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# PREVALENCE OF URINARY SCHISTOSOMIASIS IN SELECTED SECONDARY SCHOOL STUDENTS OF FASKARI LOCAL GOVERNMENT AREA, KATSINA STATE

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**Abstract**
A study was carried out to investigate "Prevalence of Urinary Schistosomiasis in selected Secondary School students of Faskari Local Government Area, Katsina State". Parasitological screening was carried out in 384 students including 239 males and 145 females. Out of the total number of 384, 96 (39.7%) males tested positive and 12 (37.76%) females for Urinary Schistosomiasis. There was significant difference in the prevalence rate in the male and female students with the males having higher infection than the females, ($X^2_{cal}$=84.36 at $P \leq 0.05$ and 2df). The prevalence of infection was significantly higher in Government Senior Secondary School Ruwan Godiya (29.54%) $X^2_{cal}$=28.27 at $P \leq 0.05$ and 2df. Followed by Government Junior Secondary School Ruwan Godiya (27.8%) $X^2_{cal}$=31.42 at $P \leq 0.05$ and 4df and lastly Government Junior Secondary School Sheme (26.15%) $X^2_{cal}$=25.47 at $P \leq 0.05$ and 2df. Individuals aged 18-20 years were the most infected. Managerial control tools can be used to improve prevention of Urinary Schistosomiasis by communication, information and health education.

***Key words:*** *Prevalence, Urinary, Schistosomiasis, Secondary Schools, Faskari.*

## Introduction

Schistosomiasis also known as bilharzia is a parasitic disease caused by the larval forms of *Schistosoma*. It is acquired from infested fresh water snail of the *Bulinus* species and is a parasitic disease affecting about 200 million people and poses a threat to 500 to 600 million people in more than 76 countries in Asia, Africa, the Caribbean and Latin America (WHO, 1993). Schistosomiasis is the most widely spread helminthic infection with very high mobidity rate of about 20 million cases causing several debilitating illness in people (Bisseru and Banji, 1984 UNDP/ World Bank/WHO, 1997*).* Schistosomiasis, is the second most important tropical disease and one of the main occupational hazards encountered in rural farming population and the most prevalent among water-base infection (Morel, 2000).

The disease can lead to chronic ill health condition and is considered as a major public health concern mostly in rural dwellers of tropical and sub-tropical regions of the world (Amuta and Houmsou, 2014).

The disease is reportedly endemic in 53 countries in the Middle East and most of the African continent (Chitsulo *et al*., 2000). Currently about 436 million people are at risk of infection and 112 million are infected in sub- Sahara Africa (WHO 1997). About 70 million individuals experienced haematuria (blood in the urine), 18 million bladder wall pathology and 10 million experienced distension and dilation of the renal pelvic and calyces, usually caused by obstruction of the free flow of urine from the kidney in sub-Saharan Africa alone (Bello *et al*., 2014). It could lead to secondary infections like, kidney damage, and cancer.

Nigeria is one of the countries known to be highly endemic from urinary Schistosomiasis with estimated 101.28 million people at risk and 25.83 million infected (Chitsulo *et al.,* 2000), it has been described as a neglected common parasitic disease (Adelukuni and Bello 1991 and Bello *et al*., 2014).

## Aim and Objectives

This research is aimed at studying prevalence of urinary schistosomiasis in selected Secondary Schools students of Faskari Local Government Area, Katsina State with the following objectives

- To determine prevalence of urinary schistosomiasis in the study area
- To assess the prevalence of urinary schistosomiasis in relation to sex and age.

## Materials and Methods

### Study Area

The study was carried out in Faskari Local Government Area ($10^0$ C 29' 18N 11 18 20 W). Katsina State, Nigeria. It covers an area of 627 $km^2$ and has a population of 269, 671 at the 2006 census. (NIPOST Retrieved 2009-10-20). The inhabitants of the Local Government are predominantly Hausa and Fulani by tribe. Their main occupation is farming and animal rearing (Faskari LGA. Retrived 2013-01-06). The climate of the Faskari local government area is tropical continental having an annual rainfall of 198.3mm and a seasonal average temperature of more than $28^0$ C rainfall start from may and end November the soil are largely clay soils locally called (Laka). (Babangida, 2005)

### Study Population

The study population comprises students of nine (9) to twenty six (26) years old. Three secondary schools were selected for the study. These were Government Junior Secondary School Sheme, Government Senior Secondary School Ruwan godiya, Government junior Secondary School Ruwan godiya. Most of the inhabitants of the area are involved in farming activities, trending, rearing of animal and civil service. The students play vital role in the socio-economic activity of the area especially during their holidays. The choice of the schools was based on the fact that the schools were located near water bodies (stream and dam). Sample size was determined according to the method of Dawe *et al*., (2012), thus 384 specimens were collected from randomly selected students.

### Sample Collection

Terminal urine samples were collected from randomly selected students across the secondary schools. About 20 ml of urine sample was collected into sterile corked plastic tube between the hours of 10.am-12.noon on each collection day

(Cheesbrough, 2005) and labeled appropriately. The urine samples were taken to the Microbiology Laboratory of the Federal University Dutsin Ma, Katsina State for laboratory analysis.

**Physical Examination of Samples**
Samples collected were physically examined to determine their colour and turbidity. They were categorized and documented; these data were recorded on the urinalysis form.

**Laboratory Analysis**
Each urine sample was prepared for examination using the method described by Dazo and Biles (1974). Each urine sample was stirred very well, by turning the container gently up and down several times for about 30 seconds. Then about 10ml of urine was measured into a centrifuge tube and centrifuged at 3000 revolution per minute for 3 minutes. The supernatant was decanted gently without disturbing the sediment. A drop of sediment was pippeted on to a clean glass slide covered with a clean cover slip and examined under 10× and 40× objective lenses of compound microscope, for detection of *Schistosoma haematobium.*

**Data Presentation and Statistical Analyses**
Data were presented in tables, and figures. Differences in proportion were done using the chi-square analysis and significance was recorded at $P<0.05$.

## Results

Results from Table 1 show that a total number of 122 students from Government Junior Secondary School Ruwan Godiya were sampled, including 65 males and 57 females, the highest prevalence among males was 100% and it was recorded among the age group (21-23) years while the lowest prevalence among males was 18.18% and it was recorded among the age group (15-17). The highest prevalence among females was 10% which recorded among the age group (12-14) years, and lowest prevalence among female was 5.26% and it was recorded among the age group (21-23) years, no case was recorded among the age group (9-11), (18-20) and (21-23) years. The overall prevalence for males was 47.69% and 5.26% for females.

**Table 1: Prevalence of Urinary Schistosomiasis in relation to sex and age in Government Junior Secondary School Ruwan Godiya, Faskari Local Government Area of Katsina State** .

| Age | MALE | | | FEMALE | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| **Year** | **No Screened** | **No positive** | **%** | **No Screened** | **No positive** | **%** | **No screened** | **No positive** | **%** |
| **9-11** | 2 | 1 | 50.00 | 7 | 0 | 0 | 9 | 1 | 11.11 |
| **12-14** | 28 | 15 | 53.57 | 20 | 2 | 10.00 | 48 | 17 | 35.41 |
| **15-17** | 22 | 4 | 18.18 | 19 | 1 | 5.26 | 41 | 5 | 12.19 |
| **18-20** | 10 | 8 | 80.00 | 8 | 0 | 0 | 18 | 8 | 44.44 |
| **21-23** | 3 | 3 | 100.00 | 3 | 0 | 0 | 6 | 3 | 50.00 |
| **Total** | **65** | **31** | **47.69** | **57** | **3** | **5.26** | **122** | **34** | **27.86** |

*$X^2cal = 28.54 > X^2crit = 14.86$ at $P \leq 0.05$ at 4df therefore there is significant difference between Observed and Expected values*

Results in Table 2 show that a total number of 132 students in Government Senior Secondary School, Ruwa Godiya Faskari were sampled, including 81 males and 51 females, the highest prevalence among males was 100% and it was recorded among the age group (12-14) years while the lowest prevalence among males was 33.3% and it was recorded among the age group (24-26) years. The highest prevalence among females was 7.14% which recorded among the age group (18-20) years, and lowest prevalence among female was 5% and it was recorded among the age group (21-23) years, and no case was recorded among the age group (12-14) and (24-26) years. The overall prevalence in males was 43.21% and 7.84% in females.

**Table 2: Prevalence of Urinary Schistosomiasis in relation to sex and Age group in Government Senior Secondary School, Ruwa Godiya Faskari Local Government Area of Katsina State**

| Age | MALE | | | FEMALE | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| | No Screened | No positive | % | No Screened | No positive | % | No screened | No positive | % |
| **12-14** | 2 | 2 | 100.00 | 1 | 0 | 0 | 3 | 2 | 66.66 |
| **15-17** | 30 | 12 | 40.00 | 20 | 1 | 5.00 | 50 | 13 | 26.00 |
| **18-20** | 33 | 15 | 45.45 | 28 | 2 | 7.14 | 61 | 17 | 27.86 |
| **21-23** | 13 | 5 | 38.46 | 2 | 1 | 50.00 | 15 | 6 | 40.00 |
| **24-26** | 3 | 1 | 33.33 | 0 | 0 | 0 | 3 | 1 | 33.33 |
| **Total** | **81** | **35** | **43.21** | **51** | **4** | **7.84** | **132** | **39** | **29.55** |

*$X^2cal = 31.835 > X^2crit = 14.86$ at $P \leq 0.05$ at 4df therefore there is significant difference between Observed and Expected values*

Results in Table 3 show that a total number of 130 students from Government Junior Secondary School Sheme were sampled, including 93 males and 37 females, the highest prevalence among males was 55% and it was recorded among the age group (18-20) years while the lowest prevalence among males was 9% and it was recorded among the age group (21-23). The highest prevalence among females was 33.33% which recorded among the age group (18-20) years, and lowest prevalence among female was 10% recorded among the age group (51-17) years, no case was recorded among the age group (12-14) and (21-23) years. The overall prevalence in males was 31.18% and 13.51% in females.

**Table 3: Prevalence of Urinary Schistosomiasis in relation to sex and Age group in Government Junior Secondary School Sheme Faskari Local Government Area of Katsina State**

| Age | MALE | | | FEMALE | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | No Screened | No positive | % | No Screened | No positive | % | No Screened | No positive | % |
| **9-11** | 2 | 2 | 100.00 | 5 | 1 | 20.00 | 7 | 3 | 42.85 |
| **12-14** | 10 | 4 | 40.00 | 4 | 0 | 0.00 | 14 | 4 | 28,57 |
| **15-17** | 39 | 10 | 25.64 | 20 | 2 | 10.00 | 59 | 12 | 20.33 |
| **18-20** | 20 | 11 | 55.00 | 6 | 2 | 33.33 | 26 | 13 | 50.00 |
| **21-23** | 22 | 2 | 9.0909 | 2 | 0 | 0.00 | 24 | 2 | 8.33 |
| **Total** | **93** | **29** | **31.18** | **37** | **5** | **13.51** | **130** | **34** | **26.15** |

Results in Table 4 show a total number of 384 students sampled, including 239 males and 145 females. The highest prevalence among males was 47.69% and was recorded in Government Junior Secondary School Ruwangodiya. Lowest prevalence among males was 31.18% and was recorded in government Day Senior Secondary School, Ruwangodiya.

The highest prevalence among females was 13.5% recorded in Government Secondary School Sheme while the lowest prevalence among females was 5.26% recorded in Government Junior Secondary School Ruwangodiya. The overall prevalence for males was 39.7% and 8.27% for females

**Table 4: Summary of the prevalence among sexes and age groups in the three schools**

| STUDY AREA | MALE | | | FEMALE | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. screened | No. positive | % | No. screened | No. positive | % | No. screened | No. positive | % |
| **Gov.Junior R/Godiya** | 65 | 31 | 47.69 | 57 | 3.00 | 5.2631 | 122 | 34.00 | 27.86 |
| **Gov. Senior R/Godiya** | 81 | 35 | 43.20 | 51 | 4.00 | 7.8431 | 132 | 39.00 | 29.54 |
| **Gov.JuniorSheme** | 93 | 29 | 31.18 | 37 | 5.00 | 13.513 | 130 | 34.00 | 26.15 |
| **Total** | **239** | **95** | **39.7** | **145** | **12.00** | **8.27** | **384** | **107.00** | |

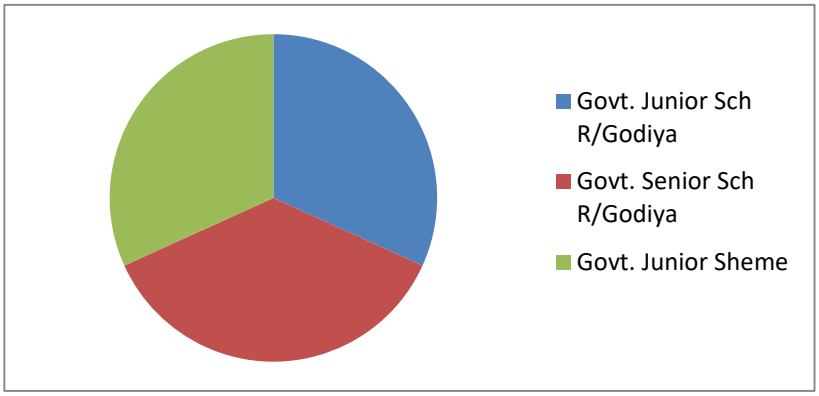


*Figure 1: Levels of infection in Govt. Junior Sch. Ruwan Godiya, Govt. Sec. Sch. Ruwan Godiya and Govt. Junior School Sheme.*

## Discussion

The observations recorded in this research from all the tables agree with the reports of Anosike and Akinkugbe (1992), Okpala *et al.,* (2002) Nwosu *et al.,* (2005) and Orpin *et al.,* (2016) who carried out their researches in different countries including, Cameroon, Ghana, Chad, Niger and Nigeria and recorded over 29% prevalence among School children respectively. The high prevalence of the disease recorded in the study area may probably be due to the inadequate knowledge on the factors associated with schistosomiasis transmission.

Individuals within the age range of 18-20 years were found to be more infected with the infection. This finding is consistent with those of Arinola (1995), Ukwandu and Bukbuk (1996), Ekpo and Ojo (2003), Okpala *et al.,* (2004) and Nmorsi *et al.,* (2007) in their various researches who recorded high rate of infection within the age group of 18-30 years.

Males were more infected by urinary schistosomiasis than the females and it agrees with the findings of Okpala *et al.,* (2002 and 2004), Adebayo (2007) and Anum *et al.,* (2014). The high prevalence recorded in males may be due to more water contact activities as they are more involved in irrigation, swimming and fishing, in the infested water bodies while females rarely participate in these activities.

## Conclusion

Urinary schistosomiasis is still a major health concern in the study area. This is evident from the high prevalence obtained from this study considering the age and sex of the students at Government Junior School Ruwan Godiya, Government Senior School Ruwan Godiya and Government Junior School Sheme all in Faskari Local Government Area of Katsina State.

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