



Journal of Clinical Epidemiology and Public Health

Prevalence of Soil-Transmitted Helminthiasis Among Public School Learners in City of San Fernando, La Union, Philippines

Mark Ericson B. Baladad*, & Josephine V. Culaton-Milan

Department of College of Medical Laboratory Science, LORMA Colleges-Center for Health Sciences

*Corresponding author: Mark Ericson B. Baladad, Department of College of Medical, Laboratory Science, LORMA Colleges-Center for Health Sciences.

Submitted: 27 December 2024 Accepted: 02 January 2025 Published: 06 January 2025

di https://doi.org/10.63620/MKJCEPH.2025.1028

Citation: Baladad, M. E. B., & Culaton-Milan, J. V. (2025). Prevalence of soil-transmitted helminthiasis among public school learners in City of San Fernando, La Union, Philippines. J of Clini Epi & Public Health 3(1), 01-03.

Introduction

Soil-Transmitted Helminthiasis (STH) is a group of parasitic infections common in tropical and subtropical countries such as the Philippines. It is estimated that 300 million people in ASE-AN countries are infected with intestinal helminths, specifically 126.7 million people infected with Ascaris lumbricoides, 115.3 million with Trichuris trichiura, and 77.0 million with hookworm species [1].

According to several factors such as widespread poverty, inadequate hygiene and sanitation, illiteracy, and malnutrition are associated with higher risk of contracting STH. This poses a particular health risk to school children in areas with insufficient resources [2].

The prevalence and intensity of Ascaris and Trichuris are seen greatest in children of five to 14 years old, classifying this age group as the most vulnerable and at significant risk for soil-transmitted helminthiasis [3]. Furthermore, 18.87% of the 5.3 billion people living in endemic areas of STH infection are projected to be school-aged children [4]. Despite being significantly debilitating, infections are typically overlooked and neglected as it tends to be under recorded and are overshadowed by more prominent diseases.

In the Philippines, the Department of Education (DepEd) in coordination with the Department of Health (DOH), through the DepEd order 10 series of 2016, is the government-based agency mandated to conduct preventive and therapeutic interventions on primary school children, including mass deworming campaign, vaccination, feeding programs, and other health education and promotion activities. Particularly, a nationwide school-based mass drug administration (MDA) is implemented biannually, in January and July. This initiative targets pre-elementary and grades 1 to 6 elementary students aged 6–12 years old in all public schools in the country.

The COVID-19 pandemic caused a significant disruption to the routine educational system. Educational institutions were forced to adopt a remote-type of learning modality as social interactions were restricted from 2020 to early 2022. This shift greatly interfered with the conduct of the school-based mass deworming programs as the responsibility has been momentarily transferred to the barangay health units. The compliance and utility by school children however has not been effectively monitored.

According to the World Health Organization, resurgence in STH infections is expected in view of the pandemic. As emphasized by an estimated 370 million children worldwide lost access to the school-based health education programs, which consequently constrained with their health benefits. Moreover, mathematical modelling showed that delays in MDA in high STH prevalence settings may mean that the 2030 target for STH elimination as a public health problem may not be achievable [5, 6].

Objective

The LORMA College of Medical Laboratory Science established a research partnership with the City Schools Division of the Department of Education and the City Health Office of the City of San Fernando, La Union. The study investigated the prevalence of soil-transmitted helminthiases among public school learners of the City. The study provided an accurate and up-to-date information regarding the status of parasitism among public school learners, fulfilling the previous gap in the health data. Lastly, the results of this study is important for health policy making and implementation [7-9].

Materials and Methods

A quantitative, descriptive, cross-sectional study is utilized for the study. The study covered all the thirty-three (33) public elementary and high schools in the City of San Fernando, La Union, Philippines. The study constitute schools on the city proper, far flung, mountainous, and near the beach. A total of 398

Page No: 01

participants were enrolled to the study through stratified random sampling method, of which 200, 131, and 57 were elementary, junior, and senior high school learners, respectively.

Participants are accepted regardless of their age and gender, but shall be voluntarily participating, enrolled during the School Year 2022 to 2023, and not be under an active anthelminthic therapy. The researchers utilized a modified Kato-Katz method to identify soil-transmitted helminths. The data was treated with the use of prevalence percentage and frequency and percentage formula. Prior the data collection, the researchers sought ethical approval from the LORMA Colleges Research Ethics Committee. Informed and parental consents were secured from all the participants, and permission were also obtained from the school principals and other administrators.

Results

Table 1: Prevalence rate among public school learners

HAME OF BOHOOL.	TARGET FOR ELEM	NUMBER OF POSTIVE	NUMBER OF SERVICE	AND PERCENTING	TARGET FOR JHS	HAMBER OF POSITIVE	NUMBER OF NEGATIVE JAB	HELMINTHS SEEN	TARGET FOR SMS	NUMBER OF POSTIVE BHS	HUMBER OF NEGATIVE SHE	HELMINTHS SEEN
Regisspole: ES	2		3	None		0	0	Name	9	1	0	None
Bangkangpalan NHS				None	3	0	3	None	1	- 1	1	Name
Barwoon E.S.	. 3		3	None	- 1		. 0	None	0	- 1	0	Name
Dungra ES	4		4	None	1	0	. 0	None	9	1	0	More
Cadastan ES	2		3	None	- 1	9	. 0	Hore	0		0	Mane
Ganassy E5	9	- 1		Techura senura	1			None	- 0	1	0	None
Cathengen ES	- 56	- 9	24	A temperature & Colorina	-		. 0	Hene	- 0			Mome
Dallangeyon 85	- 3		,	Heno	- 1	. 0	0	Nene	- 0			Name
Dalumpines ES	3	- 4		Techuris trichlora	- 1		0	None	9			None
Dr. Guintim Balcita SW45	- 0			Nene	- 5	- 0	- 6	Nene	- 5			None
Inneres III	15	- 4	4	A temperature a filmature	1	- 8	8	Name	- 8	1	8	Mana
La Union PD-CE				None	48	18	43	Assaris Ambatastics, Trichoria strichora	47	2	46	Asserts burnishmakes, Parkuries britished
La Union PD-III Gasquel Amous	0			None	2	0	3	None	1	1	1	Manu
Lingsof IS	24		24	None	18	1	17	T Panus	5	1		X Trionium
Marweltoc (62)				None	- 1	0	. 0	None	0		0	Mone
Massicome Eth	1		2	None	- 1			None		- 1		None
Magyabayuban tili	1	- 1		Stong-funds Africantis	1	1	1	Feating Negative	1	1	0	Ascerts (unbricokless
Preputorel 19	111		11	None		0		None	1	1	1	None
Pwc 66	2		2	Hene	- 1			None	- 0			None
Fac 6/85	- 0		- 1	None	1.		1	None	1	1		None
Parparage III	1		1	None	- 1			None	0		0	Name
Pargue ES	1		1	Nane	- 1	0		None	0			Mane
Sargui III	2		3	None	- 1	0	. 0	None	9	1	0	Name
Sugayat 619	4		4	None			.0	Hone		1		Mane
Son Aquatio ES	12		3	Francisco & A. Sandarinolas	1	8	- 6	None	8	1		Mana
San Fernando City WYS				None	- 1	0		None	1	- 1	1	Mane
San Fernando CSPESIS	2			Hene	- 1		1.1	None			1	None
San Fernando North-CS	17		14	C Distance & 6 Assistance	- 1	0		None	. 0		0	None
San Fernando South GIS	15	- 4	17	T Dichlora	24		24	Nene	4		4	None
Sarriago ES	7		,	None	- 1	- 0		None	- 0	1	0	None
Sanitio ES			- 1	Catalogue SA Ambrication	- 1	- 6		Neno	- 0	1		None
Bibnar Chang B	2	- 1	3	Name	1		1	None	1	1	1	Mane
Tempolgen III	3		3	Name	- 1	0	. 0	None	0	1	0	Name
	200	17	191		121	22	111		- 97	1	129	
	N of President is Eleme	13.50%			NotPeating to J45	15.27%			% of Positive in SHS	7.48%		
	Not Regulate in Stem.	80,98%			Not Regulate in Att.	H775			To of Magazine in 1949	86.94%		

Among elementary schools, the percentage of positive cases is relatively low at 13.50%, with the majority (86.50%) testing negative. The most frequently identified helminths include Ascaris lumbricoides, and Trichuris trichiura, though many schools report no infections.

Junior high schools display a similar trend, with 15.27% testing positive and 84.73% negative, while identified helminths are less diverse, including only a few cases of Ascaris lumbricoides and Trichuris trichiura.

Senior high schools have the lowest percentage of positive cases, with only 7.64% testing positive and 92.36% negative, suggesting improved hygiene or lesser exposure to risk factors at this level.

Discussion

Notably, soil-transmitted helminthiasis are either absent or minimally reported across the public schools in the City of San Fernando, La Union. However, schools with higher positive cases may require targeted health interventions.

To address the prevalence of helminth infections, the researchers recommend to strengthen biannual mass deworming programs in schools, especially those with higher positive cases. Alongside this, schools should implement health education initiatives to teach students proper hygiene practices, such as handwashing, safe food handling, and the importance of using clean toilets, to reduce exposure to helminths. Regular health monitoring and more detailed reporting systems should be established to track trends and evaluate the effectiveness of interventions.

Additionally, collaboration with local government units and communities is essential to improve access to clean water, sanitation, and hygiene infrastructure in schools and surrounding areas. Engaging parents and community members in health and sanitation awareness campaigns can help create a supportive environment to minimize transmission. These efforts, combined with targeted health interventions for high-risk schools, can significantly reduce helminth infections and improve the overall health and well-being of students.

Acknowledgement

The researchers would like to acknowledge and sincerely thank the contributors of this research project, namely: the Third Year Bachelor of Science in Medical Laboratory Science students of LORMA Colleges who undertook their MLS Research Writing and Presentation, to Ms. Mary Jane H. Aum, Ms. Wyndel Kaye A. Catli-Budchangan, Ms. Danelene N. Estacio, Ms. Allyson V. Higoy, Mr. Ryan Jay G. Mostoles, Ms. Dawn Kimberly L. Padua, Ms. Nicola Marie V. Ramos, Ms. Marilyn S. Verrano from the LORMA College of Medical Laboratory Science who served as advisers, and Dr. Michael C. Bangloy, Dr. Edmund A. Cabusora, Ms. Erika Alexis G. Casugay, Dr. Genesis C. Garingarao from the City School Division of the Department of Education who assisted with the project finalization and data collection.

References

 De Silva, N. R., Brooker, S., Hotez, P. J., Montresor, A., Engels, D., & Savioli, L. (2003). Soil-transmitted helminth infections: updating the global picture. Trends in parasitology, 19(12), 547-551.

- 2. Liao, C. W., Fu, C. J., Kao, C. Y., Lee, Y. L., Chen, P. C., Chuang, T. W., ... & Fan, C. K. (2016). Prevalence of intestinal parasitic infections among school children in capital areas of the Democratic Republic of São Tomé and Príncipe, West Africa. African health sciences, 16(3), 690-697.
- Belizario Jr, V. Y., Totañes, F. I. G., de Leon, W. U., Lumampao, Y. F., & Ciro, R. N. T. (2011). Soil-transmitted helminth and other intestinal parasitic infections among school children in indigenous people communities in Davao del Norte, Philippines. Acta tropica, 120, S12-S18.
- 4. Pullan, R. L., & Brooker, S. J. (2012). The global limits and population at risk of soil-transmitted helminth infections in 2010. Parasites & vectors, 5, 1-14.
- Karutu, C., Schultz, L., Waltz, J., Campbell, S. J., Kamara, K., Yotebieng, K., ... & Bundy, D. A. (2022). A coordinated response to the needs of the learner: how deworming and school meals together will contribute to the global recovery from the COVID-19 pandemic. Frontiers in Tropical Diseases, 3, 998276.

- Mationg, M. L. S., Tallo, V. L., Williams, G. M., Gordon, C. A., Clements, A. C., 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), 85.
- Anderson, R. M., Truscott, J. E., Pullan, R. L., Brooker, S. J., & Hollingsworth, T. D. (2013). How effective is school-based deworming for the community-wide control of soil-transmitted helminths?. PLoS neglected tropical diseases, 7(2), e2027.
- 8. Department of Education. (2016). DO 10, s. 2016 Policy and guidelines for the Comprehensive Water, Sanitation and Hygiene in Schools (WinS) Program.
- World Health Organization. (2021). Ending the neglect to attain the Sustainable Development Goals: A road map for neglected tropical diseases 2021–2030. Geneva: World Health Organization.

Copyright: ©2025 Mark Ericson B. Baladad, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.