of the 120 participants**

| Parameters | Category | Frequency | Percentage |
|---|---|---|---|
| Gender (n-120) | Male | 48 | **40.00** |
| | Female | 72 | **60.00** |
| Age | 3-7 | 33 | **27.50** |
| | 8-12 | 82 | **68.33** |
| | 13-17 | 5 | **4.17** |
| Family Members size | 1-5 | 92 | **76.67** |
| | 6-10 | 28 | **23.33** |
| | 11-15 | 0 | **0.00** |
| Toilet facilities | Yes | 118 | **98.33** |
| | No | 2 | **1.67** |
| Washes hands before eating | Yes | 116 | **96.67** |
| | No | 4 | **3.33** |

Table 1.1 shows the demographic profile of the participants consisting of 48 *males* amounting to 40 percent and 72 fe*males*, 60 percent completing 100 percent of the total participants.
In terms of age, the table reveals the ranges of *3 to 7 years old* with a frequency of 33 or 27.50, *8 to 12 years old* with a frequency of 82 or 68.33 percent, and *13 to 17 years old* with a frequency of 5 or 4.17 percent.
In addition, the table shows the participants' Family Members' size with the greater percentage from having *1 to 5 Family Members* with a frequency of 92 or 76.67 percent, and *6 to 10 Family Members* with a frequency of 28 or 23.33 percent.
In terms of toilet facilities available in the home, the greater percentage answered *Yes* signifying the avai-

lability of comfort rooms with a frequency of 118 or 98.33 percent, and the lowest percentage answered *No* signifying the unavailability of comfort rooms with a frequency of 2 or 1.67 percent.
The table shows 116 or 96.67 percent of the *participants are washing their hands before eating* and 4 or 3.33 percent *are not*.

**Table 1.2**
**Demographic profile of the 16 children with Stool Sample**

| Parameters | Category | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 8 | **50.00** |
| | Female | 8 | **50.00** |
| Age | 3-7 | 8 | **50.00** |
| | 8-12 | 8 | **50.00** |
| | 13-17 | 0 | **0.00** |
| Family Members size | 1-5 | 11 | **68.75** |
| | 6-10 | 5 | **31.25** |
| | 11-15 | 0 | **0.00** |
| Toilet facilities | Yes | 15 | **93.75** |
| | No | 1 | **6.25** |
| Washes hands before eating | Yes | 14 | **87.50** |
| | No | 2 | **12.50** |

Table 1.2 shows the demographic profile of the children with a stool sample consisting of 8 *males* amounting to 50 percent and 8 fe*males,* 50 percent completing 100 percent of the total participants.
In terms of age, the table reveals the ranges of *3 to 7 years old* with a frequency of 8 or 50 percent, and *8 to 12 years old* with a frequency of 8 or 50 percent.
In addition, the table shows the children's Family Members size with the greater percentage from having *1 to 5 Family Members* with a frequency of 11 or 68.75 percent and *6 to 10 Family Members* with a frequency of 5 or 31.25 percent.
In terms of toilet facilities available in the home, the greater percentage answered *Yes* signifying the availability of comfort rooms with a frequency of 15 or 93.75 percent, and the lowest percentage answered *No* signifying the unavailability of comfort rooms with a frequency of 1 or 6.25 percent.
The table shows 14 or 87.50 percent of the participants *are washing their hands before eating*, and 2, or 12.50 percent *are not*.

**Microscopical examination of stool**

**Table 2**
*Intestinal Parasitic infection, IPI and Its Prevalence*

| IPI | Infected Children | Prevalence |
|---|---|---|
| *Ascaris lumbricoides* | 3 | 18.75 |
| *Trichuris trichiura* | 1 | 6.25 |
| n | | 16 |

The intestinal parasite infection found by stool microscopic analysis is shown in Table 2. One child had a *Trichuris trichiura* infection (prevalence: 6.25), while three children had *Ascaris lumbricoides* infections (18.75). As stated, there were only 16 children submitted their stool samples for IPI microscopic examination.

**Discussion**

Several diseases are thought to be primarily caused by parasitic infections, which pose a serious threat to public health. One of the most prevalent ailments spread by contaminated food worldwide is intestinal parasite infection. Approximately 450 million individuals suffer from severe morbidity from intestinal parasite infections, which are one of the most neglected tropical diseases, accounting for nearly 3.5 billion infections[9,10].

A total of 120 children took part in the initial screening, which involved answering questions about their hygiene habits and providing information about their demographics. Sixty percent of the children were female and forty percent were male. Out of this, only sixteen submitted stool samples for microscopic analysis. Only four of the sixteen individuals who sent in their stool samples for microscopic examination had intestinal parasites detected. *Ascaris lumbricoides* infected three, while *Trichuris trichiura* infected one. The current study found that the prevalence of intestinal parasite infection was 18.75% for *Ascaris lumbricoides* and 6.26% for *Trichuris trichiura.* The parasitic dominance of Trichuris trichiura and Ascaris lumbricoides still exists. The estimated 40% infection rate of these helminths is similar to what was found in a recent survey carried out in a community in the Philippines [12].

**Deworming Program**

A deworming program was created for the children of Barangays 890 and 891, Sta. Ana, Manila following World Health Organization criteria [11].

**Overview**

Parasites called intestinal worms reside in the veins that surround the bladder or in the human intestines. In places without proper sanitation, these worms spread through the eggs they release into the soil or water sources from human waste or urine. A portion of the vitamins and nutrients that kids eat are eaten by the worms.

Worm infections are particularly common in children because of their immature immune systems. Untreated worm infections impair children's ability to focus and learn, hinder their normal growth, and result in poor nutrition. The procedure is easy, risk-free, efficient, and cost-free. Each child's worm count

is significantly reduced with a single deworming treatment dose. For kids to develop healthily and learn more effectively in school, deworming medications are necessary.

**Objectives**

1. To provide knowledge and improve individual health among children.
2. To improve the health of the treated and untreated children.
3. To eventually eliminate Intestinal Parasitic infection

**Program Flow**

**1. Preliminary Screening**

Objective: To determine the demographic profile of the children in terms of sex, age, family size, availability of latrines, drinking water, hand washing practices, and open defecation.

**2. Vital Signs Determination**

Objective: To check the level of physical functioning of the children

**3. Stool Examination**

**Objectives:**

1. To determine how many children are currently infected with Intestinal Parasites Infection (IPI).
2. To identify the parasites and prevalence of IPI

**4. Deworming activity**

**Objectives:**

1. To distribute and administer antihelminthic drugs to the children of Barangay
2. To distribute vitamins among the children
3. To conduct Health education focused on Hygiene.

**Deworming Program Conducted for the Children of Barangay 890 and 891**


**Recommendations**

The study's findings led to the formulation of the following recommendations.

Sanitation Development: Improving cleanliness in the targeted group can aid in lowering the rate of reinfection because parasitic worms prefer unhygienic environments. This can entail boosting the accessibility of sanitary facilities and clean water, as well as encouraging proper hand washing and other hygiene habits.

Follow-up treatment: Deworming is often most effective when it is repeated continually with the use of albendazole and mebendazole.

Health education: Educating the targeted population about the causes of worm infections and how to avoid them can aid in the prevention of future infections. This could include information on proper hygiene, sanitation, and food handling.

Integrated approach: Deworming is just one component of a comprehensive plan to improve public health. The nutritional and health problems caused by intestinal worms also require improved access to safe drinking water, basic hygiene, sanitation, and health education. Consider additional therapies in addition to deworming, such as increasing access to healthcare, nutrition, and education.

Monitoring and evaluation**:** Finding the parts of the deworming program that work and those that don't can be accomplished with regular monitoring and assessment. Future surveys or other data collection techniques, according to researchers, should be used to assess the program's effects on health outcomes and pinpoint any problems or opportunities for development.

Sustainability: Long-term success requires sustainability. To make sure the program is maintained after the initial deployment phase, researchers are considering extending their cooperation with local health officials. This can involve hiring community health workers, creating regional drug supply chains, and working with local authorities to spread awareness.

**Acknowledgment**

The researchers express their sincere gratitude to the officials, parents, and kids of Barangays 890 and 891, Sta. Ana for their cooperation and help with this study. Additionally to the College of Arts and Sciences' faculty, staff, and students for their invaluable assistance.

**References**

1. Amanuel Yoseph1 and Hunachew Beyene, The high prevalence of intestinal parasitic infections is associated with stunting among children aged 6–59 months in Boricha Woreda, Southern Ethiopia: a

cross-sectional study.
2. Monjur Ahmed, Intestinal Parasitic Infections in 2023 Gastroenterology Research 2023
Weerakoon et al. Co-parasitism of Intestinal Protozoa and *Schistosoma japonicum* in a Rural Community in the Philippines Infectious Disease of Poverty 2018
3. Gary Antonio C. Lirio1, Ryan V. Labana, Iris Rowena A. Bernardo, Racidon P. Bernarte4, Julieta Z. Dungca, and Nissapatorn, Survey of Intestinal Parasites Including Associated Risk Factors Among Food Vendors and Slaughterhouse Workers in Metro Manila, Philippines 4th International Research Conference on Higher Education Volume 2018
4. Mationg, M. L. S., Tallo, V., Williams, G. M., Gordon, C. M., Clements, A. C. A., McManus, D. P., & Gray, D. J. (2021). The control of soil-transmitted helminthiases in the Philippines: the story continues. Infectious Diseases of Poverty, 10(1). https://doi.org/10.1186/s40249-021-00870-z
5. Gary Antonio C. Lirio1, Ryan V. Labana, Iris Rowena A. Bernardo, Racidon P. Bernarte, Julieta Z. Dungca, and Veeranoot Nissapatorn, Survey of Intestinal Parasites Including Associated Risk Factors Among Food Vendors and Slaughterhouse Workers in Metro Manila, Philippines eIRCHE 2017 Conference C
6. Shaymaa A Abdalal Hatoon A Niyazi, Soa'ad M Alsulami, Ala A Azhari, Hanouf A Niyazi2, Jawahir A Mokhtar Dalya M Attallah, Faten A Al Braikan 2, Moroj A Aldarmasi Prevalence and Predictors of Intestinal Parasitic at King Abdulaziz University Hospital, Jeddah, Saudi Arabia, from 2019 to 2023:A Retrospective Study Infection and Drug Resistance 2024:17 2793–2801
7. Hussein Sharif Siddig, Imad Abdelgalil Mohammed, Mosab Nouraldein Mohammed and Ahmed Mustafa Bashir Prevalence of Intestinal Parasites among Selected Group of Primary School Children in Alhag Yousif Area, Khartoum, Sudan International Journal of Medical Research & Health Sciences, 2017, 6(8): 125-131
8. Yonas Alemu, Teshome Degefa, Mitiku Bajiro, Getachew Teshome Prevalence and intensity of soil-transmitted helminths infection among individuals in model and non-model households, South West Ethiopia: A comparative cross-sectional community-based study https://doi.org/10.1371/journal.pone.027613
9. Feleke DG, Alemu Y, Bisetegn H, Mekonnen M, Yemanebrhane N. Intestinal parasitic infections and associated factors among street dwellers and prison inmates: a systematic review and meta-analysis. PLoS ONE. 2021;16(8):e0255641.
10. Carla Muñoz-Antoli, María José Irisarri-Gutiérrez, Lucrecia Acosta, María José Bonet, J. Guillermo Esteban & Rafael Toledo Intestinal parasitic infections and their potential risk factors among prison inmates in Valencia, Spain BMC Infectious Diseases 2023
11. https://iris.who.int/bitstream/handle/10665/84742/9789241505192_eng.pdf?sequence=1
12. Kim BJ, Ock MS, Chung DI, Yong TS, Lee KJ. The intestinal parasite infection status of inhabitants in Roxas City, the Philippines. Korean J Parasitol. 2003;41:113–115. [PMC free article] [PubMed] [Google Scholar]