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Traditional Approaches on Morbidity and Case Management of Urinary Schistosoma Infection in Rural Communities of Ogun State, Nigeria

By Jonathan, Joseph, Andrawus, James & Akinjobi Rukayat, Omotayo

Federal University Dutse

Abstract- Schistosomiasis is considered to be one of the most prevalent neglected tropical disease (NTDs). It is estimated over 240 million people are infected and with about 700 million people are at risk of infection. The sample size of 152 was used to carry out the study. Ten milliliters of urine was centrifuged and the sediments were examined for *Schistosomahaematobium* ova. Data obtained were subjected to analysis using SPSS and chi-square at P< 0.05. Total Sample of 152 urine collected the result shows 33(47.8%) male and 36(52.2%) female at Ibaro and 41(49.4%) male and 42(50.6%) female at Apojula, 69 and 83 respectively for the two communities with no significant difference (p> 0.05). Treatment using traditional approaches (herbs) of which 148(97.4%) has been treated using drugs, herbs and other methods. In the two study communities, the studies shows that people where using *Trichilia emetic* and *Stylosantheserectain Ibaro and Apojula* for treatment of urinary schistosomiasis. The result also shows that roots of*Trichilia emetic* is the most used in the community with32(46.4%), stems 27(39.1%) has an impact on the treatment of urinary schistosomiasis. Traditional method as a case management plays a vital role in the treatment of urinary schistosomiasis in the study area.

Keywords: traditional approaches, morbidity, case management, urinary, schistosomiasis, infection, ogun state, nigeria.

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Traditional Approaches on Morbidity and Case Management of Urinary Schistosoma Infection in Rural Communities of Ogun State, Nigeria

Jonathan, Joseph [α], Andrawus, James [σ] & Akinjobi Rukayat, Omotayo [ρ]

Abstract- Schistosomiasis is considered to be one of the most prevalent neglected tropical disease (NTDs). It is estimated over 240 million people are infected and with about 700 million people are at risk of infection. The sample size of 152 was used to carry out the study. Ten milliliters of urine was centrifuged and the sediments were examined for *Schistosomahaematobium* ova. Data obtained were subjected to analysis using SPSS and chi-square at P< 0.05. Total Sample of 152 urine collected the result shows 33(47.8%) male and 36(52.2%) female at Ibaro and 41(49.4%) male and 42(50.6%) female at Apojula, 69 and 83 respectively for the two communities with no significant difference (p> 0.05). Treatment using traditional approaches (herbs) of which 148(97.4%) has been treated using drugs, herbs and other methods. In the two study communities, the studies shows that people where using *Trichilia emetic* and *Stylosantheserectain Ibaro and Apojula* for treatment of urinary schistosomiasis. The result also shows that roots of *Trichilia emetic* is the most used in the community with32(46.4%), stems 27(39.1%) has an impact on the treatment of urinary schistosomiasis. Traditional method as a case management plays a vital role in the treatment of urinary schistosomiasis in the study area.

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I. Introduction

Schistosomiasis is a parasitic infection caused by digenetic blood trematode worms of the family *Schistosomatidae*, is one of the most prevalent neglected tropical diseases (NTDs) and still considered as a major public health ravaging 77 developing countries in the tropics and subtropics [22]. Nigeria has a higher number of cases of schistosomiasis worldwide [9], with about 29 million infected people, among which 16 million are children, and about 101 million people are at risk of schistosomiasis [20, 8, 1, 22]. Water related activities such as harvesting hippo grass, fishing, washing clothes, washing utensils, bathing and fetching water from rivers or streams and open air defecations were observed to be risky behavior practices that enhanced disease transmission [4, 21,15,11,23, 13, 6, 2, 5,14, 16, 10, 12]. Looking a way forward towards justifying the menace of Schistosoma infections among rural endemic communities, traditional method were employed such as the use of herbs in treating Schistomiasis. Ethnobotany and ethno-medical studies are today recognized as the most viable methods of identifying new medicinal plants or refocusing on those earlier reported for bioactive constituents [7]. Plants have been of immense value to human health and roughly eighty percent (80%) of the world's populations rely on them for cure of various ailments [17]. The continual search for natural plant products used as medicines has acted as a catalyst leading to the widespread use of traditional medicinal practices today, are an important part of the primary health care delivery system in most of the developing world [3]. A study on South African medicinal plants revealed the efficiency of 21 plant species against schistosomula worms [18]. *Ricinus com-munis* leaf in association with *Capparistomentosa* leaf; *Trichiliaemetica* root in association with Afromomumlatifolium fruit and Zyziphusmucronata root bark in association with *Stylosantheserecta* whole plant were also reported to be used against urinary schistosomiasis [24]. This study highlighted on the knowledge and prevalence of Schistosoma infection and traditional approaches on morbidity and case management of urinary schistosoma infection in rural communities of Ogun State, Nigeria.

a) Research Method

i. Description of the study location

This study was carried out at Ibaro Oyan and Apojola community area of Abeokuta, located at the Ogun State, South-Western Nigeria. It is within longitude 7° 7′ 34.5″ North and 3°8′ 99.8″ east. Major occupation of people of these communities is fishing and farming, trading activities.

ii. Ethical Approval

Ethical approval was gotten from the Ogun State Ministry of Health, and from College of Biological Sciences, Federal University of Agriculture, Abeokuta.

Author α ρ: Public Health Parasitology and Epidemiology Research Unit, Department of Pure and Applied Zoology, Federal University of Agriculture, Abeokuta, Abeokuta, Nigeria.
Author σ: Department of Mathematics, Federal University Dutse, Jigawa State. e-mails: jamesandy77722@gmail.com, jonathanj@funaab.edu.ng

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iii. *Informed Consent*

Before the study began, the village heads together with the people of the communities were fully briefed on the objectives of the study.

iv. *Data Collection*

A structured questionnaire was used in collection of data required for the study. This contains questions on knowledge, attitude and practice which includes traditional in treatment of the infection.

v. *Urine Collection*

Dark (black), sterile, plastic universal containers (labeled) were given to the people both Children and Adult to collect urine samples. This was done between the hours of 10.00 am to 2.00 pm. The urine collected was taken to the laboratory for analysis. Each sample collected was visually examined for the presence of visible blood in urine.

vi. *Examination of Urine for Haematuria*

A reagent strip Medi-test Combi 9 was carefully dipped into the dark sterile bottle containing the urine for 5 seconds. The strip was drawn across the rim of the container to remove excess urine. After 30 to 60 seconds, the resulting change in color of the strip was compared with the manufacturers colour chart to estimate amount of blood in the urine. Each sample collected was visually examined for the presence of haematuria.

vii. *Examination for Schistosoma Haematobium Egg*

Ten (10) millitres of the urine sample was centrifuged at 2500 rpm for 10 minutes to separate the *Schistosomahaematobium* ova from the urine. The supernatant was discarded to leave sediment which was transferred to the centre of a clean grease-free glass slide. This was mounted on a light microscope and examined at x 10 and x 40 objectives to identify *a Schistosomahaematobium ovum which is* characterized with a terminal spine.

viii. *Statistical analysis of data*

The data was entered and analysed using SPSS version 20.0 for Windows. The questionnaire was analysed on Microsoft word excel using chi square.

II. Result

A total of 152 people from the two communities were enrolled for the study (69 people from Ibaro and 83 people from Apojola) submitted their urine samples for analysis. The age range of the participants was from 1-22 years above from both communities (Table 1). The prevalence in demographic information in respondents showing more female participated in the study than male in both communities with female 13(41.9%) and 31(63.3%) and male 18(58.1%) and 18(36.7%) were tested positive at Ibaro and Apojula communities respectively. The school aged children of 5-13 years had high number of population that participated in the study with 22(71.0%) and 20(40.8%) were tested positive. The major occupation of both communities are into fishing and farming, in the study high number of people are into fishing and 23(74.2%) and 39(79.6%) were tested positive in Ibaro and Apojula communities with no significant difference ($p>0.05$).

Table 1: Demographic information of respondents and the prevalence of infection

Location	Ibaro			Apojula		
	Positive	Negative	Total	Positive	Negative	Total
Sex						
M	18(58.1)	15(39.5)	33(47.8)	18(36.7)	23(67.6)	41(49.4)
F	13(41.9)	23(60.5)	36(52.2)	31(63.3)	11(32.4)	42(50.6)
		P-value 0.151			P-value 0.007	
Age						
1-4	3(9.7)	8(21.1)	11(15.9)	10(20.4)	10(29.4)	20(24.1)
5-13	22(71.0)	22(57.9)	44(63.8)	20(40.8)	10(29.4)	30(36.1)
14-22	1(3.2)	4(10.5)	5(7.2)	8(16.3)	6(17.6)	14(16.9)
<22	5(16.1)	4(10.5)	9(13.0)	11(22.4)	8(23.5)	19(22.9)
		P-value 0.319			P-value 0.699	
Occupation						
Fishing	23(74.2)	26(68.4)	49(71.0)	39(79.6)	27(79.4)	66(79.5)
Farming	2(6.5)	1(2.6)	3(4.3)	8(16.3)	5(14.7)	13(15.7)
Others	6(19.4)	11(28.9)	17(24.6)	2(4.1)	2(5.9)	4(4.8)
		P-value 0.524			P-value 0.621	

(n=152)

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a) *Knowledge and Prevalence of Schistosomiasis and the Exposure to Source of Infection*

Table 2: Shows the knowledge and prevalence of schistosomiasis and the exposure to source of infection. At Ibaro and Apojula 51(73.9%) and 80(96.4%) visit the stream, 18(26.1%) and 3(3.6%) do not visit the stream, 20(64.5%) and 48(98.0) were tested positive in both communities. This table shows that some visit the stream daily, weekly and occasionally. At Ibaro high percentage visit rivers daily with 54(78.3%) and 26(83.9%) were tested positive while at Apojula high percentage visit rivers weekly of which 26(53.1%) tested positive with no significant difference ($p>0.05$). At Ibaro and Apojula community 60(87.0%) and 65(78.3%) have seen blood in their urine, 7(10.1%) and 32(38.6%) experience painful urination, 2(2.9%) and 18(21.7%) have not experience blood in their urine. Information on schistosoma infection in the communities shows that Ibaro and Apojula83(100%), 68(81.9) heard about the disease and 15(18.1%) have no idea of the infection.

Table 2: Prevalence of *Schistosomiasis* and the exposure to source of infections

Location	Ibaro			Apojula		
Positive		Negative	Total	Positive	Negative	Total
Do you visit stream?						
Yes	20(64.5)	31(81.6)	51(73.9)	48(98.0)	32(94.1)	80(96.4)
No	11(35.5)	7(18.4)	18(26.1)	1(2.0)	2(5.9)	3(3.6)
		P-value	**0.048**		**P-value**	**0.631**
How often do you visit river?						
Daily	26(83.9)	28(73.7)	54(78.3)	22(44.9)	11(32.4)	33(39.8)
Weekly	0(0.0)	3(7.9)	3(4.3)	26(53.1)	23(67.6)	49(59.0)
Occasionally	5(16.1)	7(18.4)	12(17.4)	1(2.0)	0(0.0)	1(1.2)
		P-value	**0.331**		**P-value**	**0.563**
Do you heard of Scistosomiasis?						
Yes	30(96.8)	37(97.4)	67(97.1)	26(76.5)	42(85.7)	68(81.9)
No	1(3.2)	1(2.6)	2(2.9)	8(23.5)	7(14.5)	15(18.1)
		P-value	**0.707**		**P-value**	**0.542**
Have you seen blood in your urine?						
Yes	31(100.0)	38(100.0)	69(100.0)	38(77.6)	27(79.4)	65(78.3)
No	0(0.0)	0(0.0)	0(0.0)	11(22.4)	7(20.6)	18(21.7)
		P-value	**0.707**		**P-value**	**0.542**

(n=152)

b) *Mean Intensity of Schistosoma Haemato-biumInfection*

Table 3 Showing intensity rates of the infections among population in both communities which seen in both male and female which is more in the age group of 5-13 years which are the school aged children. The female has more light infection than male 35(52.2%) and 32(46.4%) and 1(50.0%) and 10(71.4%) with heavy infection from Ibaro and Apojula with no significant difference ($p>0.05$).

Table 3: Mean Intensity of *Schistosomahaematobium* Infection

Location		Ibaro			Apojula		
		Light	Heavy	**Total**	Light	Heavy	**Total**
Sex	Male	32 (47.8)	1 (50.0)	33 (47.8)	37 (53.6)	4 (28.6)	41 (49.4)
	Female	35 (52.2)	1 (50.0)	36 (52.2)	32 (46.4)	10 (71.4)	42 (50.6)
			P-value	**1.000**		**P-value**	**0.141**
Age	1-4	11 (16.4)	0 (0.0)	11 (15.9)	18 (26.1)	2 (14.3)	20 (24.1)
	5-13	42 (62.7)	2 (100.0)	44 (63.8)	25 (36.2)	5 (35.7)	30 (36.1)
	14-22	5 (7.5)	0 (0.0)	5 (7.2)	11 (15.9)	3 (21.4)	14 (16.9)
	<22	9 (13.4)	0 (0.0)	9 (13.0)	15 (21.7)	4 (28.6)	19 (22.9)
			P-value	**0.760**		**P-value**	**0.773**

(n=152)

P-value < 0.05 means there is significant difference while p-value > 0.05 means there is no significant difference. Light infection is egg count less than 50 per 10ml (1-49 eggs/10ml) while heavy infection is greater than/equal to 50 eggs per 10 ml of urine (>=50 eggs/10 ml)

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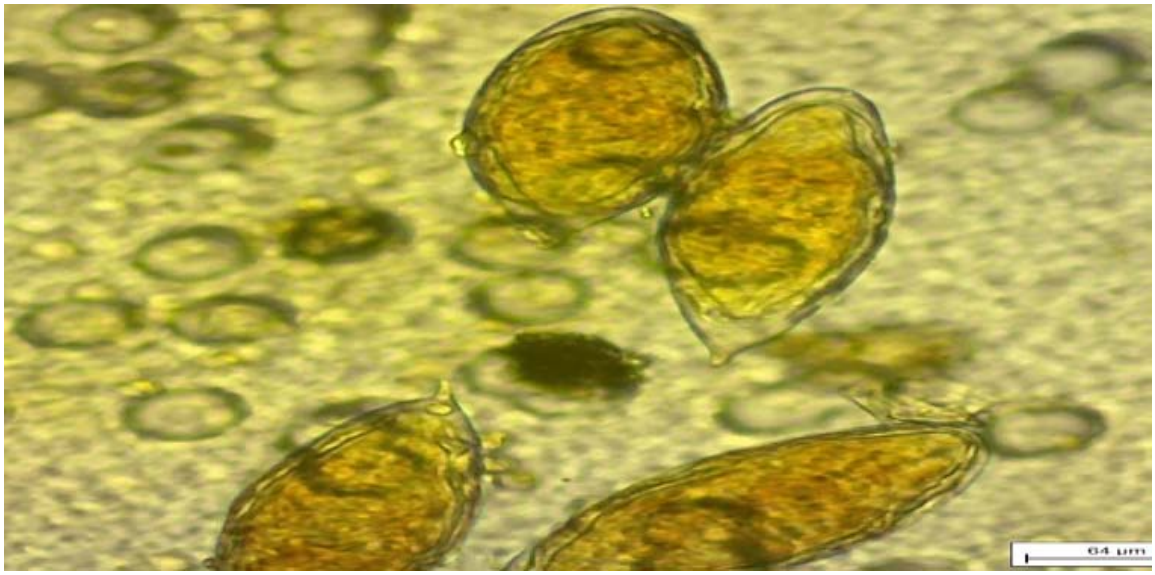


Plate 1: A *Schistosomahaematobium* ova observed from an infected person Magnification: x40

c) Knowledge of Respondents on Treatment Methods

Table 4 below shows the knowledge of respondents from both communities which indicates that 123(80.9%) people is not totally ignorance of schistosomiasis as a serious disease and 26(17.1%) agreed that it is not a serious disease of which 148(97.4%) has been treated using drugs, herbs and other methods. In the two study communities, the studies shows that people where using *Trichilia emetic*and *Stylosantheserectain Ibaro and Apojula* for treatment of the schistosomiasis. The result also shows that roots of *Trichilia emetic*is the most used in the community with 32(46.4%) and stems 27(39.1%), Whiles *Stylosantheserecta* and Hospital/MDAs are the most promised with 12 (14.5%) and 57 (68.7%) in Apojula. Effective medication period is 15 days by sucking in water as majorly practice traditionally in Apojula with 27 (32.5%) and raw consumption of with 26 (31.3%).

Table 4: Knowledge of respondents on types of herbs use and methods of treatment

Location		Ibaro	Apojula	Total
Schistosomiasis is a serious disease	Yes	61 (88.4)	62 (74.7)	123 (80.9)
	No	8 (11.6)	18 (21.7)	26 (17.1)
	I don't know	0 (0.0)	3 (3.6)	3 (2.0)
What herbs do you use for treatment?	*(Herbs)*	*Trichiliaemetic*	*Stylosantheserecta*	
	(L)	0(0.0)	6 (7.2)	6(3.9)
	(R)	32 (46.4)	12 (14.5)	44 (28.9)
	(S)	27 (39.1)	3 (3.6)	30 (19.7)
	(Se)	0(0.0)	5(6.0)	5(3.3)
	Hospital/MDAs	10 (14.75)	57 (68.7)	67 (44.1)
Effective medication period	(T)	(1/4L, 15 days)	(1/4L, 15 days)	
	Leaves	0 (0.0)	5 (6.0)	5 (3.3)
	Dry root/suck in water	15 (21.7)	27 (32.5)	42 (27.6)
	Raw consumption	1 (1.4)	26 (31.3)	27 (17.8)
	Others	0 (0.0)	10 (12.0)	10 (6.6)
Experience infection after use of herbs	Yes	67 (97.1)	67 (80.7)	134 (88.2)
	No	2 (2.9)	16 (19.3)	18 (11.8)
	Total	69 (100.0)	83 (100.0)	152 (100.0)

(n=152)
L: Leaves, R: Roots, S: Stems, Se: Seeds, T: TimeA

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III. Discussion

The result shows that the highest prevalence rate was found among the female of both communities. There was no significant difference in the sex in both communities to the infection ($p>0.05$).However, this study agrees with some findings carry out in the southern parts of Nigeria which showed that females have a higher prevalence of urinary schistosomiasis than males [25] and [26]. The reason for this is that women are mostly involved in activities known to favour infection due to their gender-assigned responsibilities which include fetching, bathing, religious act, washing these activities are done majorly by the females which probably makes the female has higher chance of infection.

The prevalence of the disease did not increase significantly with the age ($p>0.05$). This implies that the infection among population in both communities is not age specific. It confirms that the infection could be acquired through water contact activities. The knowledge, attitude and practices are high in both communities in which high population.

The result of this study show that population of both communities has the knowledge of traditional approaches in managing the disease due to no constant of mass administration of medicines (MAMs) in the communities. Findings shows that population in Ibaro communities uses *Trichiliaemetic and Stylosantheserecta* as a traditional approach in treatment of the infection and Arshe, a local name called by the Udoma people of Benue state. These traditional methods can be done using different methods in preparation of the herbs examples, boiling, drying, raw consumption etc. The result of the study on plant herbs shows that the root and stem of *Trichilia emetic* has great effect on the treatment of urinary schistosomiasis and whole plant of *Stylosantheserecta* this research work agreed with [24] where he confirms that extracts of *Trichiliaemetica* root in association with *Stylosantheserecta* whole plant has great effects against urinary schistosomiasis.

After treatment using herbs high number of population experience the infection again due to probably re-infection or constant exposure to source of infection. Since both communities are aware of the infection, there is need for the communities to be enlightened more on the dangers of re-infection. Lack of proper water supply was observed in both communities and lack of understanding of mode of transmission of the disease.

IV. Conclusion

This study concluded that traditional methods as case management play a vital role in the treatment of infection in the study area. Looking a way forward towards extenuating the menace of Schistosoma infections, traditional method and Ethnobotany and ethno-medical studies should be acknowledged as the most viable methods of identifying new medicinal plants or refocusing on those earlier reported for bioactive constituents. Plants have been of immense value to human health and roughly eighty percent (80%) of the world's populations rely on them for cure of various ailments. The continual search for natural plant products used as medicines, has acted as a catalyst leading to the widespread use of traditional medicinal practices today in most of the developing world.

Recommendations

Collaborative effort between the government and the community are required to reduce water contact behaviors that results in the transmission of urinary schistosomiasis. To make this feasible, health education should repairs all damages boreholes and provides availability of alternative sources of clean and safe water are recommended to complement ongoing efforts to control schistosomiasis and traditional method should be acknowledged as the most viable methods of identifying new medicinal plants in the study communities and other endemic communities of Sub-Saharan Africa.

Abbreviations

L: Leaves, R: Roots, S: Stems, Se: Seeds, T: Time

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