



Research Paper

Study of Intestinal Worm Infestation among Adult People at Pin-Tee Village, Pyin Oo Lwin Township

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ABSTRACT

Globally, more than 3.5 billion people are infected with intestinal worms. People get infected with worms when living in an unclean environment of poor sanitation and unhygienic habits. The purpose of this study was to determine prevalence of worm infestation among adult people in Pin-Tee village, Pyin Oo Lwin Township. History taking and physical examination was done. Stool sample was collected with wide mouth sterile plastic bottle. Stool examination for ova detection was performed with saline preparation and iodine preparation at Department of Medical Research (Pyin Oo Lwin Branch), Pathology Research Division. They all used fly-proof sanitary latrine. Among them, 10 (8.3%) cases had history of passing worm. History of taking anthelmintic during last 6 months was 36 (29.8%) cases. Regarding hand washing with soap before eating, 61 (50.4%) washed sometime, everytime 52 (43%) and not washing 8 (6.6%). Related to hand washing with soap after toilet, 79 (65.3%) washed everytime, 33 (27.3%) sometime and 9 (7.4%) did not wash. The overall prevalence of intestinal worm infestation was 53(43.8%) cases. The most prevalent intestinal helminths were *Ascaris lumbricoides* 24(45.3%), followed by *Taenia infestation* 14(26.4%) and *Trichuris trichiura infestation* 3 (5.7%) participants. Mixed infestation was observed in 12 (22.6%). Of these, *Ascaris* and *Taenia* mixed infestation were examined in 9 (17%) participants. Others were *Taenia* and Hookworm, *Trichuris trichiura* and *Taenia*, *Trichuris trichiura* and *Ascaris* detected in 1 (1.9%) participant each. A high percentage of cases have intestinal worm infestation and majority of them have *Ascaris lumbricoides* and may need public health intervention and health education for hand washing practice.

KEY WORDS: worm infestation, stool, hand washing, health education

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I. BACKGROUND INFORMATION

Worm infection occurs when infective eggs, or larvae, enter the body, mature, lay eggs and feed off the person. People get infected with worms when living in an unclean environment of poor sanitation and unhygienic habits. The three main types of common intestinal worms that infect humans are large intestinal roundworm(*Ascaris lumbricoides*), hookworm(*Ancylostoma duodenale* and *Necator americanus*) and whipworm(*Trichuris trichiura*). Globally, more than 3.5 billion people are infected with intestinal worms. Of them, 1.47 billion have roundworm; 1.3 billion are infected with hookworm and 1.05 billion with whipworm. Hookworms are usually more abundant in rural than urban communities. Diagnosis of hookworm infection is by microscopic identification of eggs in faecal samples. [1]

It has been estimated that a female worm has the potential to produce over 200000 eggs per day. Eggs are passed in the faeces in the unembryonated state. Infective eggs survival is variable up to a period of 15 years. Most of the eggs are thought to be destroyed soon after passage although many will embryonate to produce second stage larvae under adequate environmental conditions. Humans are infected by ingestion of embryonated eggs through fecal contamination.[2]

Soil-transmitted helminth infections are caused by different species of parasitic worms. They are transmitted by eggs present in human faeces, which contaminate the soil in areas where sanitation is poor. Approximately 2 billion people are infected with soil-transmitted helminths worldwide.[3]

The prevalence of infection with at least one soil-transmitted helminthiasis was 27.81% (198/712). *Trichuris trichiura* was the most prevalent soil-transmitted helminthiasis in two villages in Lower Myanmar with a prevalence of 18.12% followed by hookworm (8.71%) and *Ascaris lumbricoides* (5.34%). Prevalence of

Ascaris lumbricoides and *Trichuris trichiura* peaked in the 5–14 years old age group and decreased over the older age groups.[4]

In collaboration with the National Sanitation Week (NSW) and Social Mobilisation for Sanitation and Hygiene, Myanmar had a significant increase in access to sanitary means of excreta disposal, from 45% in 1997 to 67% and handwashing with soap and water after defecation has also increased from 18% in 1996 to 43% in 2001.[5]

Worm infestations are also included in Neglected Tropical Disease (NTDs) which are especially common in tropical areas. NTDs inflict tremendous disability and suffering yet can be controlled or eliminated. Soil-transmitted helminths refer to the intestinal worms infecting humans that are transmitted through contaminated : *Ascaris lumbricoides*, whipworm (*Trichuris trichiura*), and hookworm (*Anclostoma duodenale* and *Necator americanus*). A large part of the world’s population is infected with one or more of these soil-transmitted helminths: approximately 807-1,121 million with *Ascaris*, 604-795 million with whipworm and 576-740 million with hookworm. [6]

The aim of this study was to explore the prevalence of worm infestation among community people at rural area of Pyin Oo Lwin Township and determine the some risk factors associated with worm infestation.

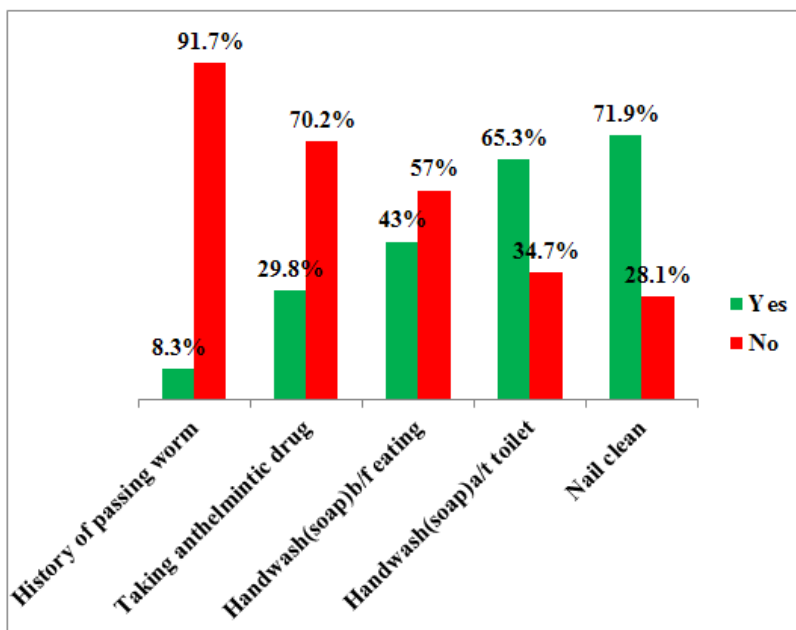
II. MATERIALS AND METHODS

Study design was community and laboratory-based cross-sectional descriptive study which were carried out at Pin-Tee village, Pyin Oo Lwin Township, Myanmar. Study population included both sexes (age>18 yrs) 121 people were selected randomly from the list of household numbers available from village’s chief from September to December 2015. After taking informed consent, we performed history taking, physical examination and stool samples were taken with sterile plastic screw cap bottle. One drop of saline was placed in the middle of slide. Sample was taken with the applicator stick and emulsified stool in saline. Cover slip was placed on suspension. The entire cover was systematically scanned with 10x objective. In saline preparation, organisms appear as refractile objects, in iodine, organisms and cysts were stained. If something suspicious was seen, the 40x objective was used for more detailed study. After examination, we gave pamphlet(Figure-4), health education and de-worming drug in collaboration with health care provider.

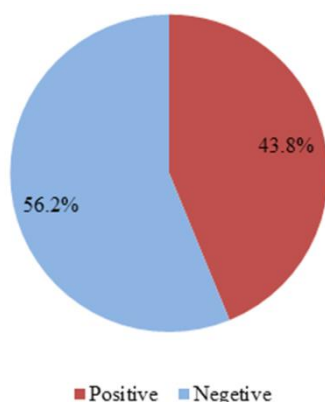
III. RESULTS

Table(1) Demographic data of adult people at Pin-Tee village, Pyin Oo Lwin Township (n=121)

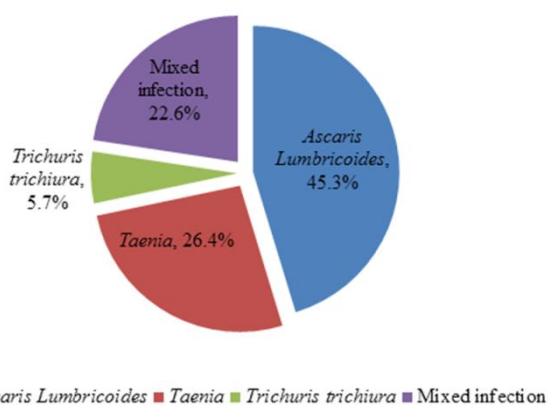
Variables	Number	Percentage
Gender		
Male	49	40.5
Female	72	59.5
Age (Years)		
19-30	38	31.6
31-40	26	21.8
>40	57	46.6
Education		
Illiterate	3	2.5
Read and write	7	5.8
Primary	77	63.6
Secondary and above	34	28.1
Income (Kyats)		
≤100,000	18	14.9
100,000 - 200,000	73	60.3
≥200,000	30	24.8



Figure(1). Personal data of adult people at Pin-Tee village (n=121)



Figure(2) Prevalence of worm infestation among adult people at Pin-Tee village(n=121)



Figure(3) Spectrum of worm infestation among adult people at Pin-Tee village (n= 53)



Figure(4) Pamphlet for health education

IV. DISCUSSIONS

Study population included male 49 (40.5%) and female 72 (59.5%). Among age group, >40 years was accounted 46.6% at Pin-Tee village. Regarding educational status, most of adult people were primary school level (63.6%). Income between 100,000-200,000 Kyats was 60.3%.

Concerning personal sanitary habits, 43% of people handwash(with soap) before eating and 65.3% handwash(with soap) after toilet. According to 2001 data, handwashing with soap and water after defecation has also increased from 18% in 1996 to 43% in 2001.[5] Handwashing practices were similar condition to that time.

In the present study, the overall prevalence of intestinal worm infestation was 43.8%. The most prevalent intestinal helminthes was *Ascaris lumbricoides*(45.3%), followed by *Taenia* infestation 14(26.4%) and *Trichuris trichiura* infestation 3 (5.7%) participants..

The prevalence of infection with at least one soil-transmitted helminthiases was 27.81% (198/712), *Trichuris trichiura* was the most prevalent soil-transmitted helminthiases in two villages in Lower Myanmar with a prevalence of 18.12% followed by hookworm (8.71%) and *Ascaris lumbricoides* (5.34%) at 2012.[4] The result of this study was higher than the result (13.6%) of Myanmar workers in Bangkok and Samut Sakhon provinces which were examined for intestinal parasites during 2017.[7]

Kumar et al (2014), in a study in India on 2656 males and 76 females (including 6 children), reported that prevalence of intestinal parasitosis was found to be 49.38% (1349/2732). The prevalence of *Ascaris lumbricoides* was found to be the highest (46.88%), followed by *Taenia* (2.1%) and *H. nana* (0.21%).[8]

Results of this study were higher than China national survey in 2010, prevalence of 12.7 %, 4.6 %, and 6.1% for Ascariasis, Trichuriasis, and hookworm.]. However, some provinces still had high prevalence of STH infection such as 40.8 % in Hainan, 34.6 % in Guizhou, and 30.6 % in Sichuan in 2010.[9] Mixed infestation was observed in 9.8%. Regarding STH infection, prevalence was 32.3% among adult people in Pin-Tee village.

V. CONCLUSIONS

High prevalence of intestinal worm infestation was found among community people at rural area in Pyin Oo Lwin Township. Prolonged worm infestation are associated with nutrition, work efficiency and economic productivity. The specific objectives should be implemented to control intestinal worm infestation among community by implementing screening program for worm infestation, de-worming program in regular period and health educations (personal hygiene, wearing shoes).

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