

Prevalence of Schistosomiasis in School-aged Children in Selected Communities in Benue South Nigeria.

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ABSTRACT

Schistosomiasis is a debilitating disease and second behind malaria affecting over 200 million people worldwide. Despite its huge impact on the health and socio-economic burden of the society, it remains a neglected tropical disease. One critical area that is underdeveloped is the diagnostics of Schistosomiasis. This research was conducted to determine the prevalence of *Schistosoma* infection among school-aged children in Benue South Senatorial District. Accurate diagnosis is important for the detection and treatment of the disease. where Kato- Katz (KK), Fecal concentration technique (FECT), Urine Microscopy and Hemastix methods were used and the risk factors (age, sex, water activities etc.) that influence Schistosomiasis in resource limited settings were used. Survey on the prevalence of urinary and stool Schistosomiasis was carried out on school-aged children between the ages of 5-15 years from October, 2024 to January, 2025 in the four federal constituencies in Benue South Senatorial District (Apa and Agatu, Ado Ogbadibo and Okpokwu, Obi and Oju, Ohimini and Otukpo). A total of 184 pupils volunteered and a sample of urine and stool were collected from each of the respondents, making it a total of 368 samples. The prevalence of *S. haematobium* and *S. mansoni* was 39.2% and 15.1% respectively which indicate that urinary Schistosomiasis was more prevalent than intestinal Schistosomiasis, with overall prevalence rate of 54.3% of Schistosomiasis. The overall indices of infection were generally highest in the 11-15 years age group and those from farming backgrounds, indicating strong links with water contact activities. The prevalence rate varies from constituency with Obi and Oju 16.3% highest and Ohimini and Otukpo with lowest infection of 8.7%. Therefore, our findings justify the urgent need to develop an integrated community-based intervention that addresses the water and sanitation needs of the constituencies.

Keywords: schistosomiasis, school-aged pupils, neglected tropical diseases, Kato-Katz, Benue South.

INTRODUCTION

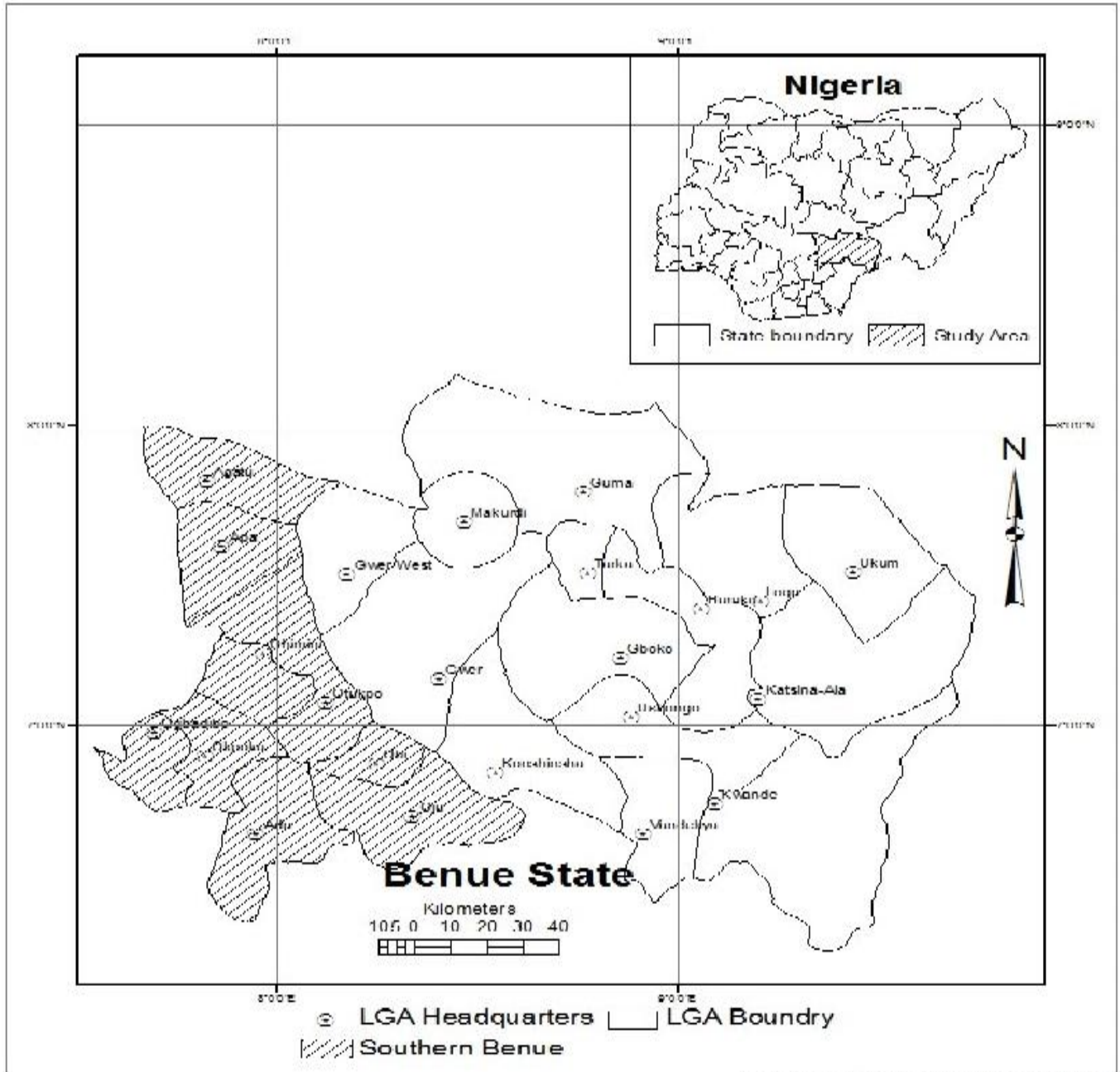
Malaria and Schistosomiasis are among the most important diseases of enormous public health burdens in the globally (Doumbo *et al.*, 2014). Bilharzia or snail fever also known as (Schistosomiasis) ranking second to only malaria in terms of its socio-economic and public health importance in most study areas (Nanvya *et al.*, 2011), it is a trematodes parasitic water borne disease, transmitted by a trematode called *Schistosoma*, a neglected tropical disease (NTD) and more prevalence among young aged between the ages of 5-15 years.

The disease is transmitted via contact with contaminated fresh water infested with the larval forms (cercariae) of parasitic blood flukes, known as Schistosomes. Clinically important species in order of dominance in Africa are: *S. haematobium*, *S. mansoni* and *S. japonicum* (Mawa *et al.*, 2021). It is the second most important neglected tropical diseases (NTDs) of public health concern in the world. It affects almost 240 million people worldwide, and 91% of which reside in tropical and subtropical areas without potable water and adequate sanitation (Mawa *et al.*, 2021). The global mortality ranges from 24,672 to 200,000 annually (WHO, 2022). Urinary Schistosomiasis is caused by *S. haematobium* while intestinal schistosomiasis is caused by *S. mansoni*. The parasitic disease has been reported in many countries worldwide and endemic in 52 countries (Mawa *et al.*, 2021; Mohammed *et al.*, 2022; WHO, 2022.) Schistosomiasis is associated with serious health problems and morbidities among women and children (WHO, 2018). The disease manifestations in pregnancy are: anemia, placental complications resulting in low birth weights, increased risk of acquiring bladder cancer, sexually transmitted diseases, kidney fibrosis, vaginal bleeding and genital lesions. Most infected children suffer from anemia, malnutrition, stunted growth, impaired mental and cognitive development that impacts negatively on their development and productivity (Degarege *et al.*, 2015). Attempts had been made to determine the prevalence of the disease in some parts of Nigeria. It was reported that 16 million children are infected in Nigeria (WHO, 2018). The World Health Organization (WHO) recommended the use of anthelmintic drugs for treatment of people at risk based on community diagnosis. About 206 million Schistosome-infected individuals were given treatment as at 2020 (Mawa *et al.*, 2021). Praziquantel has been safely co-administered with albendazole and ivermectin, in areas where these drugs have been used separately for preventive chemotherapy. These interventions make it possible to control schistosomiasis in poor and marginalized communities, in conjunction with interventions against lymphatic filariasis, onchocerciasis and soil transmitted helminthiasis (King *et al.*, 2008). The WHO has launched a new guideline that provides evidence-based recommendations to countries in their efforts to achieve control and elimination of schistosomiasis as a public health problem and to move towards interruption of transmission. This is to accelerate the elimination target of schistosomiasis as a public health problem and the interruption of transmission in humans in some countries by 2030, which is part of the roadmap for neglected tropical diseases (WHO, 2022). A major drawback in the intervention of schistosomiasis is low coverage of the preventive chemotherapy and lack of sufficient data on infected subjects (Parkin *et al.*, 2008). Although Benue State has been classified as a high endemic area for Schistosomiasis due to presence of associated risk factors, there is lack of adequate information on the prevalence of the disease in the Study area especially among vulnerable groups such as children and women who are thought to have close links with water bodies harboring snail vectors (Yandev *et al.*, 2019).

Residents of Benue South are in particular highly predisposed to this infection. The overall aim of this study is to determine the prevalence of schistosomiasis among school-aged children in rural communities in Benue South Senatorial District (comprising of four federal constituencies), in the zone C of the State. (1) To determine the prevalence rate of Schistosomiasis among selected school age children in Benue South (2) To review the sensitivity of available diagnostic methods (3) Determine the degree of Association among demograghic parameters, risk factors and infection types in the study area.

MATERIAL AND METHODS

Study area: The study was conducted in primary and junior secondary schools in the four (4) federal constituencies in Benue South (Apa and Agatu, Ado Ogbadibo and Okpokwu, Obi and Oju, Ohimini and Otukpo) of Benue State, Nigeria



Source: Fed University Dutain ma, GIS Lab

Fig 1. Map showing Benue State and the Study

Sample Size Determination:

Sample size for the determination of schistosomiasis of school age children in Benue South Nigeria was calculated

According William G. Cochran's formula (1977)

$$n = Z^2 pq / e^2 \tag{1}$$

Where;

n = sample size

Z (standard normal distribution at 95% confidence interval) = 1.96

p (prevalence) = 27.2%

$p = 0.272$

$q = 1 - p$

$q = 0.728$

e (the allowable error, taken as 5%) = 0.05

The minimum sample size calculated for this study was 304 samples, however a total of 368 Samples was collected for this study which is 17.4 % (64) increase.

Ethical Approval

Ethical approval (FUHSO-HREC/02/05/2023) was obtained from the Ethical Committee of Federal University of Health Sciences Otukpo, FUHSO for the use of human subjects for research. In addition, permission was sought from the various school Head Teachers to allow interaction pupils were given an informed consent forms to take home for their parents and guardians approval.

Study period

The study was conducted for a period of four (4) months from October 2024 to January 2025.

Study Design

A school-based cross-sectional selection of pupils were randomly selected from age range 5-15years old in each school in the study area. Eighteen (18) Government and private schools were randomly selected from the four constituencies in Benue south senatorial districts based by balloting on proximity to source of water, accessibility and security challenges and samples were collected in the schools at different interval.

Study Population

Eighteen (18) Government and private schools were randomly selected in the four Federal constituencies of Benue South based by balloting on proximity to source of water, accessibility and security challenges.

Inclusion and Exclusion Criteria

Age range 5–15 years of school -aged children were recruited .The anonymity of each pupil was treated with high level of confidentiality as the purpose of this research is concerned and those school age children below five (5) years and those above fifteen (15) years were excluded from the study

Questionnaire Administration and Data Collection

An advocacy visit and orientation were carried out by the Research Assistants in the study area for the consent of the parents and guardians of the school age children, respondents and the teacher/tutor. The questions were translated in their native language for better understanding and the pupils were guided on how to fill the structured questionnaire forms used for the demographic data collection. Data on socioeconomic, demographic characteristics and risk factors (e.g. name, sex, age and health details of the student, parent's occupation, water sources, water contact activities), symptoms, treatments if any, knowledge ,attitude, and practice about the parasitic infections (CDC, 2016)

Sample Collection

Each respondents that consented to the research programme were given a 20ml screw capped bottle labeled with instruction to provide terminal urine and clean, wide mouth, screw capped dry transparent containers for stool between 7:00 am and 11am since eggs output from infected persons reach peak value around that time of the day (King *et al.*, 2008; Parkin *et al.*, 2018). Each bottle was

labeled to correspond to the number assigned to each subject's questionnaire. One hundred and eighty four (n=184) samples of urine and stool samples one hundred and eighty four (n=184) were collected from the eighteen selected schools randomly in the study area. Samples were collected in the schools at different interval. Where minimum of twenty (20) samples collected from each selected schools to include males and females of age of 5-15 years. The urine samples were preserved by adding two drops of 10% v/v sodium hypochlorite solution (Kosala *et al.*, 2015). It was then transported immediately to the Microbiology laboratory Federal University of Health Sciences Otukpo for analysis according to the method of Cheesbrough, (2005).

Analysis of Stool and Urine Samples

Kato- Katz (KK) is the most universally applied test for intestinal Schistosomiasis such as *S. mansoni*, *S. japonicum*, and *S. mekongi*, and it involves microscopic examination of a thick fecal smear for eggs that are shed by the infecting helminth. Kato-Katz is a diagnostic technique for the detection of helminth eggs in stool using a light microscope. This test is based on the detection of helminth eggs in small amounts (41.7 mg) of fresh stool. The Kato-Katz technique facilitates the detection and quantification of helminth eggs that infected subjects pass in their stool. A thick smear is prepared on a microscopic slide and helminth eggs are enumerated under a light microscope and recorded for the presence of the helminth. Subsequently, the prevalence and intensity of helminth infections can be determined. Parasite intensity look out for the number of eggs counted of each *S. heamatobium* species per 1 gram of stool. A Kato-Katz smear consists of 41.7 mg of stool. To calculate the number of eggs per 1 g of stool (EPG) multiply the egg count from the slide by a factor of 24 (24 x 41.7 mg \approx 1 g). EPG: EPG is the estimated number of Eggs per Gram of stool excreted by the examined infected sample. KK provides a high diagnostic specificity in endemic areas where parasite loads are high, but the detection limits falls to low levels when being applied in non-endemic areas or in the diagnosis of infections at an early stage. Gberikon *et al.*, 2015). (a.) the outside of the stool container was wiped with a clean piece of gauze soaked in 10% bleach (b.) the stool container were homogenized to ensure eggs are distributed in the sample (c.) 1 gram of stool sample was placed on a scrap paper and a nylon screen pressed on top of the stool (d.) Kato-Katz template were placed on the middle of the first slide "A". The hole of the template was completely fill with the stool sample. (e.) The template was removed vertically. (f.) The Kato-Katz template was placed in the middle of the second slide "B". Completely again the hole of the template was filled with sample using spatula (g) the pre-soaked cellophane was placed on top,of the clean surface of the cellophane and the faecal material were spread evenly between the microscope slide and the cellophane strip.(h) The Lift cellophane was lifted and wrinkled ,Supporting the slides to avoid breaking/cracking. (i). the slides were gently slided sideways to avoid separating the cellophane strip from the slide. (j) the slides were placed on the bench with the cellophane upwards. (k). the slides were examined under 10-40x magnification. Within 30-60 minutes by counting the number of helminth eggs.

Fecal concentration technique (FECT). The Formalin-Ethyl Acetate Concentration Technique (FECT) is a diagnostic method that processes stool samples to concentrate parasitic organisms like eggs, cysts, and larvae, making them easier to detect under a microscope, the method was also used in stool examination (WHO 2018).(a.)The specimen was mixed well with formalin-ethyl acetate. (b) 5ml of the fecal suspension were strained through wetted cheesecloth gauze placed over a disposable paper funnel into a 15 ml conical centrifuge tube. (c).10 ml of 10% formalin was added to the sediment and mix thoroughly with wooden applicator stick (d).4 ml of ethyl acetate was added, to the tubes, and shaking vigorously in an inverted position for 30 seconds. (e). The supernatant was decanted (f). A drop of the sample was placed unto a grease free, clean slide and covered with a cover slip (g) the prepared slides were viewed under the microscope, using different magnifications.

Urine Microscopy Urine microscopy is a standard technique to diagnose schistosomiasis caused by *S. haematobium*. The number of eggs per 10 ml of urine is used to express infection intensity (Chadeka *et al.*, 2017). (a)10 ml of urine was aliquoted and filtered through polycarbonate filter membrane, (b) the slides were prepared using a clean glass slide free of grease (c)two drops of the residue were placed on the slide and covered with cover slip (d)the prepared slides were examined for parasite eggs using microscope with different magnifications.

Detection of Microhematuria in Urine

Microhematuria (abnormal presence of blood in urine) which is detected by a dipstick urinalysis which looks for red blood cells (RBCs) in urine sample. A colour change from orange to green or blue indicate positive and no colour change indicate negative result. The intensity of color change is proportional to the amount of blood in the urine. (Keller *et al.*, 2020; Mohammed *et al.*, 2022). Hemastix is a firm plastic strip to which is affixed a reagent area that tests for occult blood in urine. Test results provide information on urinary tract status. The reagent test area on Hemastix is ready to use upon removal from the bottle and the reagent strip is disposable.

Reagent urinalysis dipsticks (Hemastix®, Siemens, Healthcare Diagnostics, United Kingdom) was used following the manufacturer’s instructions. (a) the urine sample collected was well-mixed, uncentrifuged (b)one strip of Hemastix was removed from the bottle and cap replaced (c) the reagent area of the strip was dipped into urine container for 5-10 seconds.(d) the strip removed and edge was run against the rim of the urine container to remove excess urine. € the strip was hold in horizontal position to avoid soiling of hand with the urine(f) Colour change was observed in 60 seconds, the resulting color change of the strip was compared with the manufacturer’s diagnostic color chart of the Hemastix.

Statistical Analysis

Data were coded using sample identification number to maintain confidentiality. Collected data was entered into a spreadsheet and imported for analysis into SPSS version 23.0. Only descriptive statistics was computed for the data.

RESULTS

Table 1: Prevalence and Distribution of *Schistosomiasis* among School-Aged Children in Benue South, Nigeria

Constituency	Total Sample per constituency	<i>S. haematobium</i>	<i>S. mansoni</i>	Overall Prevalence
Ado, Okpokwu and Ogbadibo	92	10(10.9%)	4(4.3%)	15.2%
Apa-Agatu	92	9(9.8%)	4(4.3%)	14.1%
Obi and Oju	92	11(12%)	4(4.3%)	16.3%
Ohimini and Otukpo	92	6(6.5%)	2(2.2%)	8.7%
Total	368	36(39.2%)	14(15.1%)	54.3%

Table 1 showed that Schistosomiasis was more prevalent (16.3%) in Obi and Oju constituency and lower (8.7%) in Ohimini and Otukpo constituency with overall prevalence rate of *S. haematobium* as

39.2% and 15.1% of *S. mansoni* among the 184 school aged children recruited with samples (n=368) for the research, indicating 54.3% overall prevalence rate of Schistosomiasis in the study area.

Table 2: Detection Methods Used for *Schistosomiasis* in Benue South

Constituency	Total Samples	Detection Method Stool		Detection Method Urine	
		Kato-Katz	FECT	Hemastix	Urine
Ado, Okpokwu and Ogbadibo	92	3(3.3%)	1(1.1%)	2(2.2%)	7(7.6%)
Apa and Agatu	92	3(3.3%)	1(1.1%)	4(4.3%)	5(5.4%)
Obi and Oju	92	5(5.4%)	1(1.1%)	4(4.3%)	5(5.4%)
Ohimini and Otukpo	92	1(1.1%)	2(2.2%)	1(1.1%)	4(4.3%)
Total	368	12(13.1%)	5(5.5%)	11(11.9%)	21(22.7%)

Table 2 Explained the most sensitivity methods of detection of different species of *Schistosoma* in the two samples collected in the study area in stool sample, Kato-Katz (13.1%) was the most sensitive method than FECT(5.5%), while in urine analysis, urine microscopy (22.7 %) was the most sensitive than Hemastix (11.9 %)

Table 3: Demographic Distribution of *S. haematobium* Based on Gender and Age

Constituency	Total Samples	Prevalence rate of <i>S. haematobium</i>	Gender		Age (years)	
			Male	Female	0-10	11-15
Ado, Okpokwu and Ogbadibo	92	10(10.9%)	6(6.5%)	4(4.3%)	5(5.5%)	5(5.5%)
Apa and Agatu	92	9(9.8%)	5(5.5%)	4(4.3%)	4(4.3%)	5(5.5%)
Obi and Oju	92	11(12%)	6(6.5%)	5(5.5%)	6(6.5%)	5(5.5%)
Ohimini and Otukpo	92	6(6.5%)	3(3.3%)	3(3.3%)	2(2.2%)	4(4.3%)
Total	368	36(39.2%)	20(21.8%)	16(17.4%)	17(18.5%)	19(20.8)

Table 3. Explained the demographic factors of *S. haematobium* based on gender and age. From the result, Male have the highest prevalence of 21.8% compared to female with 17.4%. While that of age, 11-15 years have the highest of 20.8% of total prevalence compared to the age 5-10 years with 18.5%.

Table 4: Demographic Distribution of *S. mansoni* Based on Gender and Age

Constituency	Total Samples	Prevalence rate of <i>S. haematobium</i>	Gender		Age (years)	
			Male	Female	0-10	11-15
Ado, Okpokwu and Ogbadibo	92	4(4.3%)	2(2.2%)	2(2.2%)	1(1.1%)	3(3.3%)
Apa and Agatu	92	4(4.3%)	2(2.2%)	2(2.2%)	1(1.1%)	3(3.3%)
Obi and Oju	92	4 (4.3%)	2(2.2%)	2(2.2%)	1(1.1%)	3(3.3%)
Ohimini and Otukpo	92	2(2.2%)	1(1.1%)	1(1.1%)	0%	2(2.2%)
Total	368	14(15.1%)	7 (7.7%)	7(7.7%)	3(3.3%)	11(12.1%)

Table 4 Explained the demographic factors of *S. mansoni* based on gender and age from the result, both male and female have the same prevalence rate of 7.7% , while that of age, 11-15 years have the higher Prevalence of 12.1% compared to the age 5-10 years with 3.3%.

Table 5: Source of Water of the Study Areas in Benue South

Constituency	Water Source	<i>S. haematobium</i>	<i>S. mansoni</i>	Gender		Age (years)	
				Male	Female	0-10	11-15
Ado, Okpokwu and Ogbadibo	Stream	7(7.6%)	2(2.2%)	6(6.5%)	2(2.2%)	2(2.2%)	2(2.2%)
	River	3(3.3%)	2(2.2%)	3(3.3%)	3(3.3%)	3(3.3%)	3(3.3%)
Apa and Agatu	Stream	4(4.3%)	2(2.2%)	6(6.5%)	2(2.2%)	3(3.3%)	5(5.5%)
	River	5(5.5%)	2(2.2%)	4(4.3%)	1(1.1%)	2(2.2%)	3(3.3%)
Obi and Oju	Stream	6(6.5%)	2(2.2%)	7(7.6%)	3(3.3%)	3(3.3%)	6(6.5%)
	River	5(5.5%)	2(2.2%)	3(3.3%)	2(2.2%)	3(3.3%)	3(3.3%)
Ohimini and Otukpo	Stream	3(3.3%)	1(1.1%)	2(2.2%)	3(3.3%)	1(1.1%)	1(1.1%)
	River	3(3.3%)	1(1.1%)	1(1.1%)	2(2.2%)	1(1.1%)	2(2.2%)

Table 5 Showed the source of water visited by the school age children in the study area. From the table, it showed that more children ($n=27/184 =14.67\%$ visited stream while $n=23/184= 12.5\%$ visited the river. The highest visited to the water sources are male and age of 11-15 years with ($n=32/184=17.39\%$ respectively, while the female and age 5-10 years visited less with 9.78 % respectively.

Table 6: Occupation of Parents/Guardians of the School-Age Children in the Study Area

Constituency	Occupation of Parents/Guardians (prevalence rate %) n=184			
	Farming	Civil Servant	Artisan	Business
Ado, Okpokwu and Ogbadibo	(32)17.4%	(5)2.72%	(4)2.17%	(5)3.26%
Apa-Agatu	(24)13.04%	(8)4.35%	(8)4.35%	(6)2.72%
Obi-Oju	(22)11.96%	(9)4.89%	(8)4.35%	(7)3.80%
Ohimini-Otukpo	(25)13.59%	(10)5.43%	(4)2.17%	(7)3.80%
Total	103(55.98%)	32(17.39%)	24(13.04%)	25(13.59%)

Table 6 showed the occupation of the parents/guardians of the school age children in Benue South. From the table it showed that most parent/guardian occupation was farming with high prevalence of 55.98%, followed by civil servant with 17.39% and the least was artisans 13.04%.

DISCUSSION

Kuleve *et al.* (2024) reported 34.0% prevalence of *S. haematobium* in Naka Benue State with peak infection among 11–15-year-old, which was similar to the study area (Benue South). Balla and Jabbo (2013) found 32.4% prevalence in Mayo-belwa in Adamawa, also highest among 11–15-year-olds due to water-related activities (regular visit to the water bodies for farming, fishing and the age that can visit water area with their peer group without parent or guardian directive). From the study conducted in the study area (Benue South senatorial district) on prevalence of Schistosomiasis among school aged children of 5-15 years, we have a higher prevalence of *S. haematobium* (39.2%) than *S. mansoni* (15.1%) among 184 school-aged children. This indicates that urinary Schistosomiasis is more common than intestinal Schistosomiasis in the area with overall prevalence of 54.3%. The prevalence rate (16.3%) of Schistosomiasis higher in Obi and Oju constituency, followed by Ado, Okpokwu and Ogbadibo (15.2%), Apa Agatu and (14.1%) and lower (8.7%) in Ohimini and Otukpo constituency respectively. This is similar to Kuleve *et al.* (2024)

Detection Methods for Schistosomiasis Species

From the detection techniques, it shows that Urinary Schistosomiasis was detected using Hemastix reagent strip and Urine microscopy, while intestinal schistosomiasis was detected using Kato-Katz and, fecal concentration technique (FECT) techniques. Hemastix Reagent Strips (5.98%), Urine microscopy (11.41%), Kato-Katz (6.52%), FECT (2.71%), this showed that urine microscopy was more sensitive than Hemastix method, while kato-katz was more sensitive than the FECT method. *S. haematobium* was detected more frequently than *S. mansoni* ($\chi^2 = 12.02$, $p = .001$). The methods used were (urine sedimentation and stool microscopy) which were reliable and standardized (Kuleve *et al.*, 2024; Iliyasu *et al.*, 2022) and egg count or egg intensity which was done in each positive sample to determine the level of infection.

Gender-wise

In our study, Males had higher prevalence of *S. haematobium* (51.4%) compared to females (48.6%), males had a significantly higher prevalence of *S. mansoni* (61.5%) than females (38.5%). This is due to activities carried out by the male, which include farming, fishing, swimming similar to Kuleve *et al.* (2024). while males and females had the same prevalence of *S. mansoni* (1.9%).

Occupational influence

Children of farmers showed the highest infection rates. Linked to frequent exposure to infested water sources (Balla & Jabbo, 2013). In our study, the trend was similar to the report of Kosala *et al.* (2015) where most infected (55.98%) are school age children of farmers, followed by civil servants (17.39%), Business (13.59%) and lowest was artisan children respectively.

Association between Demographic Parameters, Risk Factors and Infection Types

Using multivariate analysis, source of water was significantly linked to *S. haematobium* infection ($p=0.001$) – children using streams/swamps had higher prevalence. Gender and occupation were predictors for *S. mansoni* (Balla and Jabbo, 2013). In our study, prevalence was higher among children using streams (14.7%) than rivers (12.5%), and higher in males than females and age between 11-15 years than 5-10 years. (consistent with Balla and Jabbo, 2013).

Contributing factors

constituency, and water source did not show significant links to infection in this research ($p > 0.05$). From our study in Benue South senatorial district, the contributing factors studied like, age, reasons for water use, gender and occupation of the parents/guardians showed significant impact in the prevalence rate of Schistosomiasis.

Egg intensity

Egg count or egg intensity was done in each positive sample to determine the level of infection following WHO guideline (2018). This was done on the computer system fixed to the light microscope. For *S. haematobium*, level of infection is classified as: low when eggs are within 1-50 eggs per 10 mL (EP/10 mL); heavy when egg counts are >50 eggs per 10 mL (EP/10 mL) per infected sample. For *S. mansoni*, egg intensity is expressed as EPG (Egg per gram) in faecal samples. It is classified as light (1-99 EPG), moderate (100-399 EPG) and heavy (>400 EPG) per positive samples

CONCLUSION

Schistosomiasis remains a significant public health issue in Benue South senatorial district. The prevalence of Schistosomiasis was predominant in male school age children than the female, in Benue South. Urinary schistosomiasis was more prevalent than intestinal schistosomiasis, particularly among older children and those from farming backgrounds, indicating strong links with water contact activities. Further researches should be encouraged to identify context specific factors related to gender differences in occurrence of schistosomiasis.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest

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