Urinary Schitosomaisis Infection in Some Village Around Falkon Bado Dam in Yunusari L.G.A, Yobe State, Nigeria

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Abstract

A study was conducted to determine the prevalence and intensity of urinary Schitosomiasis in six (6) villages within the Falkon bado dam. A total of 657urine sample were examined for the eggs of Schistosoma hacmatobium using the standard filtration technique. The overall prevalence was 165 (25.11%) had a highest prevalence than the female 39(12.11%). The age group indicate that between 11-20 years had the highest prevalence and intensity of 44.50% per 10ml urine, the lowest was in the 41+ years ago group with 0.9% prevalence. The prevalence of the disease at p<0.05 while was in the not significant. The study showed that irrigation activities in the area are contribution to the transmission of the disease.

Key words: *Schistosomiasis, Prevalence, Transmission, Endemic, Centrifugation*

INTRODUCTION

Urinary *Schistosomiasis or* Bilhazia is a tropic parasitic disease caused blood driveling fluke worm *Schistosoma haematobium* (WHO, 2017). It is still endemic in 53 countries in the Middle East and most of the African continent (Chilsulo *et-al.*, 2020). It is still one of the major public health problem facing humanity, with severe social and economic consequence (WHO, 2019). The global prevalence showed that over 139 million people are infected with 85% of them occurring in Africa (WHO, 2019).

Nigeria is one of the countries known to be highly endemic for urinary *Schistosomiasis* with more than 100 million at risk and about 25 million people already infected (Chitsulo *et-al.*, 2020).

Although the majority of people in endemic areas have only light infection or no symptoms, the impact of urinary *Schistosomiasis* on economic condition and the general health situation is much (Chidozie and Duniyan, 2018). The disease is known to affect the work capacity of rural inhabitants owing to the weakness and lethargy it induce as well as affect the performance and growth patterns of infected school children (WHO 2019, WHO 2004, Unere *et-al.*, 2017).

MATERIALS AND METHODS

Study area: Falkon bado dam Yunusari Local Government Area in Yobe State is community of settled and semi-settled Kanuri and Hausa-Fulani whose occupation are mainly farming and cattle rearing. It comprised of six hamlets, namely Anguwan Sarki, Anguwan Fulani, Anguwan Mangawa, Anguwan Mada, Tudun wada and Sabon Gari. The area has a network of ponds and streams some natural while others are man-made. The ponds accumulate water and remain perennial which is essential for snail breeding and also some of major sources water used by the inhabitants.

Urine Sample Collection

Sterile specimen bottles were given to selected individuals for the study who were advised on how to collect the urine samples. A total of 657 urine samples were collected between 10:00am and 14:00pm (Lucas and Gilles, 2020*).* The samples population included males and females of all ages. The specimen bottles were labelled with some identification codes to match with the one on the questionnaire. A drop of bleach was added to each specimen and transported in a cold box containing the block to the laboratory for analysis.

Urine Analysis and Examination

Each urine sample was concentrated by centrifugation during which 10ml of urine was taken and span at 500rpm for 5 minutes.

The supernatant was discarded and the sediments examined at X40 magnification under the microscope. Eggs were detected and identified by the shape and terminal spine characteristic for *S. haematobium (*Feldmeler and Poggenses 2023*).*

Positive samples are counted and recorded as number of eggs per 10ml urine (no egg/10ml urine)

Mapping and Distance

Coordinates of the ponds and the settlements were taken using the global positioning system (GPS) to determine the distance of the hamlets to the ponds. Mapping was done using the enhanced thematic mapper (EMT) 2005 version.

A total of 657 individuals from the six hamlets were examined for the ova of *S. haematobiom* of which 165(25.11%) were positive. Result from the hamlets showed that Anguwan Sarki had the highest prevalence of 87(60-80%) while Anguwan Mangawa and Anguwan Mada having the lowest prevalence 1(0.602) each. Odds ratio

revealed significant association between. Tudun wada (OR=8.68(5.63, 13.4) and Anguwan Fulani (OR=5.95(3.83, 9.27) with the prevalence of the infection as presented in Table 1.

The prevalence according to six shows that the males 126(37.61%) had a higher prevalence than the females 39(12.11%), there was a significant association between sex and the prevalence of the disease X^2=64.51,p<0.05. the intensive of the females (77.82±48.96) was higher than the males (72.73±16.77) as shown in Table 2.

The 11-20 years age group had the highest prevalence intensity of 44.50% per 10ml urine, the lowest was in the 41+years age group with the prevalence of 0.9%. This indicate a decrease in the prevalence of the disease with an increase in age. There was a significant association of the 11-20 age group with prevalence of the disease at p<0.05 (CI) = 3.73(2.52, 5.53). While the 21-30 age group showed association which was not significant as shown in Fig. 1

Table 1: The prevalence of urinary *Schitosomiasis* in Falkon Bado Dam

Hamlet	No of Sample	No of Infected	Prevalence	Odd ratio (95%CI)	X^2	P-Value
Anguwan Sarki	143	87	60.8	8.68(53,13.4)	121.2	0.0000
Anguwan Fulani	168	1	0.6	0.01(0.000,0.08)	70.41	0.0000
Anguwan Mangawa	122	69	56.6	1.95(3.83,9.25	76.72	0.0000
Anguwan Mada	172	1	0.6	0.01(0.00,0.08)	72.81	0.0000
Tudun Wada	33	3	9.1	0.29(0.07,099)	3.89	0.0486*
Sabon Gari	19	4	21.1	0.79(0.22,259)	0.02	0.0040

Table 2: Prevalence of urinary *Schistosomiasis* Infection in Yunusari L.G.A according to Sex.

Sex	No of Sample	No of Infected	Prevalence	Odd ratio (95%cl)	Chi Square	P-Value
Male	335	126	37.61	4.88(3.21,745)	64.51	0.0000
Female	322	39	12.11	4.88(3.21,745)	64.51	0.0000

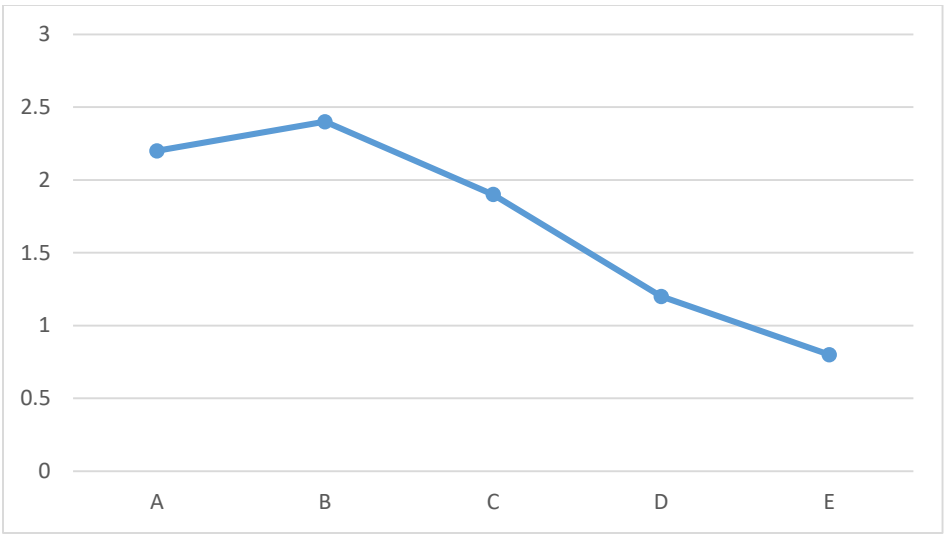

Fig 1: Mean Intensity of urinary *Schistosomiasis* Infection according to age in Falkon bado dam

Discussion

The overall prevalence of infection recorded at Falkon bado dam falls within the WHO classification of endemicity (WHO 2022). This result also agrees with a number of reports Okpala *et al.*, (2004), Nnorsi *et al*, (2017) which consistently show increase in the endemicity of *Schistosoma haematobium* in Nigeria.

The prevalence of *urinary Schistosomiasis* in Falkon bado dam can be attributed to low literacy level. Lack of basic amenities, in adequate and discriminate disposal of human sewage, proximity of infested water bodies and high water contact activities in the snail infested ponds (WHO, 2017). The highest prevalence at Falkon bado dam could be due to the presence of the infested ponds within the hamlet and that serve as the major sources of water for domestic purpose. The low prevalence recorded at Anguwan Sarki and Anguwan Mangawa could be due to availability of bore-hole which supplies them with safe water for domestic use, thereby reducing their contact with the infested dam, thus, reducing risk of infection. This shows the important role safe water supply plays in the control of urinary *Schistosomiasis* by Udonsi *et al.*, (2020), Okoli *et al.*, (2016), WHO, (2017) and Uneke *et al*, (2017).

There was significant association between sex and the disease with more males Infected than females. This could be due to socio-cultural and religious factors that expose male to activities at the infested dam such as fishing, watering the cattle, swimming and bathing, thereby increasing their rate of exposure to infection. *(*Okoli *et al.*, 2019, Uneke *et al.*, 2007, Ndvomugyenyi *et al.*, 2021).

The prevalence rate recorded according to age shows the 11-20 age groups as having the highest prevalence, while the lowest was recorded in person above 40 years old. The prevalence rate of the disease showed a strong negative correlation (-0.9) with age indicating a decrease in prevalence with increase in age. This could be due the fact that young children are often involve in more activities that bring them to infested dam or ponds such as watering of the cattle, washing and bathing. The decrease in prevalence with increase in age. The decrease in prevalence rate with increase in age could also be due to reduced

water contact and increased immunity with increase age or reported by Okoli *et al.,* (2016) *and* Uneke *et al.,* (2017).

This work also highlight the significant of proximity of human to infected dam, as settlement closer to the dam (Anguwan Sarki) had the highest prevalence rate while those furthest away (Anguwan Fulani and Anguwan Mangawa) had the lowest infection rate.

The distance of the hamlets negatively correlates with the prevalence rates, thereby indicating a decrease in prevalence rate with increase in distance especially from Anguwan Sarki. This result agrees with reports by Gong *et al.,* (2019) and Clennon *et al.*, (2024). Who advocate the use of GIS to identify transmission hot spot and which will make it easier to locate and channel the few resources available to control of the disease.

Conclusion

Prevalence of *Schistosoma haematobium* eggs in Falkon bado dam, reveals urinary *Schistosomasis* is endemic in the settlement. The difference in prevalence rate among the fix hamlet studies could be attributed majority to proximity to source of infection (dam), poor sanitation, high illiteracy level and lack of safe water supply for domestic use.

This work recommends the use of the Geographical Information System (GIS) to show the spatial pattern of human infection at the same line with those of the snail intermediate host, this will make the allocation of available transmission control method should be used in the control of urinary *Schistosomiasis,* snail control, good personal hygiene and chemotherapy.

Recommendations

1. Educating the people on personal hygiene on the danger of swimming, fishing and washing in the river, streams and lakes since in the process they get infected with *Schistosoma haematobium*
2. Elimination of intermediate host using mulluscide where breading areas are identified.
3. The government should try as much as possible to continue to providing borehole and pipe borne water in the various ward and local government in general.

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