Sahel Journal of Life Sciences FUDMA (SAJOLS)
March 2026 Vol. 4(1): 702-708
ISSN: 3027-0456 (Print)
ISSN: 1595-5915 (Online)
DOI: *https://doi.org/10.33003/sajols-2026-0401-74*

Research Article

Age-Specific Occurrence of *Schistosoma mansoni* Infection among Al-majiri Pupils in Rafin Guza and Hayin Dan Bushiya Schools, Kaduna Metropolis, Nigeria

***Maryam Abdullahi[1], Karderam Bukar Dikwa[1], Ali Ahmed Haroun[2] and Ebenezer Tolulope Obimakinde[1]**

[1]Department of Biological Sciences, Nigerian Defence Academy, Kaduna, Nigeria
[2]Department of Biotechnology, Nigerian Defence Academy, Kaduna, Nigeria
****Corresponding Author's email*: bologi2015@gmail.com**

ABSTRACT
Schistosoma mansoni infection poses a significant public health challenge, particularly in sub-Saharan Africa, with Nigeria bearing a substantial burden. Al-majiri pupils in Northern Nigeria are highly vulnerable to schistosomiasis due to poor sanitation and contaminated water contact. Despite recognized overall prevalence, study on the age-specific distribution of *S. mansoni* infection within the Al-majiri community in Kaduna metropolis remains an important gap for targeted control. This school-based cross-sectional study investigated 138 Al-majiri pupils aged 6-20 years from four schools in Rafin Guza and Hayin Dan Bushiya, Kaduna metropolis. Stool specimens were examined using the formalin-ether concentration technique. Participants were grouped into 6-10, 11-15 and 16-20 years age old. Pearson Chi-square (χ^2) test was used to analyse locations and age-group differences. The overall prevalence of *S. mansoni* infection among the pupils was 14.5%. *S. mansoni* infection among Al-majiri pupils in Kaduna metropolis is significant ($p = 0.003$) age-dependent, with the highest burden concentrated in younger children (6-10 years) (25.4%), followed by pupils between 11-15 years old (7.8%). However, no infections were detected among pupils between 16-20 years old (0.0%). Occurrence of infection did not differ significantly between Rafin Guza (15.4%) and Hayin Dan Bushiya (13.3%). Results from this study is an indication that there is an urgent need for tailored control programmes, including routine screening, preventive chemotherapy, improved WASH interventions and age-appropriate health education, specifically targeting early school-aged Al-majiri children to achieve global elimination targets.

Keywords: Age group; Al-majiri pupils; Intestinal schistosomiasis; Kaduna metropolis; *Schistosoma mansoni*

Citation: Abdullahi, M., Dikwa, K.B., Haroun, A.A., & Obimakinde, E.T. (2026). Age-Specific Occurrence of *Schistosoma mansoni* Infection among Al-majiri Pupils in Rafin Guza and Hayin Dan Bushiya Schools, Kaduna Metropolis, Nigeria. *Sahel Journal of Life Sciences FUDMA*, 4(1): 702-708. DOI: *https://doi.org/10.33003/sajols-2026-0401-74*

INTRODUCTION

Schistosomiasis, caused by trematodes, remains a significant neglected tropical disease globally, with *Schistosoma mansoni* being the primary cause of intestinal schistosomiasis (Ali *et al*., 2024; WHO, 2026). The World Health Organization (WHO) aims to eliminate schistosomiasis as a public health problem by 2030 and interrupt transmission in specific areas (WHO, 2021). Despite a nearly 60% reduction in prevalence among school-aged children in sub-Saharan Africa, challenges persist, including limited Praziquantel access for adults, inadequate water, sanitation and hygiene (WASH) infrastructure and the impact of climate change on snail hosts (Stensgaard *et al*., 2019; Assaré *et al*., 2026; Kumar *et al*., 2026).

Africa bears a disproportionate burden, accounting for approximately 93% of global schistosomiasis cases, with Nigeria reporting the highest prevalence (Ekpo *et al*., 2025; Peng *et al*., 2025). The Nigerian National Schistosomiasis Control Programme, initiated in 1994, employs mass drug administration

(MDA) targeting school-enrolled children (Makamu *et al*., 2018). However, persistent transmission is fueled by poor sanitation, limited access to safe water and the exclusion of marginalized child populations from school-based interventions (Omohwovo *et al*., 2024; Julius and Wang, 2026). Kaduna State in Northern region of Nigeria is endemic for both urinary and intestinal schistosomiasis (Adamu *et al*., 2019; Markus and Bishop, 2024; Ibrahim *et al*., 2025). The Al-majiri population constitute, traditional Qur'anic school pupils, who are particularly vulnerable due to overcrowded living conditions, inadequate sanitation and reliance on unsafe freshwater sources for daily activities, increasing their exposure to *Schistosoma* cercariae (Balla *et al*., 2022; Muhammad *et al*., 2023). Studies in Kaduna State indicate high rates of parasitic infections, including *S. mansoni*, often compounded by poor nutritional status and limited health literacy among Al-majiri children (Mohammed, 2015; Shaibu *et al*., 2025).

Age is a crucial epidemiological factor influencing schistosomiasis transmission, as water contact behaviours and risk awareness vary across childhood and adolescence (Cando *et al*., 2022; Li *et al*., 2025). While molecular studies confirm *S. mansoni* presence in Kaduna metropolis, studying the age-specific prevalence within the Al-majiri community is a key tool for targeted control strategies. Therefore, this study aimed at determining the age-specific prevalence of *S. mansoni* infection among Al-majiri pupils in Rafin Guza and Hayin Dan Bushiya, Kaduna metropolis and to assess the association between age group and infection status.

MATERIALS AND METHODS

Study Area

The study was conducted in Kaduna metropolis, the capital city of Kaduna State, situated in the North-Western geopolitical zone of Nigeria. Kaduna metropolis is positioned between latitudes 10°20'N of the equator and longitudes 7°22'E of the Greenwich meridian. It lies on the high plains of Hausaland at an average elevation of approximately 2,014 feet above sea level. The climate is characterized by two distinct seasons, a wet season (April to October) and a dry season (November to March) with an average annual rainfall of 1,200 mm (Bello *et al*., 2025). The city serves as a major administrative and commercial hub, characterized by a mix of urban and peri-urban settlements.

The study specifically focused on two peri-urban communities within the metropolis: Rafin Guza and Hayin Dan Bushiya (Figure 1). These areas are predominantly residential but lack comprehensive municipal infrastructure, particularly in terms of piped water supply and standardized sanitation systems. Proximity to the Kaduna River and its various seasonal and perennial tributaries is a defining environmental feature of these settlements, providing readily accessible but potentially contaminated water sources for the local population(Mande, 2020). The natural vegetation belongs to the Northern Guinea Savanna biome, although it has been extensively modified by rapid urbanization and agricultural activities. The socio-economic landscape of Rafin Guza and Hayin Dan Bushiya is marked by high population density and a significant presence of traditional Islamic schools, known as Tsangaya. The Al-majiri pupils residing in these schools often live in overcrowded conditions with limited access to improved sanitation facilities.

Ethical Considerations

Ethical approval was granted by the Kaduna State Ministry of Health (Reference: MoH/ADM/744/vol.1/111066). Given the unique social structure of Al-majiri schools, informed consent was obtained from the school heads, who act as immediate guardians for the pupils. Written informed consent was also obtained from each participating pupil after they were given clear explanation of the study's objectives and procedures. Participation was entirely voluntary.

Study Design

A descriptive, school-based cross-sectional study was conducted to determine the age-specific prevalence of *Schistosoma mansoni* infection among Al-majiri pupils in Kaduna metropolis, Nigeria. The study was conducted in selected Al-majiri schools in Rafin Guza and Hayin Dan Bushiya within the Kaduna metropolis with the total of four schools (two schools drawn from each location) studied. This study represents a focused analysis of age-related patterns derived from a broader epidemiological survey of intestinal schistosomiasis in the region.

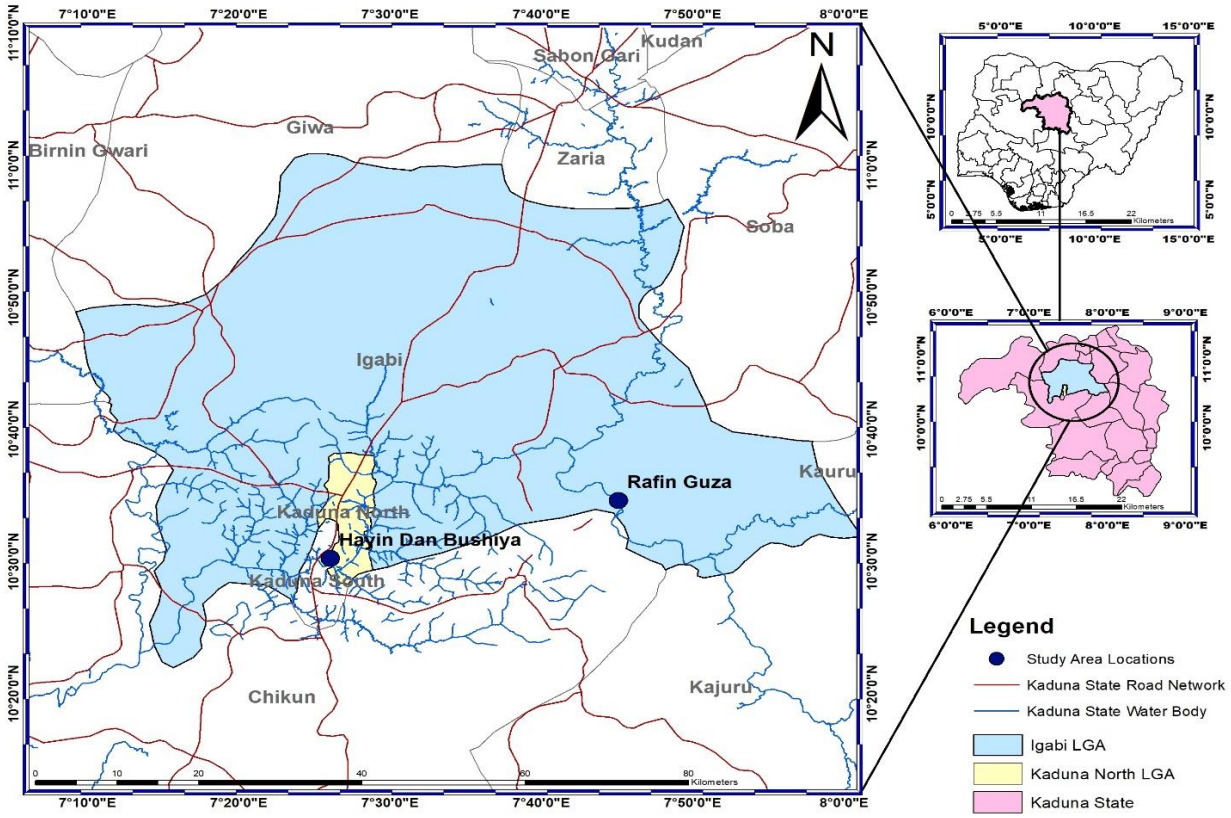

Figure 1: Map of Study Area showing the Sampling Locations

Population

The study population consisted of Al-majiri pupils and adolescents attending traditional Qur'anic schools (Tsangaya) who are known to be socially and environmentally vulnerable to parasitic infections.

Inclusion Criteria

During the study, pupils between the age of 6-20 years who were actively attending the four selected Al-majiri schools in Rafin Guza and Hayin Dan Bushiya were considered during the study. Before a school was selected during the study, there was provision of informed consent by the school guardian and assent by the pupil who were ready to provide fresh stool specimen on the day of collection.

Exclusion Criteria

Pupils who had received Praziquantel or any other anthelmintic treatment within the six months before the study were excluded. In addition, individuals presenting with acute febrile illnesses or other severe medical conditions that could interfere with their participation were not considered eligible. Furthermore, pupils and/or their guardians who declined consent for participation were also excluded from the study.

Sampling Technique and Sample Size

A systematic random sampling technique was employed to select participants from the four participating schools (two schools per community). A total of 166 sterile stool containers were distributed to eligible pupils. Out of these, 138 pupils returned usable specimens, representing an 83.1% response rate. For the purpose of age-specific analysis, participants were categorized into three distinct age group: 6-10, 11-15and 16-20 years old.

Data Collection

Data were collected using a well-structured, interviewer-administered questionnaire to obtain demographic information, including age, school location and duration of residency in the community. Age was verified through school records.

Laboratory Analysis

Stool specimens were collected in well-labelled sterile, wide-mouthed containers and transported to the research laboratory of the Department of Biological Sciences, Nigerian Defence Academy, Afaka, Nigeria for processing within four hours. The formalin-ether concentration technique was used to maximize the detection of *S. mansoni* eggs. Briefly, approximately 1g of faeces was emulsified in 10 mL of 10% formal saline and filtered through a double-

layered gauze. The filtrate was mixed with 3ml of diethyl ether, centrifuged at 2,000 rpm for 3 minutes and the resulting sediment was examined microscopically under 10× and 40× objectives. The presence of characteristic oval golden-yellow lateral-spined eggs confirmed *S. mansoni* infection (Oyibo *et al*., 2025).

Data Analysis

Data obtained from the study were entered into Microsoft Excel and exported to Statistical Package for Social Sciences (SPSS) (Version 25.0) for analysis. Descriptive statistics, including frequencies and percentages were used to summarize the occurrence of infection across age groups and locations. The association between participants locations, age groups and infection status was evaluated using the Pearson Chi-square (χ^2) test. P-value of less than or equal 0.05 was considered statistically significant.

RESULTS

A total of 138 Al-majiri pupils were successfully enrolled, which included 78 (56.5%) from Rafin Guza and 60 (43.5%) from Hayin Dan Bushiya. The overall occurrence of *Schistosoma mansoni* infection was 14.5% as shown in Figure 2.

The pattern of disease distribution among the pupils in the two locations is presented in Table 1. The occurrence of *S. mansoni* was slightly higher among Al-majiri pupils from Rafin Guza (15.4%) compared to those from Hayin Dan Bushiya (13.3%). However, statistical analysis revealed no significant difference (p = 0.734).

The distribution of infection across age groups of the pupils revealed a significant downward trend in the occurrence of *S. mansoni* as age increased (Table 2). The highest prevalence was recorded in among pupils within the age group of 6-10 years old (25.4%), followed by those within 11-15 years group (7.8%). However, no infections were recorded among participants within the age group of 16-20 years (0.0%). Statistical analysis revealed a highly significant association (p = 0.003) between age group and infection status.

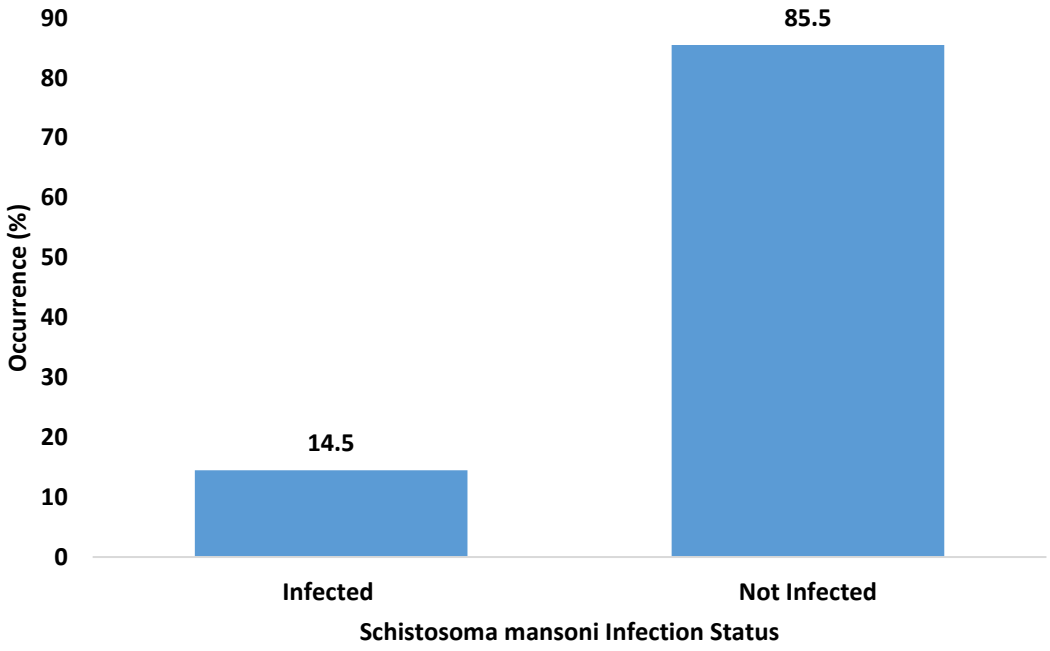

Figure 2: Overall Occurrence of Intestinal Schistosomiasis among Al-majiri Pupils in Rafin Guza and Hayin Dan Bushiya

χ^2=0.115; df = 1; p = 0.734

Table 1: Distribution of *Schistosoma mansoni* Infection among Participants by Study Areas

Locations	Number Examined	Number Infected	Prevalence (%)
Rafin Guza	78	12	15.4
Hayin Dan Bushiya	60	8	13.3

χ^2=0.115; df = 1; p = 0.734

Table 2: Age Prevalence of *Schistosoma mansoni* Infection among Participants in the Study Area

Age group (years)	Number Examined	Number Infected	Prevalence (%)
6-10	63	16	25.4
11-15	51	4	7.8
16-20	24	0	0.0
Total	138	20	14.5

χ^2=11.932, df = 2, p = 0.003

DISCUSSION

This current study reported the prevalence of intestinal schistosomiasis among Al-majiri pupils in Kaduna metropolis, Kaduna State, Nigeria. The overall prevalence of *Schistosoma mansoni* (14.5%) observed in this study confirms that intestinal schistosomiasis remains a public health concern among Al-majiri pupils in the study area. This finding is consistent with recent reports from Northern Nigeria and other sub-Saharan African regions where marginalized school-aged populations continue to experience active transmission (Saidu *et al*., 2023; Ali *et al*., 2024;). The lack of significant difference in prevalence between Rafin Guza and Hayin Dan Bushiya indicates that both communities share similar environmental risk factors, likely rooted in their nearness to contaminated water bodies and shared socioeconomic vulnerabilities (Adamu *et al*., 2019; Mande, 2020).

Results from this study revealed a significant age-dependent gradient in infection occurrence, with pupils between 6-10 years old sharing the highest burden of infection, which is more than three times the prevalence found among pupils within the age group of 11-15 years, while no infections were recorded in the oldest age group (16-20 years). This pattern aligns with the peak of infection typically observed in early-to-mid childhood in endemic settings (Reed *et al*., 2023; Assaré *et al*., 2026). Reports from the recent meta-analyses (2024-2026) have highlighted that children within the aged group of 8-12 years are often at the highest risk due to increased recreational water contact and developing but incomplete immunity (Peng *et al*., 2025; WHO, 2026).

The high occurrence of infection among the youngest Al-majiri pupils (6–10 years) can be attributed to several behavioural and environmental factors. Younger children are more likely to engage in frequent, unsupervised water contact through playing, bathing and swimming in Schistosomiasis infested streams or river tributaries (Muhammad *et al*., 2023). Furthermore, their limited health literacy and lower risk awareness make them less likely to adopt protective behaviours (Balla *et al*., 2022; Alade *et al*., 2023). In contrast, the absence of infection in the 16-20 years group may reflect behavioral maturation, reduced frequency of recreational water contact and could also be linked to potential degree of acquired immunity from repeated exposures to the disease over time(Li *et al*., 2025; Julius and Wang, 2026).

The Al-majiri population represents a unique epidemiological challenge in Northern Nigeria. Unlike children in formal schools who can be reached through national school-based Mass Drug Administration (MDA) programmes, Al-majiri pupils often fall outside these traditional intervention frameworks (Mohammed, 2015; Shaibu *et al*., 2025). The concentration of infection in the youngest age group indicates the need for expanding MDA coverage to include non-formal educational settings, such as Tsangaya schools, to ensure that the most vulnerable children to schistosomiasis are not left behind in the global effort to eliminate schistosomiasis by 2030 (WHO, 2021; Ekpo *et al*., 2025).

CONCLUSION

This study demonstrates that *Schistosoma mansoni* infection is significantly associated with age among Al-majiri pupils in Kaduna Metropolis, with the highest prevalence occurring in the 6-10 years age group. The findings revealed the persistent transmission of intestinal schistosomiasis in peri-urban settlements and highlight the vulnerability of younger children in the Al-majiri system.

Therefore, to achieve the world health organization 2030 elimination targets, it is important that national and state control programmes should prioritize Al-majiri schools for routine screening and preventive chemotherapy with praziquantel, specifically targeting children under 10 years of age. Improved water, sanitation and hygiene infrastructure must be extended to study area to reduce reliance on contaminated freshwater sources. Also, ageappropriate and culturally sensitive health education campaigns should be implemented within Al-majiri schools to promote behavioral change and increase risk awareness of the disease.

REFERENCES

Adamu, A., Dzikwi, A., Akefe, O., Alimi, Y., Adikwu, A., Idoko, S., Kore, M., Okita, A., Yikawe, S., Bello, S., Lamai, R. and Kolo, R. (2019). *Epidemiology of Urinary Schistosomiasis among Secondary School Students in Kaduna State, Nigeria*. https://doi.org/10.4172/2161-0711.1000650

Alade, T., Ta-Tang, T. H., Nassar, S. A., Akindele, A. A., Capote-Morales, R., Omobami, T. B. and Berzosa, P. (2023). Prevalence of *Schistosoma haematobium* and Intestinal Helminth Infections among Nigerian School Children. *Diagnostics (Basel, Switzerland)*, *13*(4). https://doi.org/10.3390/DIAGNOSTICS13040759

Ali, T. P., Sepidarkish, M., Alizadeh, F., Al-Obidy, S., Ebrahimi, P., Kianifard, N., Sheikhi Nooshabadi, M., Jafari Tadi, M., Zolfaghari Dehkharghani, M., Mousavi, S., Rezapour, N., Mohammadnia, S., Fazlollahpour Naghibi, A., Bagheri, K., Asghari, M. H., Bayani, M., Rollinson, D., Gasser, R. B. and Rostami, A. (2024). Prevalence of human *Schistosoma mansoni* infection in endemic regions (2010-2024): a systematic review and meta-analysis. *E Clinical Medicine*, *77*. https://doi.org/10.1016/J.ECLINM.2024.102855

Assaré, R. K., Bassa, F. K., Coulibaly, J. T., Diakité, N. R., Ouattara, M., N'Goran, E. K. and Utzinger, J. (2026). Prevalence, risk factors and trends of human schistosomiasis in Côte d'Ivoire from 1974-2023: systematic review and meta-analysis. *Infectious Diseases of Poverty*, *15*(1). https://doi.org/10.1186/S40249-025-01410-9

Balla, H. J., Inabo, H. I. and Olonitola, S. O. (2022). Detection of Urinary schistosomiasis, the associated risk factorsand its impact on blood parameters among Almajiris in two selected rural communities of Kaduna State. *UMYU Journal of Microbiology Research (UJMR)*, *7*(1), 77–83. https://doi.org/10.47430/ujmr.2271.013

Bello, N., Garba, H. and Ako, A. A. (2025). Rainfall and Temperature Trends in Kaduna North and Their Implications for Water Resources. *UMYU Scientifica*, *4*(2), 285–297. https://doi.org/10.56919/USCI.2542.028

Cando, L. F. T., Perias, G. A. S., Tantengco, O. A. G., Dispo, M. D., Ceriales, J. A., Girasol, M. J. G., Leonardo, L. R. and Tabios, I. K. B. (2022). The Global Prevalence of *Schistosoma mansoni*, *S. japonicum* and *S. haematobium* in Pregnant Women: A Systematic Review and Meta-Analysis. *Tropical Medicine and Infectious Disease*, *7*(11). https://doi.org/10.3390/TROPICALMED7110354

Ekpo, U. F., Olamiju, F. O., Mogaji, H. O., Ovia, S. N., Oladipupo, O. O., Kehinde, A. Y., Oyediran, F. O., Aderogba, M. and Makau-Barasa, L. K. (2025). Sensitivity of Three Impact Assessment Methodologies in Adjusting Preventive Chemotherapy Treatment Decisions for Schistosomiasis Elimination in Ondo State, Nigeria. *The American Journal of Tropical Medicine and Hygiene*, *112*(5), 987–999. https://doi.org/10.4269/AJTMH.24-0352

Ibrahim, H. D., Onusiriuka, B. C. and Dibal, D. M. (2025). Prevalence and socio-demographic factors associated with urinary schistosomiasis in selected communities of Kaduna North Local Government, Kaduna State. *Science World Journal*, *20*(1), 431–436. https://doi.org/10.4314/swj.v20i1.58

Julius, N. and Wang, R. (Sherry). (2026). The regional impact and control strategies of schistosomiasis in Rwanda, Tanzaniaand Uganda: a narrative review. *Annals of Medicine and Surgery*, *88*(1), 637–643. https://doi.org/10.1097/ms9.0000000000004584

Kumar, S., Alghamdi, A., Singh, P. K., Pal, N., Pattnaik, R., Alissa, M., Alghamdi, S. A., Abusalim, G. S. and Subhadra, S. (2026). Neglected tropical diseases: recent trends and challenges associated with its rapid diagnosis and effective therapeutic strategies. In *Frontiers in Pharmacology* (Vol. 17). Frontiers Media SA. https://doi.org/10.3389/fphar.2026.1742086

Li, Q., Li, Y. L., Guo, S. Y., Li, S. Z., Wang, Q., Lin, W. N., Zhang, L. J., Li, S. Z., Zhou, X. N. and Xu, J. (2025). Global trends of schistosomiasis burden from 1990 to 2021 across 204 countries and territories: Findings from GBD 2021 study. *Acta Tropica*, *261*. https://doi.org/10.1016/j.actatropica.2024.107504

Makamu, F., Azam, M. and Kazianga, H. (2018). Returns to Controlling a Neglected Tropical Disease: Schistosomiasis Control Programme and Education Outcomes in Nigeria. *Journal of African Economies*, *27*(5), 538–557. https://doi.org/10.1093/JAE/EJY003

Mande, K. H. (2020). Assessing the Impact of Climate Change on the Built Environment in Kaduna Metropolis and Environs. *Science World Journal*, *15*(3), 78–84. https://doi.org/10.47514/swj/15.03.2020.011

Markus, D. A. and Bishop, H. G. (2024). Prevalence of urinary schistosomiasis among school children in Giwa and Markafi Local Government Areas, Kaduna State, Nigeria. *Science World Journal*, *19*(1), 224–228. https://doi.org/10.4314/swj.v19i1.29

Mohammed, M. (2015). Nutritional Status and Prevalence of Intestinal Schistosomiasis among Al-majiri Population in Kawo District of Kaduna Metropolis, Kaduna State-Nigeria. *Journal of Bacteriology and Parasitology*, *06*(04). https://doi.org/10.4172/2155-9597.1000237

Muhammad, M. I., Abdulsalam, A. H., Petit-Clair, F., Acquaye, A., Nobles, A., Fleischer, B., Konkwo, C., Ransome, Y. and Paintsil, E. (2023). Almajiri health; a scoping review on disease, health literacy and space for participatory research. *PLOS Global Public Health*, *3*(10). https://doi.org/10.1371/journal.pgph.0001641

Omohwovo, E. J., Gabaake, K. P. and Lucero-Prisno, D. E. (2024). Challenges of schistosomiasis control in Africa: The path ahead. In *Public Health Challenges* (Vol. 3, Number 1). John Wiley and Sons Inc. https://doi.org/10.1002/puh2.166

Oyibo, P., Meulah, B., Agbana, T., van Lieshout, L., Oyibo, W., Vdovin, G. and Diehl, J. C. (2025). Deep learning-based automated detection and multiclass classification of soil-transmitted helminths and *Schistosoma mansoni* eggs in fecal smear images. *Scientific Reports*, *15*(1). https://doi.org/10.1038/s41598-025-02755-9

Peng, D., Zhu, Y., Liu, L., Zhang, J., Huang, P., Bai, S., Wang, X. and Yang, K. (2025). Schistosomiasis Burden and Trend Analysis in Africa: Insights from the Global Burden of Disease Study 2021. *Tropical Medicine and Infectious Disease*, *10*(2). https://doi.org/10.3390/tropicalmed10020042

Reed, A. L., O'Ferrall, A. M., Kayuni, S. A., Baxter, H., Stanton, M. C., Stothard, J. R. and Jewell, C. (2023). Modelling the age-prevalence relationship in schistosomiasis: A secondary data analysis of school-aged-children in Mangochi District, Lake Malawi. *Parasite Epidemiology and Control*, *22*. https://doi.org/10.1016/j.parepi.2023.e00303

Saidu, U., Ibrahim, M. A., de Koning, H. P., McKerrow, J. H., Caffrey, C. R. and Balogun, E. O. (2023). Human schistosomiasis in Nigeria: present status, diagnosis, chemotherapyand herbal medicines. *Parasitology Research*, *122*(12), 2751–2772. https://doi.org/10.1007/S00436-023-07993-2

Shaibu, M. A., Adegboyega, N., Abdullahi, B., Peter, S. A., Jimoh, O., Idoko, M. O., Orinya, A., Shuaibu, R. A., Anchau, Z. G., Muhammad, M. A., Abduljalil, N. A. and Dungus, F. B. (2025). Prevalence and Risk Factors of Soil-Transmitted Helminthes among Qur'anic School Children (Almajiri) in Hayin Dogo, Samaru, Zaria, Kaduna State Nigeria. *Sahel Journal of Life Sciences FUDMA*, *3*(2), 367–376. https://doi.org/10.33003/sajols-2025-0302-42

Stensgaard, A. S., Vounatsou, P., Sengupta, M. E. and Utzinger, J. (2019). Schistosomes, snails and climate change: Current trends and future expectations. *Acta Tropica*, *190*, 257–268. https://doi.org/10.1016/J.ACTATROPICA.2018.09.013

World Health Organization. (2021). *World Health Organization. Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030. Geneva: WHO; 2021.* World Health Organization.

World Health Organization. (2026). *Schistosomiasis Fact Sheet. Published February 23, 2026.* World Health Organization. https://www.who.int/news-room/fact-sheets/detail/schistosomiasis.