9.6. Epidemiology of Biiharzia (*Schistosomiasis*) among Fishing Communities

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Introduction

Lake Victoria is the largest freshwater body in the tropics and the second largest in the world. Located in East Africa, the Lake is bordered by Uganda, Kenya and Tanzania. It serves as an important source of both fish for food and trade, water for domestic and industrial uses for the surrounding region and a source of hydroelectric power and irrigation among many other resources. All along, focus has been on fishing but hardly any talk on the health of the fishers. This is a break through trial to incorporate the health of the fisherfolk community in the rejuvenation of a healthy lake. This study tries to marry the life and health of man with the purely zoological and scientific approaches that have been the tradition, and an oversight over the Lake Victoria basin.

The study is about the intensity and spread of *Schistosomiasis* in the fisherfolk communities at the Lake Victoria shores (Uganda) in relation to the obligate intermediate snail populations. In this study we were not able to cover adequately the socia- economic aspects like health and nutritional status, which among others influence the spread and intensity of *SChistosomiasis* although at some point adequate information was collected. *Schistosomiasis* in Uganda was known as early as 1903 (Prentice, 1960) and has thus reached pandemic proportions especially in the north west of the country. The distribution pattern is probably determined by people's activities particularly fishing that bring them in contact with infected water.

Currently about 1.7 million people in Uganda are suffering from *Schistosomiasis.* The districts most affected include Nebbi, Arua, Moyo, Apac, Lira, and all those that have shores along Lake Victoria Basin in Uganda (Kabatereine unpublished) *S. mansoni* is responsible for the majority of all the cases in Uganda while. *S.Heamatobium* is limited to a few foci in Lira and Apac disricts (Bradley et.al1976).

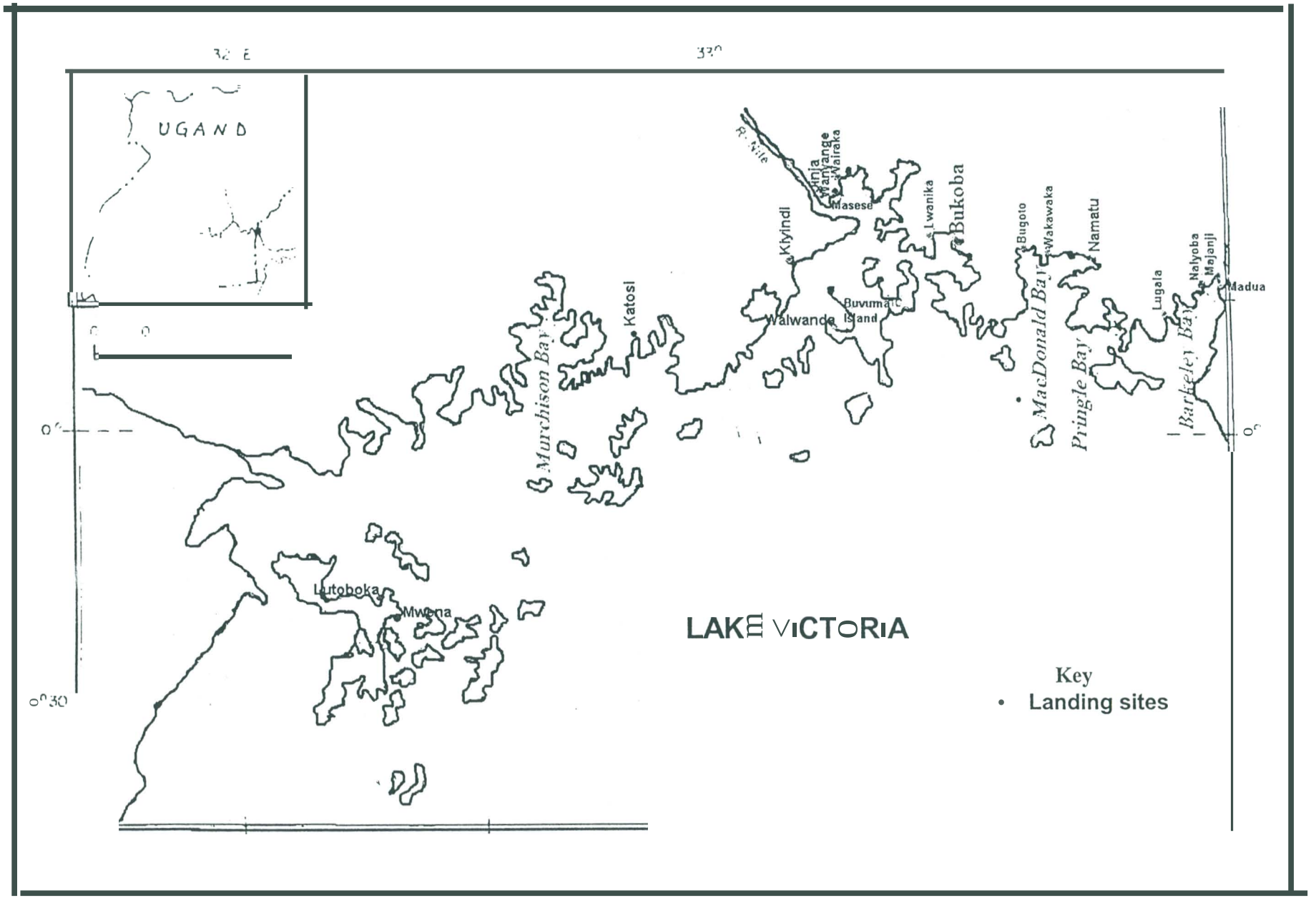
Against this background, this study was undertaken in order to provide information that would be used in formulating *Schistosomiasis* control measures.

The objective of this study therefore was to establish prevalence of *Schistosomiasis* at various fish landing sites along the main land shore line and islands in the Victoria basin and to identify the responsible vector snails and their distribution within the lake. We also investigated the nutrition and health status of the riparian fisherfolk communities at the beaches. (Fish landing site)

Materials and Methods

The study area was demarcated and grouped into the following categories: The main land shoreline fish landing site (beaches) and the islands. In the districts of Busia, Bugiri, Iganga, Jinja, Mukono and Kalangala, the landing sites visited were Majanji,Madua, Nalyoba (Busia District), Lugala, Namatu, Wakawaka (Bugiri District), Bugoto, Lwanika (Iganga District), Wairaka, Wanyange, Masese (Jinja

District), Kiyindi, Katosi and the Islands of Buvuma at Walwanda (Mukono District), Lutoboka, Mwena (Kalangala District) (Fig 1).



Map of Lake Victoria showing landing sites visited

At the landing sites, a unit questionnaire was administered to 271 randomly selected respondents. The questionnaire covered personal medical history of the respondent, health infrastructure and nutrition. This was done in order to ascertain, establish the relationships of available health infrastructure, nutritional status and the presence of *Schistosomiasis*. Symptoms covered were persistent abdominal complaints, stool stained with blood and bloody diarrhoea. While under health and nutritional status key issues were: availability of latrines, clean water and food.

This was further complimented with laboratory tests, which involved collection of fresh stool, fresh terminal urine and blood from each of the 271 respondents. All these samples were taken by a team comprising of Dr. Kadama A.B. (Medical Doctor), Magumba K.M. (Chief Laboratory Technician).

Each respondent was given an empty sterile bottle in which fresh stool was placed. The bottle-containing stool was immediately transferred to an icebox. Similarly terminal urine sample was collected and placed in an empty sterile bottle and transferred to the icebox. Using a 5ml-syringe, blood was drawn and transferred to sequestrated 10ml bottle and shaken to avert clotting. The bottle was transferred to the icebox. Blood, urine stool, sample bottles were taken to Victoria Modem Medical Laboratory Services-Jinja for analysis.

Stool was analysed for *Schistosome* eggs using the concentration technique and microscopic examination. Occult blood was tested for using Orthotolidine test. Urine was analysed and examined under microscope for *Schistosome* eggs and blood using centrifuge concentration technique. Blood was examined under the microscope for an eosinphil cell count. Snail were sampled using ek-man grab which was lowered from the side of the boat along the shoreline following transects at 3M, 6M, 9M depths. In areas where there were weeds samples were taken underneath the weeds. Snails were washed on a tray aboard the canoe and placed in clear glass 150ml bottles and preserved in ethanol. The snail samples were transported to FIRRI laboratories for analysis. The analysis was done using a field guide-African Fresh water snails from the Danish Bilharziasis Laboratory while socio-economic data was analysed using spreadsheet program-Statistical Package for Social Scientists (SPSS).

Results

Laboratory Tests

Out of 271 respondents screened for S. *mansoni* 140 were infected giving a prevalence of 51.6% (Table 1). Morbidity (damage) Markers in terms of symptoms were persistent abdominal complaints, which were found in 50% of the respondents. Laboratory results showed S. *mansoni* egg shedding in stool in 25% of the respondents. Blood analysed revealed significant increase from normal 0.4% in 50% of the respondents.

Table 1: Prevalence of Bilharzia cases

District	landing	Respondents	Bilharzia cases	"loage cases per landing	"loage cases per district
Mukono	Katosi	10	6	60.0	
	Kiyindi	10	7	70.0	
	Walwanda	36	13	36.1	46.4
Jinja	Wairaka	10	6	60.0	
	Wanyange	10	6	60.0	
	Masese	10	6	60.0	60.0
Iganga	Bukoba	13	4	30.7	
	Bugoto	10	5	50.0	
	Lwanika	25	14	56.0	47.9
Bugiri	Wakawaka	20	8	40.0	
	Lugala	20	9	45.0	
	Namatu	10	6	60.0	46.0
Busia	Maduwa	22	12	54.5	
	Nalyoba	-	-	-	
	Majanji	29	17	58.6	56.8
Kalangala	Mwena	11	4	36.3	
	Lutoboka	25	17	68	58
Total		271	140		

Source: Field data

Snail analysis revealed *Bulinus* and *Biomaphalaria* in Lutoboka landing in Kalangala District. At other landings there were no other obligatory intermediate snails captured (Appendix 1).

Fishers' Perceptions on the Prevalence of Schistosomiasis

In relation to community perceptions about the prevalence of *Schistosomiasis*, 61% of the respondents reported that they had experienced blood in stool and urine (Figure 2). More so, out of the 271 respondents, 62 reported that they had coughed long round worms. Related to this was that most respondents (57%) reported Malaria as the most common disease and some 16% and 15% of the respondents reported diarrhoea with or without blood in stool and pains in the stomach with or without blood stains in the stool respectively, which two conditions are key symptoms of *Schistosomiasis*. Common periods in the year in which people mostly fell sick were the months of March to May, which mostly coincides with the major rainy seasons.

Figure 2: Fishers who experienced blood in stool and urine

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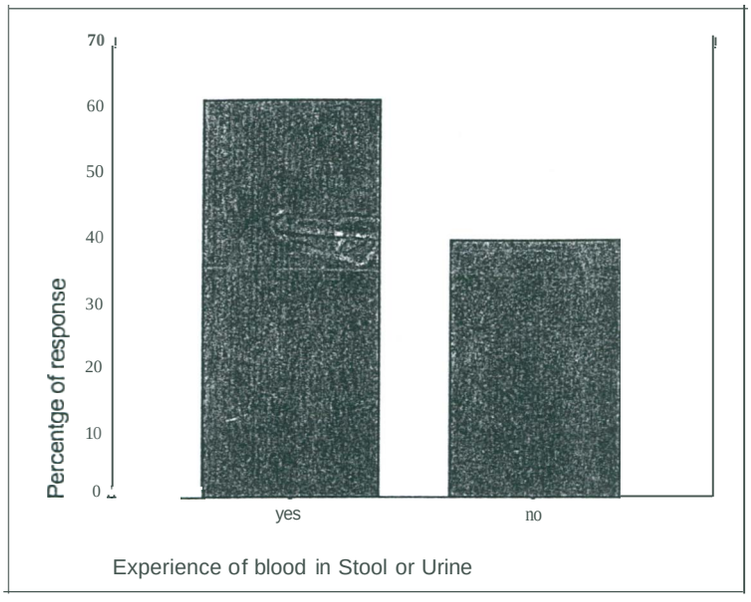

Health Facilities and Practices

In the sampled area, at most of the sites visited fishers reported that a significant proportion owned latrines (95% of the respondents). Of these, 47% said their latrines were in good condition. Concerning where most fishers drew water for domestic use, 60% reported the lakeshore with the most common method of drawing water as stepping in the lake (70% of the respondents) making most of the fishers prone to *Schistosomiasis* as it is mostly in shoreline waters.

As regards to the specific category of people who draw water from the lake, results indicated that it was commonly an activity of women (64%). Thus making them more vulnerable to the disease. Most respondents (77%) reported that they treated water for domestic use by mostly boiling.

Fishers' vulnerability to the disease was further enhanced by inaccessibility to both health facilities and personnel. To most (56%) the nearest health units were in a distance of beyond a kilometre, worse still, health workers rarely paid visits to these communities (58%). In situations where visits were made, outstanding visiting periods were once in three months. On assessing what fishers learnt and/or benefited from visits by health workers, virtually nothing about Bilharzia was reported.

Nutrition

In the results, fishers had access to a variety of staple foods henceforth, positively influencing their diet. A bigger proportion of respondents (51 %) reported posho as the most common staple food eaten (Table 2) while 86% reported fish as the most common source; consequently reflecting presence of high protein food values to a bigger proportion of fishers.

Table 2: Staple Foods Commonly eaten.

Staple food	Frequency	Valid percentage
Matooke	29	14%
Posho	106	51 .2%
Rice	1	.5%
Sweet potatoes	23	11.1%
Irish potatoes	2	1%
Any other	46	22.2%
Total	207	100%

Source: Field data

Social Demographic Health Indicators

Key indicators examined were literacy levels of fishers and house holds population sizes. Results indicated higher levels of illiteracy among fishers. The biggest proportion 57% of fishers had acquired only primary level education and 24% had not acquired any formal education (Table 3). Population per household was between 3 to 8 people as reported by 51 % of the fishers.

Table 3: Literacy Levels Among Fishers

Education Levels	Frequency	Valid Percentage
Primary	139	57.7%
Secondary	42	17.4%
Tertiary	2	0.8%
None	58	24.1%
Total	241	100%

Source: Field data

Discussion

The study showed that S. *mansoni* was highly endemic in the Lake Victoria basin in areas so far studied with prevalence rate of 51 %. The results potray a high prevalence rate where fishing activities are known to be high and the population unstable. (The case of Masese-Jinja District, Majanji -Busia District and Lutoboka - Kalangala Distrit (Table 1). This may be related to deteriorating water quality of the lake which factor supports the growth of intermediate host.

In the case of Jinja, piped water did not seem to improve on the infection prevalence. Meanwhile, at other landings in Bugiri, Mukono and Iganga districts the infection rates were almost comparable in terms of prevalence (Table.1). This can be related to the inadequate health facilities and poor health practices of fishers. Coupled with this are the social demographic health indicators notably the low literacy levels, which directly or indirectly have a bearing to human health.

At all landing sites sampled no obligate intermediate host snail types were encountered except at Lutoboka in Kalangala District (Appendix 1). At other landing sites other than Lutoboka in Kalangala District where the transect method of sampling was used, there was no obligate intermediate host snails found. This implies that in the sampling design of snails large area of coverage should have been done.

Conclusion

The overall prevalence rate of 51 % is comparatively much higher the acceptable level of 18% (W.H.O. Conference June 2000). It is important to note that S. *mansoni* was the only species found throughout the study. The health facilities and practices were noted to be poor at all the landing sites sampled. The fisherfolk communities drew water from unclean water sources thus increasing their risk to infection. Besides, the situation is aggravated by fishers' ways of life manifested in the identified social demographic information.

Recommendations

In view of the high prevalence of *Schistosomiasis* so far established in this study, it is recommended that preventive and curative measures be put in place to reduce *Schistosomiasis* and other soil transmitted helminthes to levels where they cease to be a public health hazard. These measures would include:

a) Provision of both health units and personnel to members of the fishing communities.

b) Mass treatment of the fishing communities with praziquantel at 40 mg /kg body weight at a yearly interval.

c) Provision of safe water and sensitisation on appropriate health practices particularly to the women and children.

d) The fisherfolk should be encouraged to put on gumboots when stepping in lake water.

e) General improvement of fishers' ways of life with special emphasis on education and family management.

However, other preventive methods on Lake Victoria although appropriate could be costly and environmentally devastating for instance, spraying of Molluscide. The current molluscide of choice (Baymscide) is very expensive and kills other flora and fauna indiscriminately and it would not be acceptable in a fishing community. Related to this, is that environmental snail control such as clearing of vegetation at water landing sites, which deprive snails of their food, shelter and breeding sites.

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