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Research Article

Prevalence and Risk Factors of Soil-Transmitted Helminthes among Qur'anic School Children (Almajiri) in Hayin Dogo, Samaru, Zaria, Kaduna State, Nigeria

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ABSTRACT
The term Almajiri is derived from Arabic and refers to a child who leaves home in pursuit of Islamic knowledge. These children are typically under their Mallam's care with no adequate nutrition, hygiene, shelter, and health care, thus making them vulnerable members of society. Consequently, they face significant environmental hazards and a high risk of parasitic infections. This study examined 100 stool samples from Almajiri children in Zaria. Before sampling, questionnaires were administered to assess socio-demographic characteristics and risk factors. Samples were analyzed for ova of the parasite using direct wet mount and concentration methods with 10% formol-ether. A total of 67 samples tested positive for helminth infections. Among them, 39 had a single infection, while 28 had co-infections. Age distribution showed 29 infected children within 3–10 years and 38 infected children within 11–17 years, respectively. The most prevalent helminth was *Hookworm* (28.7%), followed by *Schistosoma mansoni* (22.3%), *Strongyloides stercoralis* (13.9%), *Ascaris lumbricoides* (12.8%), *Trichuris trichiura* (5.3%), *Taenia* spp. (3.2%), *Enterobius vermicularis* (2.1%), and *Schistosoma intercalatum* (1.1%). Although a high prevalence of 38% was recorded in children aged 11–17 years, it was found to be not statistically significant. Risk factors such as lack of toilet facilities, inadequate handwashing, absence of footwear, and contact with refuse dumps were significantly associated with helminth infections. This study highlights that soil-transmitted helminth infections remain a major public health concern among Almajiri children in Zaria. This calls for improved environmental and personal hygiene as a means of reducing transmissibility.

Keywords: Almajiri; Children; Helminthes; Prevalence; Qur'aniic; Risk factor

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INTRODUCTION

Soil-transmitted helminths (STHs) are a group of parasitic worms that include *Ascaris lumbricoides, Trichuris trichiura, Enterobius vermicularis, Strongyloides stercoralis, Ancylostoma duodenale,* and *Necator americanus.* These infections disproportionately affect impoverished and marginalized communities, particularly those in tropical and subtropical regions that lack access to clean water, sanitation, and hygiene facilities

(Moncayo *et al*., 2018). The highest prevalence of STH infections is reported in Sub-Saharan Africa, China, South America, and Asia (Akinsanya *et al*., 2021). This widespread burden is primarily due to the parasites' life cycle, which requires faecal contamination of soil—making infections more prevalent in areas with poor sanitation and inadequate hygiene practices.

Soil-transmitted helminths are transmitted through the faeces of infected individuals, which contain eggs or larvae. Once excreted, these eggs contaminate the soil and, in unsanitary environments, can spread through food, water, and direct skin contact. Adult worms residing in the intestines of infected individuals produce large numbers of eggs daily, further contributing to environmental contamination (Winslow *et al*., 2024). The warm, moist conditions of tropical and subtropical climates provide an ideal environment for the survival and development of STH eggs and larvae (Garrison *et al*., 2021).

The infections are classified as neglected tropical diseases (NTDs) and affect over 1.5 billion people—approximately 24% of the global population—according to the World Health Organization (WHO, 2023). The Global Burden of Disease (GBD) 2019 reported that STH infections account for approximately 1.5 million Disability-Adjusted Life Years (DALYs) (GBD, 2019; Incani *et al*., 2022). Additionally, an estimated 5.9 billion people worldwide remain at risk of acquiring STH infections (Sedo *et al*., 2025).

Children are the most vulnerable group due to their underdeveloped immune systems, frequent contact with contaminated soil, and inadequate hygiene practices (Abera *et al*., 2025). Moreover, they experience the severe health consequences of these infections. It is estimated that over 260 million preschool children, 654 million school-age children, and 108 million adolescent girls live in regions with high transmission rates of STH parasites (WHO, 2023). These infections significantly impact children's health, leading to malnutrition, anaemia, stunted growth, impaired nutrient absorption, and increased susceptibility to other infections. Additionally, cognitive development and academic performance are adversely affected, resulting in decreased school attendance and learning difficulties (Donkoh *et al*., 2022).

The *Almajiri* system is a form of Islamic education widely practiced in Northern Nigeria, where children are sent away from home to study the Qur'an. Boys in this system are referred to as *Almajiri*, while the female counterparts are known as *Almajirai.* This educational structure often shifts parental responsibility onto Islamic schools, leaving many children without proper supervision or care. Currently, approximately 8.5 million children are enrolled in Islamic schools across Northern Nigeria (Oniya & Jegede, 2021).

Due to their living conditions, *Almajiri* children are at a heightened risk of contracting STH infections. They often lack access to clean water, proper sanitation, and adequate nutrition, making them highly susceptible to parasitic diseases. This study aims to assess the prevalence of soil-transmitted helminths among Qur'anic school children (*Almajiri*) in Hayin Dogo, Samaru-Zaria, Kaduna State, Nigeria. By identifying infection rates and associated risk factors, this research seeks to contribute to public health interventions aimed at reducing the burden of STH infections in this vulnerable population.

MATERIALS AND METHODS

Study Location

The study was conducted in Hayin Dogo which is a community in Samaru, Sabon Gari Local Government Area which is part of the Zaria metropolis in Kaduna State (Figure 1). Zaria is a historic city in Kaduna State, Nigeria. It is one of the major educational and commercial centers in northern Nigeria and is home to Ahmadu Bello University, one of the country's most prestigious universities. The city has a rich cultural and Islamic heritage and plays a significant role in the region's history. It lies at approximately 11.0855° N latitude and 7.7190° E longitude, at an elevation of about 670 meters (2,200 feet) above sea level. The climate of Zaria is tropical savanna with wet and dry seasons (Maduekwe and Garba, 1999; Kurowska *et al*., 2022).

Informed Consent

Informed consent was obtained from the Malams after an elaborate discussion on the significance of the study and procedure for sample collection. The Malam in turn addressed the almagiri emphasizing the impact the study on their health. Those who were willing were given screw capped white bottles for sample collection. Any "Almagiri" who submitted the sample was given detergents as incentive.

Study Population

The study population are the Qur'anic school children which are called the "*Almajiri*" in the Northern part of Nigeria, who are aged less than 20years old.

Sample Size Determination

Sample size for this study was determined to be 92 using the equation N = $\frac{Z^2 p(1-p)}{d^2}$ by Naing *et al*. (2006) and a previous prevalence of 74.2% by Oniya and Jegede (2021).

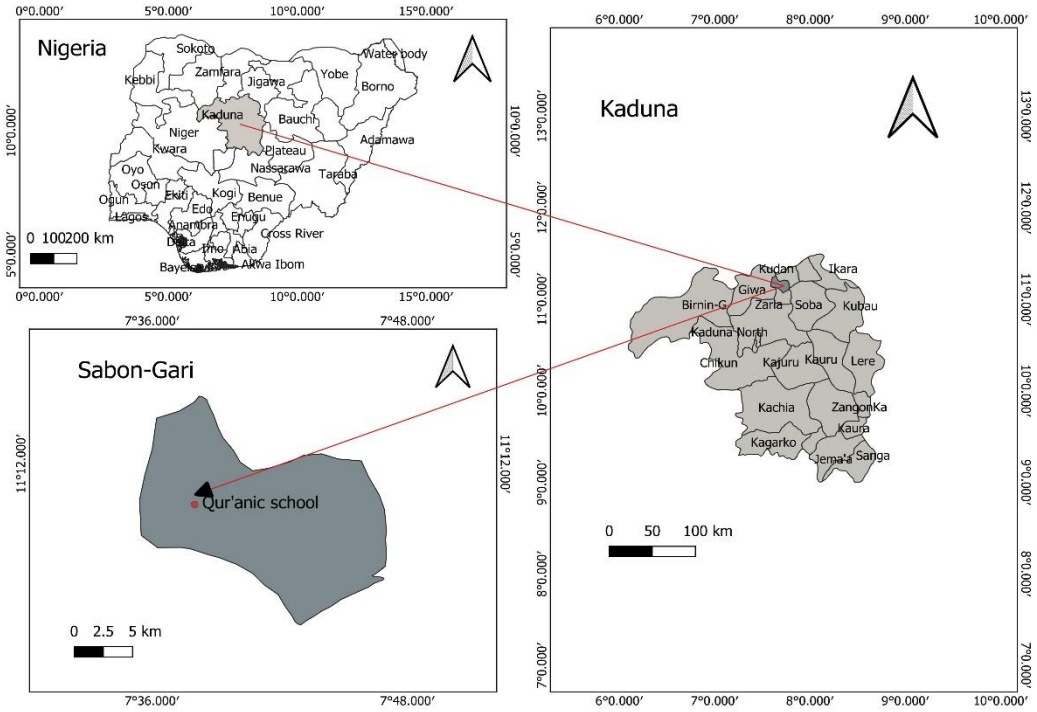

Figure 1: Map of Study Area

Sample Collection

A total of 100 faecal samples were collected from the Qur'anic school children (*Almajiri*) using a sterile clean wide mouth and screw capped plastic container. Instructions on how to collect faecal samples were given in a clear unambiguous language to the children. The samples were collected between the hours of 8-10 am every day and immediately transported in an icebox to the Department of Microbiology Laboratory, Ahmadu Bello University, Zaria for examination (stool microscopy). All samples collected were labelled and registered for proper identification.

Data Collection

Prior to sample collection, questionnaires were administered to obtain socio-demographic (age, sex et cetera) data and behavioral risk factors associated with helminthic infection among the children. Information sought include hand washing habits, availability of toilet facilities, wearing of shoes, washing of hands, etc.

Macroscopic Examination of the Faecal Specimen

The faeces were examined macroscopically for their consistency colour and presence of blood, mucus or adult worms (Cheesebrough, 2009). After which each stool sample was concentrated using Formol-Ether concentration techniques as follows; An applicator stick was used to pick 1g of faeces and was emulsified in 4ml of 10%v/v formal water in a test tube. The test tube was tightly covered and its content mixed by thorough shaking of the tube. The emulsified faeces were strained (sieved) using a strainer (450um pore size) into a clean beaker. The filtrate was then poured into a bottle and 3ml of diethyl ether was added. The tube was covered with a stopper and vigorously mixed for one minute and centrifuged at 300rpm for three minutes (Cheesbrough, 2009).

After the centrifugation process, four layers were observed; the topmost layer is ether, the second is a thin layer of debris, the third formalin and the last layer (bottom) was sediment with the parasites. An applicator stick was used to loosen the layer of faecal debris from the side of the tube. Then the ether, debris and formalin were carefully poured off leaving the sediment.

The sediment was then transferred onto a clean glass slide and covered with a cover slip and then observed under the microscope using x10 and x40 objective with the condenser iris closed sufficiently to give a good contrast (Cheesbrough, 2009). Atlas of parasitology was used to interpret presence or absence of specific ova of helminths based on the morphologic appearance.

Data Analyses

The data obtained was recorded on Microsoft excel and was analyzed using Statistical Package for Social Sciences (SPSS) version 21.0. Results are presented in Tables. Measures of association between variables were determined using Pearson Chi square at 95% confidence interval and all comparisons with p-value < 0.05 were considered statistically significant.

RESULTS

Analysis of 100 stool samples from *Almajiri* children revealed an overall helminthic infection prevalence

of 67% (67/100). Among the infected children, 39% (39/100) had a single infection, while 28% (28/100) had co-infections. The remaining 33% (33/100) were not infected, as presented in Table 1.

The frequency distribution of soil-transmitted helminths (STHs) among the *Almajiri* children showed that Hookworm was the most prevalent parasite, with 27 cases (28.7%), followed by *Schistosoma mansoni* (21 cases, 22.3%), and *Strongyloides stercoralis* (13 cases, 13.9%). Other detected helminths included *Ascaris lumbricoides* (12 cases, 12.8%), *Trichuris trichiura* (5 cases, 5.3%), *Taenia* spp. (3 cases, 3.2%), *Enterobius vermicularis* (2 cases, 2.1%), and *Schistosoma intercalatum* (1 case, 1.1%), as shown in Table 2.

The prevalence of helminthic infections varied across age groups. Children aged 3–10 years had a lower infection rate (29 cases, 43.3%), whereas those aged 11–17 years had a higher prevalence (38 cases, 56.7%). However, the difference in infection rates between these age groups was not statistically significant ($\chi^2 = 0.242, p = 0.623, df = 1$) as presented inTable 3.

Among the 26 children who had access to toilet, 11 (16.4%) were infected. In contrast, 74 children lacked access to toilet, with 56 (83.6%) testing positive for infection. This difference was statistically significant ($\chi^2 = 9.689, p = 0.002, df = 1$), as shown in Table 3. Only 25 children practiced regular hand washing, of whom 8 (11.9%) were infected. Among the 75 children who did not practice hand washing, 59 (88.1%) were infected. The difference in infection prevalence between these two groups was highly significant ($\chi^2 = 18.468, p = 0.000, df = 1$), as shown in Table 3. A total of 21 children regularly wore shoes, with 8 (11.9%) testing positive for infection. Conversely, 79 children did not wear shoes, and 59 (88.1%) were infected. Although infection rates were higher in those without shoes, the difference was not statistically significant ($\chi^2 = 5.442, p = 0.020, df = 1$), as shown in Table 3. A total of 78 children frequently wandered into refuse dumps, with 58 (86.6%) testing positive for infection. Among the 22 children who avoided refuse dumps, only 9 (13.4%) were infected. This difference was statistically significant ($\chi^2 = 8.684, p = 0.003, df = 1$), as shown in Table 3.

Table 1: Helminthic infestation Status of Qur'anic School Children (Almajiri) in Hayin Dogo Samaru, Zaria

Infestation Status	Prevalence (%)
Single infection	39 (39.0)
Co-infection	28 (28.0)
No infection	33 (33.0)
Total	100 (100)

Table 2: Distribution of Helminthes among Qur'anic School Children (Almajiri) in Hayin Dogo Samaru, Zaria.

Parasites	Frequency (%)
Hookworm	27 (28.7)
Schistosoma mansonii	21 (22.3)
Strongyloides stercoralis	13 (13.9)
Ascaris lumbricoides	12 (12.8)
Trichuris trichiura	5 (5.3)
Taenia spp	3 (3.2)
Enterobious vermicularis	2 (2.1)
Schistosoma intercalatum	1 (1.1)

Table 3: Risk factors associated with helminth infection among male Qur'anic School Children (Almajiri) in Hayin Dogo, Samaru, Zaria

Risk Factors	Number of Samples Screened	No Positive (%)	χ^2	P	Df
Age (years)					
3-10	45	29 (43.3)	0.242	0.623	1
11-17	55	38 (56.7)			
Latrine Available					
Yes	26	11 (16.4)	9.689	0.002	1
No	74	56 (83.6)			
Hand Washing Habit					
Yes	25	8 (11.9)	18.468	0.000	1
No	75	59 (88.1)			
Shoe Wearing Habit					
Yes	21	8 (11.9)	5.442	0.020	1
No	79	59 (88.1)			
Wandering into Refuse Dumps					
Yes	78	058 (86.6)	8.684	0.003	1
No	22	9 (13.4)			

DISCUSSION

The analysis of stool samples from *Almajiri* children in this study revealed a high prevalence (67%) of helminthic infections. This indicates that helminthic infections remain a significant public health issue among this vulnerable populationl. This high prevalence suggests that *Almajiri* children live in environments conducive to helminth transmission, such as poor sanitation, lack of potable water and inadequate hygiene practices. This finding is however lower than the reports of Aminu and Abubakar (2023), who carried out a similar study area with a prevalence of 93.3%. The difference in the prevalence could be due to effective infections control adopted and awareness in the study area over the years.

The presence of co-infections in nearly one-third of infected children suggests a high level of exposure to multiple sources of infection. This may be attributed to poor hygiene, inadequate sanitation, and environmental contamination with helminth eggs or larvae. Co-infections are particularly concerning, as they can lead to more severe health complications, including nutritional deficiencies, anaemia, and impaired cognitive development (Cepon-Robins *et al*., 2023; Genanew *et al*., 2024). Affected children may experience reduced school attendance and academic performance, further limiting their opportunities for socioeconomic advancement.

These findings have serious public health, socioeconomic, and developmental implications, particularly for vulnerable populations like *Almajiri* children. Hookworm infections cause chronic blood loss, leading to iron-deficiency anaemia and malnutrition (Furtado *et al*., 2024). Anaemia in children results in fatigue, impaired cognitive function, and poor academic performance (Singh *et al*., 2024). The high prevalence of hookworm suggests frequent contact with contaminated soil due to barefoot walking, poor sanitation, and open defecation (Anegagrie *et al*., 2021). Schistosomiasis is a waterborne disease (Reitzug *et al*., 2023), meaning many of these children likely come into contact with contaminated water bodies (e.g., rivers, ponds, or stagnant water). Chronic infections with *Schistosoma* can cause liver damage, intestinal inflammation, and impaired growth (Payne *et al*., 2023). The presence of *Schistosoma intercalatum* (1.1%), though rare, further indicates persistent exposure to unsafe water sources. *Strongyloides stercoralis* parasite can persist for decades in a host and cause severe complications in immunocompromised individuals (Fang *et al*., 2025). Infections with *Strongyloides stercoralis* are linked to poor hygiene, contaminated soil, and inadequate sanitation facilities (Servián *et al*., 2024). *Ascaris lumbricoides* and *Trichuris trichiura* contribute to intestinal blockages, nutritional deficiencies, and growth retardation (Stracke *et al*., 2021). Their presence highlights the role of faeco-oral transmission, emphasizing the need for proper hand washing and sanitation. Although less common, the presence of *Taenia* spp and *Enterobius vermicularis* suggests exposure to contaminated food or water (Mu *et al*., 2024). Taeniasis is associated with poor meat inspection and inadequate cooking of meat, posing additional food safety concerns (Anyango *et al*., 2023). Chronic infections with these helminths result in fatigue, decreased concentration, and absenteeism, leading to poor academic performance (Alemayehu *et al*., 2024). *Almajiri* children, already disadvantaged in terms of formal education, may face further barriers to learning due to these infections. Treating recurrent helminth infections places financial strain on families who may already struggle with access to healthcare. The need for continuous deworming programs and medical treatment adds to public health costs (Witek-McManus *et al*., 2021). The variety of STHs detected suggests widespread contamination of the environment with human faeces, which is consistent with the lack of latrines reported among *Almajiri* children. The high prevalence of hookworm infections confirms that barefoot walking in contaminated environments is a major transmission route (Eyayu *et al*., 2022)**.** The presence of faeco-oral transmitted helminths (*Ascaris*, *Trichuris*, *Enterobius*) highlights the lack of handwashing and poor hygiene practices. The high prevalence of *Schistosoma mansoni* suggests that *Almajiri* children may bathe, drink, or play in unsafe water bodies (Khanna *et al*., 2024). Without access to clean water and improved sanitation, reinfection is likely, even after treatment. The identification of these helminthes in this study is in consonance with the study of Agrawal *et al*, (2024).

The higher prevalence of this helminthic infection among children aged 11–17 years (56.7%) compared to younger children aged 3–10 years (43.3%)**,** although, the difference in infection rates between the two age groups was not statistically significant, showed that there is a relatively risk of the infection between both age groups. This may be as a result of similar living conditions, including poor sanitation, exposure to contaminated environments, and inadequate healthcare access. It may also be as a result of homogeneous risk factors, such as lack of latrines, poor hand washing practices, frequent walking on barefoot, which equally affect all age groups. Continuous reinfection, as untreated or inadequately treated infections persist across childhood and

adolescence. Lee *et al*. (2021) however attributed the increased prevalence in older children to be as a result of the fact that older children are likely to spend more time outdoors, engaging in activities such as farming, manual labor, or fetching water from contaminated sources (Lee *et al*., 2021). They may venture farther from supervised areas, increasing exposure to soil, stagnant water, and unsanitary locations where helminths thrive. Adolescents may not consistently practice proper hand washing after defecation, before eating, or after engaging in outdoor activities. Studies suggest that as children grow older, they become more independent but may not always adopt better hygiene habits, increasing their risk of infection (Lee *et al*., 2021).

This study found that hookworm (28.7%) and *Schistosoma mansoni* (22.3%) were the most prevalent parasites. The relatively high prevalence of Hookworm in this study may be due to walking on bare foot which is a common practise amongst the *Aalmajiri.* Hookworm is transmitted through the skin, often when walking barefoot on contaminated soil, a habit more common among older children (Kim *et al*., 2024). Schistosomiasis is contracted from exposure to infected water bodies (Reitzug *et al*., 2023), which older children may frequent more for bathing, swimming, or other activities. Older children may have accumulated infections over time due to repeated exposure without treatment. Unlike younger children who might have had fewer years of exposure, adolescents may already be harboring chronic infections, leading to higher prevalence rates. Infection rates were still high in younger children (3–10 Years) because younger children have an immature immune system, making them more vulnerable to parasitic infections. Their inability to fight off infections effectively results in prolonged parasite persistence (Fauziah *et al*., 2022). This age group is more likely to play in contaminated soil and put their hands or objects in their mouths, leading to faeco-oral transmission of parasites like *Ascaris lumbricoides* and *Trichuris trichiura*. Many young children rely on caregivers or older siblings for hygiene practices, and if these are neglected, the risk of infection increases. Poor hand washing and lack of supervised toilet use increase exposure to helminth eggs and larvae (Sedo *et al*., 2025).

The study found a statistically significant association ($\chi^2 = 9.689$, $p = 0.002$) between toilet availability and helminthic infection among the *Almajiris*. Children who do not have access to toilets (defaecate in the open) had a higher infection rate (83.6%) compared to those who had access (16.4%)**.** This underscores the critical role of proper sanitation in controlling soil-transmitted helminths (STHs) and other parasitic infections (Garn *et al*., 2022). The absence of toilets force the children to defecate in open spaces, contaminating the soil with helminth eggs and larvae. Over time, these parasites persist in the environment, leading to continuous reinfection through contact with contaminated soil, water, and food. Without toilet facilities, human waste is improperly disposed of, making it easier for parasites like *Ascaris lumbricoides* and *Trichuris trichiura* to spread via contaminated hands, food, and water sources. Children, particularly younger ones, are more likely to engage in hand-to-mouth behaviors, further increasing transmission risks (Hernandez *et al*., 2022). Hookworm and *Strongyloides stercoralis* infections are commonly contracted through skin penetration, particularly by walking barefoot on contaminated ground (McClure *et al*., 2023). Since most *Almajiri* children lack shoes, they become highly susceptible to infection in areas where open defecation occurs. The absence of latrines reduces opportunities for proper hygiene, as children may be unable to wash their hands after defecation. This leads to hand-to-mouth transmission of parasites, further exacerbating infection rates.

The study also revealed a highly significant association ($\chi^2 = 18.468$, $p = 0.000$, $df = 1$) between hand washing habits and helminthic infection prevalence among Almajiri children. Children who practiced regular hand washing had a much lower infection rate (11.9%) compared to those who did not (88.1%)**.** This also emphasizes the critical role of hand hygiene in preventing soil-transmitted helminths (STHs) and other parasitic infections**.** Many soil-transmitted helminths (e.g., *Ascaris lumbricoides*, *Trichuris trichiura*, and *Enterobius vermicularis***)** are transmitted through ingestion of eggs or larvae from contaminated hands (Barnabas *et al*., 2022). Regular hand washing with soap removes parasite eggs and prevents them from being ingested, effectively breaking the transmission cycle. Helminth eggs can stick to the hands, especially under fingernails, after contact with contaminated soil or feces. Proper hand washing helps remove these infective stages, reducing the likelihood of accidental ingestion (Barnabas *et al*., 2022: Zhang *et al*., 2024). Children who do not wash their hands after using the toilet or before eating spread helminths to shared objects, food, and drinking water, increasing infection risks within their community. Hand hygiene limits environmental contamination, protecting both individuals and their peers.

The findings indicate that children who did not wear shoes had a much higher infection rate (88.1%) compared to those who regularly wore shoes (11.9%)**.** This agrees with previous reports that

highlights barefoot exposure as a major risk factor for soil-transmitted helminths (STHs), particularly hookworm and *Strongyloides stercoralis* infections (Eldin and Gautret, 2021; McClure *et al*., 2023: Rahimi *et al*., 2023). However, despite the substantial difference in infection rates, the association between shoe-wearing and infection prevalence was not statistically significant ($\chi^2 = 5.442, p = 0.020, df = 1$). Hookworm larvae (*Necator americanus* and *Ancylostoma duodenale*) and *Strongyloides stercoralis* infect humans by penetrating the skin, usually through the soles of the feet (Rahimi *et al*., 2023). Wearing shoes acts as a physical barrier, preventing contact with contaminated soil and reducing the risk of infection. Many *Almajiri* children live in environments with poor sanitation, where open defecation is common, leading to widespread soil contamination with parasite eggs and larvae. Those walking barefoot are more likely to pick up helminthic infections, particularly in areas where human faeces are used as fertilizer or where children play in contaminated soil. Walking barefoot increases the likelihood of cuts, abrasions, and skin infections, which can serve as entry points for bacteria and parasites (Eldin and Gautret, 2021). Wearing shoes helps prevent these injuries, indirectly reducing the risk of infections that can worsen malnutrition and anemia. While hookworm and *Strongyloides stercoralis* enter through the skin, other STHs (e.g., *Ascaris lumbricoides*, *Trichuris trichiura*, and *Enterobius vermicularis*) are primarily transmitted through ingestion of contaminated food, water, or hands (Ihnacik *et al*., 2022). Since these infections can still occur regardless of footwear, the overall impact of shoe-wearing on total helminthic infections might not have been strong enough to show a statistically significant difference. Only 21 children wore shoes, compared to 79 who did not. The smaller number of shoe-wearing children reduces statistical power, making it harder to detect a significant difference in infection rates. Children who wore shoes may also have practiced better hygiene overall, such as hand washing, using toilets, and avoiding contaminated areas. If these children were exposed to fewer risk factors, their lower infection rates may not be solely due to shoe-wearing but rather to an overall cleaner lifestyle.

The findings show that children who frequently wandered into refuse dumps had a significantly higher prevalence of helminthic infections (86.6%) compared to those who avoided such areas (13.4%). The statistical analysis ($\chi^2 = 8.684, p = 0.003, df = 1$) confirms that this difference is highly significant, indicating that exposure to contaminated waste is a major risk factor for soil-transmitted helminth (STH) infections among the *Almajiri* children (Ezenwaka and Okere, 2024). Open refuse dumps are often heavily contaminated with human and animal faeces, which serve as reservoirs for helminth eggs and larvae (Sangkachai *et al*., 2024). Helminths such as *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworm are transmitted via contaminated soil, food, and water, making dumpsites a high-risk environment (Barnabas *et al*., 2022). Hookworm and *Strongyloides stercoralis* larvae can actively penetrate the skin, particularly through barefoot exposure in refuse dumps (McClure *et al*., 2023). Ingestion of contaminated soil (from unwashed hands after handling waste) can lead to infections with *Ascaris lumbricoides*, *Trichuris trichiura*, and *Enterobius vermicularis* (Eyayu *et al*., 2022). In areas with poor sanitation, refuse dumps often serve as informal toilet areas, further increasing fecal-oral transmission of helminth infections. Children playing in such areas are likely to accidentally ingest parasite eggs through contaminated hands or food. Many *Almajiri* children lack access to proper hygiene facilities, meaning they may eat with unwashed hands after being in contaminated areas. The high infection rate among these children is consistent with findings on hand washing practices, where children who did not wash their hands regularly had significantly higher infection rates (Rifqi *et al*., 2023; Tunio *et al*., 2024.

CONCLUSION

The study revealed a prevalence of 67% soil-transmitted helminths species amongst Almajiris in Hayin dogo Samaru Zaria. The soil-transmitted helminths among these *almajiris* in study area were Hookworm, *Schistosoma mansoni Strongyloides stercoralis* and *Ascaris lumbricoides* with Hookworm been the most prevalent parasite (28.7%) among the children. In addition, this study also identified the risk factors associated with STHs infections among the children in the study area; such as latrine availability, handwashing habit, wandering into refuse dump and age group differences. Therefore, we advocate for regular mass deworming of the children in the study area and regular hand washing habit should be encouraged. Shoe wearing habit should be encouraged. There is the need for periodic assessment and constant surveillance study of STHs among children in the study area.

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Conflict of interest:

The author declares that there was no conflict of interest.

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