

Prevalence of Urinary Schistosomiasis in Pregnant Women attending Ante-natal Care in Some Hospitals within Makurdi Metropolis

Okoh Martina Enyanwu and Akinola Gbenga Moses

Department of Biological Sciences, Benue State University, Makurdi, Nigeria.

RESEARCH ARTICLE

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Corresponding author

Okoh Martina Enyanwu
okohmartina@gmail.com

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ABSTRACT

The study was carried out among pregnant women attending anti-natal care at Federal Medical Centre Makurdi and Madonna Hospital, Makurdi, Benue State to determine the prevalence of urinary schistosomiasis. A total of 200 urine samples were collected and examined microscopically for the presence of eggs of *schistosoma haematobium*, out of 200 urine samples 70 (35%) pregnant women were infected. In relation to the Ages 20-30 years had the highest prevalence of 81(51.72%) while age group 41-50 years had the least prevalence of 23 (8.60%) there was significant difference among the age groups at ($P < 0.05$). In terms of occupation, the pregnant women who are business women had the highest prevalence of 98(49.27%) while those of them who are fadama farmers had lowest prevalence of 42(21.73%), there was significant difference among the various occupation at ($P < 0.05$). In terms of educational status, pregnant women who are Graduate had highest prevalence of 124(62.85%) while those of them who have no formal Education had least prevalence of 27 (15.70%), there was significant difference among the various educational status at ($P < 0.05$). Prevalence in relation to mean of daily sanitary practice and the sources of the infection (water sources), there was statistical significance difference at ($p < 0.05$) between the sources of infection and sanitary practice. Urinary schistosomiasis prevalence among pregnant women attending anti-natal care in Makurdi which could be as a result of poor sanitation and lack of good household water supply and constant water activities may predisposes pregnant women to urinary schistosomiasis, therefore factors which favour the transmission should be checked to beat down the infection rate in the area by giving considerable attention to snail host eradication program.

Keywords: Urinary schistosomiasis, Prevalence, Pregnant women.

INTRODUCTION

Urinary schistosomiasis caused by *Schistosoma haematobium* is a parasitic disease of the blood of mammals including human [1] the disease is caused by the deposition of eggs by adult flukes in the blood vessels surrounding the bladder of the infected host [2]

Schistosomiasis is a parasitic infection in 74 resource-poor nations that affects approximately 200 million people [3]. Schistosomes are water-borne flatworms or blood flukes that enter the human body through the skin [4].

Schistosomiasis is a neglected tropical disease and its global health impact is grossly underestimated (Tempe A. *et al.*, 2013). Women suffer considerably from female genital schistosomiasis that causes infertility, preterm labour, anemia, menstrual disorders and dyspareunia [5]. Today, 120 million people are symptomatic. Over 80% of the disease is currently found in Sub-Saharan Africa [4]. Approximately 652 million people are at risk with an estimated 200,000 deaths occurring annually [2]. Forty million women of child-bearing age are infected [1]. The last decade estimated population of infected pregnant women totaled 10 million with increasing reports on schistosome infection during pregnancy [6-7]. Management of infected pregnant women through treatment with praziquantel in late trimesters has been advocated in order to avert undesirable pregnancy outcomes. Despite recommendations from WHO many endemic countries are reluctant to include it because of the side effects. Besides pregnancy-associated morbidities, female genital involvement associated with *S. haematobium* infection characterized by symptoms like pelvic discomfort, vaginal discharge, and sandy patches in mucosa, edema and contact bleeding could be presented in non-pregnant and pregnant women alike. Pregnant women may experience any of these morbidities and others e.g. hepatic fibrosis and the associated increased risk of oesophageal varices, at approximately the same rates as seen among non-pregnant individuals. During pregnancy, maternal schistosomiasis may lead to poor birth outcomes [7]. This infection has been implicated in fetal growth restriction and is associated with prematurity and low birth weight [8]. Nigeria is one of the most endemic regions of Africa with an overall estimated 26 million people with schistosomiasis in the tropics are not limited to the interplay between human host, snail host and the parasite but also of complex demographic, environmental, biological, socioeconomic and cultural processes (WHO/TDR 2008). Urinary schistosomiasis is a threat to pregnant women in a place such as Nigeria as well as Makurdi, Benue State which is recognized to be an endemic area for urinary schistosomiasis [8-9]. Due to involvement in domestic work that requires unsafe water exposure which puts pregnant women at risk, this study aims to determine the prevalence of urinary schistosomiasis in pregnant women attending ante-natal care at some selected hospitals in Makurdi, Benue State, Nigeria.

MATERIAL AND METHOD

Study Area

This study was carried out in Makurdi, the capital of Benue State, Nigeria along the Benue River, on latitude 07°43'N and longitude 08°35'E and holds the base for the Nigerian Air force.

Makurdi lies on the south bank of the Benue River. Founded about 1927 when the rail road from Port Harcourt was extended to Jos and Kaduna, Makurdi has rapidly developed into a transportation and market centre. As of 2017, Makurdi had an estimated population of 500,797.

Sample Size

A total of 200 urine samples were collected and examined for the presence of *Schistosoma haematobium* eggs from the pregnant women in Federal Medical centre, Makurdi and Madonna Hospital, Makurdi, Benue state.

Sample Collection

Written permission was issued to Federal Medical centre, Makurdi and thereafter ethical clearance was given to me which guaranteed my permission to collect a total of 120 urine samples and as well issued out questionnaires to the pregnant women.

Written permission was also issued to Madonna Hospital, Makurdi attached with the ethical clearance collected from Federal Medical centre, Makurdi and the request letter was approved by the Hospital management which guaranteed me to collect a total of 80 urine samples and as well issued out questionnaire to the pregnant women. The urine sample was collected into urine Specimen sterile Bottles from Federal Medical centre, Makurdi and from Madonna Hospital, Makurdi which was correctly labelled to avoid confusion and thereafter was immediately taken to the Microbiology laboratory of Benue state University for parasitological examination.

Sampling Techniques

Multi stage Sampling Technique

At stage one, purposeful Sampling method was used to select Federal Medical centre, Makurdi and Madonna Hospital, Makurdi, Benue State. At stage two, simple random sampling method was used to select the pregnant women to be involved in Federal Medical centre, Makurdi and Madonna Hospitals in Makurdi, Benue State.

Well-structured questionnaires were given to the pregnant women involved at Federal Medical centre and Madonna Hospitals, Makurdi which enabled information regarding their demographic values and daily sanitary practices. This was used to obtain the relationship between sanitary practices and possible sources of urinary schistosomiasis (water sources) among pregnant women.

Examination of the Samples

Urine samples were collected from the selected Hospitals in Makurdi, Benue State, Nigeria, which were examined in the Microbiology laboratory of Benue state University according to the sedimentation technique.

Sedimentation Technique of Detection of *Schistosoma haematobium*

For the examination of urine samples for ova of *Schistosoma haematobium*, sedimentation method was used. This involved the collection of urine into a clean, sterile container with the following procedures:

- i. The 10ml well mixed urine sample was transferred into a conical tube and centrifuged at 3000rpm for 5 minutes to sediment the schistosome eggs.
- ii. The supernatant fluid was discarded, and the entire sediment was transferred to a grease free glass slide and cover with cover slip which was examined microscopically under 10x or 40x objective.
- iii. The number of eggs/ova of schistosomes were counted and recorded per 10ml of urine sample.

Data was collected from the pregnant women involved in the both Hospitals and was observed and reported using simple arithmetic percentage (%) and chi-square (χ^2) statistical test method. The general prevalence of urinary schistosomiasis was determined by simple percentage of infected individuals. The rates of prevalence were compared using χ^2 tests.

RESULTS AND DISCUSSION

Table 1: General prevalence of urinary schistosomiasis of infected pregnant women: Total number of pregnant women examined= 200

Number of pregnant women examined	Number infected	Percentage prevalence
200	70	35%

Table 2: Prevalence of urinary schistosomiasis infection in pregnant women according to age range.

Age range	No of pregnant women examined	infected	Percentage prevalence
20-30	81	30	81(51.72%)
31-40	83	23.17	82.83(39.65%)
41-50	23	5.16	22.99(8.60%)
Total	187	58.33(31.22%)	186.82(100%)

Between age range that are infected $\chi^2 = 17.207$, df = 2, P = 0.001

Table 3: Prevalence of urinary schistosomiasis infection in pregnant women according to occupation

Occupation	No of pregnant women Examined	Infected	Percentage prevalence
Civil servant	55	20	55(28.98%)
Fadama farmer	42	15.17	42(21.73%)
Business women	98	34.17	98 (49.27%)
Total	195	69.34(36%)	194.83

Between occupation that were infected $\chi^2 = 8.435$, df = 2, P = 0.015

Table 4: Prevalence of urinary Schistosomiasis infection in pregnant women by Educational status

Education	No of pregnant women examined	Infected	Total Percentage rate
No formal education	27	11	27(13.57%)
"O" Level	48	15	47.97(24.11%)
Graduate	124	44	123.99(62.32)
Total	199	68.67(35%)	198.96 (100%)

Between Educational status that were infected $\chi^2 = 26.435$, $df = 2$, $P = 0.001$

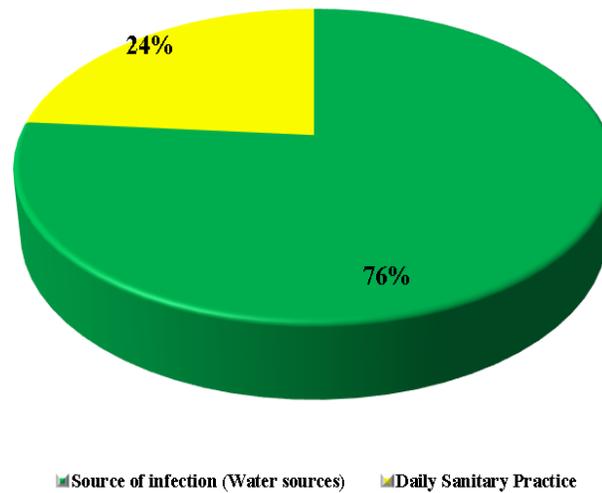


Figure 1: Percentage prevalence of urinary schistosomiasis

The rate of prevalence of urinary schistosomiasis among pregnant women across age range was found in this study to be 20-30 years had higher prevalence 51.72%, 31-40 years had 39.65%, and 41-50 had the lowest prevalence of 23%. Chi square at alpha level of 0.05 significance show there is significance difference between age ranges that were infected with urinary schistosomiasis. The age range 20-30 in this finding had an higher prevalence of 51.72% this result may be attributed to how the pregnant women at this age range were engaged in domestic works with infected water sources and this could be as a result of the pregnant women in this age range are just getting pregnant for the first time and has no idea of the prevalence of urinary

schistosomiasis among pregnant women. This agrees with the observations of the trends established in schistosomiasis surveys carried out in Cameroon and other part of Africa[10-11]. While the low rate of prevalence of urinary schistosomiasis in the study; the older age groups (>30 years) may therefore be due to acquired immunity and changes in water contact patterns and the older pregnant women are less likely to be engaged in water contact behaviours compare to younger women. This findings is in agreement with the observation of [11].From this study the rate of urinary schistosomiasis according to occupation of the pregnant women involved where Business pregnant women had the higher prevalence 49.27%, and pregnant women who are fadama farmers had the least prevalence 21.73%.From the result obtained, show that there is significant difference between occupation and the rate of prevalence. The pregnant women who are business women had the higher prevalence 49.27%.This result may be attributed to the little or no knowledge about how urinary schistosomiasis is transmitted which make them careless in relating with infected water body. This result agrees with the findings of [12] with 87.5% prevalence. The low prevalence 21.73% among pregnant women who are Fadama Farmers may be attributed to their awareness of urinary schistosomiasis and how it is transmitted, which may result in them using control measure such treating the noticed infected water sources before making contact with them. This study revealed the rate of prevalence of urinary schistosomiasis in pregnant women attending ante-natal care at some selected in makurdi, across educational status that are Graduate had higher prevalence 62.85%, O' Level had 21.42%,No formal Education had the lowest prevalence of 15.70%; from the result obtained,shows that there is significant difference between education status and the rate of prevalence among pregnant women involved in the study area. The highest prevalence among pregnant women who are graduates may be due to their ignorance of urinary schistosomiasis which makes them to be careless in the way the way they make contact with water source such as their sources of drinking water. This study reveals low prevalence 15.7% among pregnant women with no formal Education. This result may be due to little or no contact with infested water by the pregnant women involved. This finding agrees with the observations of [13] among Hausa communities of Kano state, Nigeria.

In this study mean of daily sanitary practices of the pregnant women involved in the the study area and the sources of the infection was compared; from the result obtained the sources of infection, show that there is effect on sanitary practice which means that there is statistical significant difERENCE between sources of infection and daily sanitary practices in preventing the prevalence of urinary schistosomiasis among pregnant women attending ante-natal care at Federal medical centre and Madonna makurdi. Benue state,Nigeria.

CONCLUSION

The findings of this study clearly show that the prevalence of urinary schistosomiasis among pregnant women attending ante-natal care at Federal medical centre, makurdi, and Madonna Hospital, Makurdi is 35% infected. This may be attributed to the absolute dependence of the pregnant women on natural water sources.

This work has further established endemicity in Makurdi Metropolis of Benue State. The disease is present in the area because it is obvious that poor sanitary facilities, lack of portable water supply, availability of fresh water bodies and frequent contact with infected water bodies are responsible for the continuous occurrence of *Schistosoma haematobium* in the study area. Though disease prevalence appears moderate and the both hospitals studied were affected, the intensity was mild.

REFERENCES

- [1]. Joseph E., F. O. (2012). Tropical Biomedicine of Urinary Schistosomiasis . *Schistosomiasis among Pregnant Women in some Endemic Tropical Semi-Urban Communities at Anambra State, Nigeria.*, 1-4.
- [2]. Herbert O., O. (2010). Epidemiological Studies. *Epidemiology of Urinary Schistosomiasis at Jos South Local Government Area, Plateau State, Nigeria*, 35-42.
- [3]. Sahu L. Tempe. A., S. K. (2013). Open Access Journal. *Rupture Ectopic Pregnancy Associated with Tuberschistosomiasis*, 1-10.
- [4]. G. Pogsense, K. I. (2000). World Health Organisation. *Screen Childbearing age Women for Urinary Schistosomiasis at Tanzanian*, 1-5.
- [5]. Oyetunde T. Salawu, A. B. (2014). Journal of Parasitic Disease. *Schistosomiasis Transmission, Socio-Demography, Knowledge and Practices as Transmission Risk Factors in Pregnant Women at Ilishan*, 1-4.
- [6]. Benjamin K., A. (2016). Journal of Genetic Variation . *Schistosoma haematobium and Disease Severity at the Greater Accra Region*, 35-42.
- [7]. Hary F., R. (2018). Open Access Journal of Gynecology and Obstetrics . *Maternal Schistosomiasis Causing Stillbirth at Madagascar*, 1-4.
- [8]. Herbert O., O. (2010). Epidemiological Studies. *Epidemiology of Urinary Schistosomiasis at Jos South Local Government Area, Plateau State, Nigeria*, 35-42.
- [9]. Chemezie, E. J. (2017). Journal on Prevalence of Urinary Schistosomiasis . *Schistosomiasis among Selected Primary School Children at Makurdi, Benue State Nigeria*, 10.
- [10]. Eli B., C. (2015). Journal of Travel Medicine of Schistosomiasis. *Schistosomiasis in Pregnant Travellers, a Case at Dublin Ireland.*, 96-97.
- [11]. Oyetunde, T. O. (2017). Journal of Maternal Urogenital Schistosomiasis. *Monitoring Disease Morbidity by Simple Reagent*, 1-5.
- [12]. Bala, A. L. (2012). Science World Journal. *Prevalence and Intensity of Urinary Schistosomiasis at Abama Village, Gusau, Nigeria*, 10.
- [13]. Maria M., G. M. (2016). Journal of Travel Medicine. *A Case Report of Schistosoma heamatobium Infection in a Pregnant Migrant Raises Concerns about Lack of Screening Polices at Magna Greacia.*, 1.
- [14]. Akaha, S. T. (2015). Epidemiological Study. *Epidemiology on Urinary Schistosomiasis and Intermediate Host at Gwer East, Nigeria*, 15.