

**MAGNITUDE AND RISK FACTORS OF URINARY SCHISTOSOMIASIS
AND ITS REPRODUCTIVE SEQUELA IN WOMEN OF REPRODUCTIVE
AGE IN MANYONI DISTRICT**

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**Masters of Science in Tropical Diseases Control
Muhimbili University of Health and Allied Sciences
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REPRODUCTIVE SEQUELA IN WOMEN OF REPRODUCTIVE AGE IN MANYONI
DISTRICT**

By

Joseline Samson Ishengoma

**A dissertation submitted in partial fulfillment of the requirement for the degree of
Masters of Science (TDC) of the Muhimbili University of Health and Allied
Sciences**

Muhimbili University of Health and Allied Sciences

June, 2013

CERTIFICATION

The undersigned certifies that she has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a thesis/dissertation entitled Magnitude, risk factors for urinary schistosomiasis and its reproductive sequel in women of reproductive age in Manyoni district in (partial) fulfillment of the requirements for the degree of Master of Science (TDC) of Muhimbili University of Health and Allies Sciences.

Dr. G. Leyna (MD, PhD)

(Supervisor)

Date -----

DECLARATION AND COPYIGHT

I, Joseline Ishengoma declare that this dissertation is my own original work and that it has not been presented to any other university for a similar or any other degree award.

Signature-----

Date-----

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DEDICATION:

This work is dedicated to my children Axel and Ethan who sometimes went through hard time in my absence, yet they supported me and prayed for me to the accomplishment of this dissertation. This work is also dedicated to my beloved parents; my father Mr. Samson Ishengoma and my mother Mrs. Scholastika Kalugwa whom through their care and support I got good foundation in education that has brought me to this level, may God bless them all.

ABSTRACT

Background

Urinary schistosomiasis is a neglected tropical disease that has received a lot of attention in school-aged children. A number of studies have revealed that the disease is common in women of reproductive age (15 - 49 years), although this population has not been studied widely in Tanzania. The aim of this study was to determine the magnitude of urinary schistosomiasis, its associated factors and its reproductive health outcomes in women of reproductive age in rural Tanzania.

Methods

A population-based cross-sectional study was carried out in Manyoni district in two villages practicing irrigation farming among women of reproductive age. An interviewer-administered questionnaire was used to gather information on socio-demographic characteristics and risk factors known to be associated with urinary schistosomiasis, and female genital schistosomiasis infection. Urine samples were collected and evaluated for *Schistosoma haematobium* ova. Univariate and bivariate analysis were run using SPSS to identify important risk factors.

Results

The prevalence of urinary schistosomiasis was 4% based on microscopic examination of eggs in urine. There was no significant difference in prevalence between the two studied villages. The median egg intensity of urinary schistosomiasis among infected individuals was 12 (interquartile range 20) eggs per 10 milliliters of urine. Low level of education was significantly associated with urinary schistosomiasis infection (% vs. %; $p= 0.025$) in univariate analysis. This association remained significant after adjusting for potential confounders (AOR = 6.5, 95% CI: 1.2, 32), indicating that having primary education increases the risk for urinary schistosomiasis. Female genital schistosomiasis was found to be probable in 1.3 % of the study participants.

Conclusion

The magnitude of urinary schistosomiasis in women of reproductive age in the two villages that practice irrigation farming is low. Low education is a predictor of urinary infection. The schistosomiasis control program in the district should develop strategies to address this group as they make act as reservoir for the infection. More studies should look into female genital schistosomiasis in this population.

ABBREVIATIONS

| | |
|------|---|
| FGS | Female genital schistosomiasis |
| HIV | Human immune deficiency virus |
| HPV | Human papilloma virus |
| OR | Odds ratio |
| SPSS | Statistical Package for Social Sciences |
| STIs | Sexual transmitted infections |
| WHO | World Health Organization |

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND TO THE PROBLEM

Schistosomiasis, (also known as bilharzias), is a disease caused by parasitic worms. The parasites that cause schistosomiasis live in freshwater snails of the species *Bulinus africanus*, *Bulinus truncatus*, *Bulinus glabosus* and *Bulinus forskalii*. In its miracidia and sporocyst stages produces cercaria which penetrates man. The disease is considered a neglected tropical disease and mainly affects developing countries where water resources are poor and inadequate, also in areas where sanitation is poor to allow growth and infection of snails.

About 200 million people suffer from Schistosomiasis, with: approximately 20 million severely affected and 20 thousand deaths occurring annually (WHO 2003). The disease is endemic in Sub Saharan Africa including Tanzania. Estimates from sub-Saharan Africa indicate that 436 million people live at risk of being infected with *Schistosoma haematobium* [1, 2]. Although the infection is extremely prevalent the associated morbidity is low, uneven and indirectly due to poor nutritional status, cognitive processes and sometimes complications that require surgical operations.

There are a number of special groups who are considered to be at higher risk of infection with schistosomiasis. These include children of school age, women of child bearing age, and special occupational groups like people working in rice fields, car washers, people in irrigation canals etc. Schistosomiasis in women may affect the reproductive health resulting into a condition known as Female genital schistosomiasis, a clinical attribute of schistosomiasis characterized by the existence of schistosome eggs and worms in the genital organs. This may present with a range of signs and symptoms including lesions of the cervix and vagina, vaginal bleeding, pain during sexual intercourse and nodules in the vulva. These lesions may render the person susceptible to HIV. A recent WHO working group concluded that there is biological plausibility of a possible link between female genital schistosomiasis and HIV acquisition in women. The typical genital changes, such as sandy patches and pathological blood vessels may make women susceptible to super-infection, cause contact bleeding, decreased fertility, abortions, and discharge and bleeding. In areas endemic for urogenital schistosomiasis a large proportion of women may have female genital schistosomiasis (FGS).

A majority of the Tanzanian population both in urban and rural areas is exposed to the parasite due to poor water resources and sanitation. The Tanzanian National Program for schistosomiasis control, now under the neglected tropical diseases control program has mostly targeted school age children through mass treatment campaigns as their major strategy, neglecting other at risk groups like women and children of preschool age and other groups.

In order to advise the neglected tropical diseases control program to include other at-risk groups such as women of reproductive age in endemic areas in mass treatment programs, or to look for alternative control measures, there is a need to obtain accurate and adequate information on the disease distribution in these other population groups. This study aims to determine the prevalence and intensity of *schistosoma haematobium* infection in women of reproductive age, and establish the proportion of women presenting with symptoms and signs of FGS in the villages across the irrigation areas of Chikuyu ward in Manyoni district council.

1.2: LITERATURE REVIEW

1.2.1 Magnitude

An estimated 200 million people in 76 countries are infected with schistosomes. Of these, approximately 20 million suffer severe sequels, with disease manifestations ranging from bladder carcinomas to liver fibrosis. Schistosomiasis can sometimes cause mortality by negatively affecting nutritional status, and cognitive processes [14]. Most of the affected persons are in Sub Saharan Africa, including Tanzania. The magnitude of urinary schistosomiasis varies from place to place due to unequal distribution of risk factors. For instance, in Madagascar, the prevalence of urinary schistosomiasis in women of reproductive age, diagnosed by *S. haematobium* egg excretion in urine was found to be 75.5% and the intensity of infection among the infected was median 76 ova/10ml of urine [17]. Similarly, high prevalence have been observed elsewhere in Africa ranging from 24.8% in Ghana to 55.6%-72.2% in Niger (4, 11)

There is limited information on the prevalence of urinary schistosomiasis in Tanzania among women of reproductive age. Findings from one community-based study in Tanzania estimated a prevalence of 40% in women of childbearing age. The diagnosis was based on *Schistosoma*

haematobium eggs excretion in urine, with a median egg intensity of 2.2 eggs/10 ml of urine. In another cross sectional study carried out to assess schistosomiasis in endemic areas of Northern Tanzania, urinary schistosomiasis was diagnosed in 36% (239/657). High prevalence of 60% was observed in Zimbabwe. The classic sign of urogenital schistosomiasis is haematuria (blood in urine). Fibrosis of the bladder and ureter, and kidney damage are common findings in advanced cases. Bladder cancer is also a possible late-stage complication. In women, urogenital schistosomiasis may present with genital lesions, vaginal bleeding, pain during sexual intercourse and nodules in the vulva (15, 16, 30).

1.2.2 Risk factors

Schistosoma haematobium, the cause of urinary schistosomiasis is spread by eggs which, are excreted in human urine that contaminate water sources or soil areas that lack adequate sanitation. Infective larva infects humans, when they spend significant amounts of time inside fresh water that has been infested with the parasite. High risk groups are those that have activities that require them to spend time in water for occupation, domestic activities or recreation; these include children of school age, women of child bearing age, and special occupational groups like fishermen, rice growers and car washers.

Several studies have explored the determinants of urinary schistosomiasis in specific populations, majority in school children and occupational groups. The few studies that have studied women of reproductive age have observed domestic activities such as visiting the water sources to bathe their children, wash clothes or kitchen utensils and fetch water as being predictors of infection [21]. In Niger the risk factors for urinary schistosomiasis infection included frequent visits of mothers to the irrigation canals for domestic activities like washing and fetching water [10]. Some studies have demonstrated that age can be a risk factor for urinary schistosomiasis while other studies have failed to show a similar association. It is hypothesized that younger women are more likely to get infected compared to older women. One study observed the prevalence of *S. haematobium* infection was highest (60%) in women below 20 years of age and declined to 29% in the oldest age group (test for trends, $P < 0.001$)(30). This might be because the infection is acquired by contacting infected water, it is

the people who are able to visit those water sources that are at risk than others. This theory needs more exploration.

Dependence on irrigation systems as a source of water can be associated with the risks of urinary schistosomiasis. The higher prevalence rates in the areas practicing irrigation reflect the higher levels of exposure and dependence of the inhabitants on the infected water bodies for their livelihood [10]. It has been shown that 2/3 women in endemic areas using irrigation systems for farming used the irrigation canal water for water supply and for washing their children (10). Occupation of the women might be associated to infection with urinary schistosomiasis in particular, housewives, due to the nature of their domestic roles. Prolonged contact with water can be a factor aiding infection as the people engaged in farming usually have higher infection rates, as do those who go to the river to fetch water (30, 32).

Lack of adequate sanitation facilities in the communities is also hypothesized to be one of the factors responsible for high prevalence of urinary schistosomiasis. In areas with lack of sanitation facilities people usually urinate and defecate in or around the water bodies. One study in Niger described up to 80% of women in endemic areas disposed off their wastes in the water bodies they used for domestic purposes [10, 31]. By doing so, infected individuals contaminate the water bodies, which becomes a source of infection to other individuals who use the water body.

Urinary schistosomiasis is present in many communities in different regions of Tanzania mainland. It is focally distributed within the country, regions, districts and wards. The prevalence can be quite high in one ward while very low in another ward of the same district; this might be contributed by a number of factors like occupational exposure, environmental factors, knowledge on schistosomiasis and age.

1.2.3 Female Genital Schistosomiasis

Female Genital Schistosomiasis (FGS) is a condition which occurs when ova or adults of the trematode parasite, *Schistosoma* sp ectopically locate in the female genital system. Although any of the *Schistosoma* parasites that affect humans may cause FGS, its occurrence is more

common with *S. haematobium* infections, the causative agent of urinary Schistosomiasis [4]. FGS has been implicated in women's reproductive health problems. Chronic female genital-tract inflammation caused by *S. haematobium* has been associated with vaginal itching and discharge, post-coital bleeding, genito-pelvic discomfort, marital discord, and infertility [18]. Female genital schistosomiasis clinically presents itself like sexually transmitted infections (STI). In Zimbabwe, clinical symptoms of STIs - genital itch and vaginal discharge were used as indicators of genital *Schistosoma haematobium* morbidity in women.

Estimation of the prevalence of FGS is difficult as diagnosis of FGS is complicated. This can be based on clinical symptoms where by women need to be questioned about obstetrical history and uro-gynecological symptoms. In addition, physical examination consisting of inspection and palpation of the lower abdominal area; gynecologic examination including colposcopy, preparation of a cervical smear, a biopsy of cervical tissue, and ultra-sonographic examinations need to be conducted (16).

FGS prevalence in urinary schistosomiasis endemic areas is estimated to range between 11–50% [4, 15, 16, 18, 22]. Even in the absence of ova excretion in women, 23–41% of them are found to have genital schistosomiasis [20-16]. Studies that have assessed the frequency of different clinical symptoms in women with FGS have observed that 57.7% report copious discharge, 80.8% - vaginal itch, and 66.7% - lower abdominal pain compared to those without FGS. The most predominant clinical sign in the lower genital tract was erythematous appearance of the cervix (18.8%) [4].

In a cross sectional study carried out to assess uro-genital schistosomiasis in a schistosomiasis-endemic area of Northern Tanzania the proportion of women affected by FGS of the lower reproductive tract was 36% (239/657) (16). In another cross sectional study on female genital schistosomiasis in endemic rural Zimbabwe, eighty percent of the women who had genital itch and yellow discharge, and current weekly or childhood water body contact had sandy patches and only 30% of women with none of these three had sandy patches [22].

The intensity of urinary schistosomiasis may influence the risk of having FGS (15). There is a considerable increase of risk for FGS between cases with very light and cases with light infections, which can be missed when the diagnosis is based on a single examination of 10 ml

of urine. In a community-based study in Tanzania, 40% of women of child-bearing age had a median intensity of haematobium eggs in urine of 2.2 eggs/10 ml of urine. Of these, 32% had *S. haematobium* eggs in their cervical tissue [15]. In this study urinary and genital schistosomiasis coexisted in 62% of the women, but *S. haematobium* eggs were found in the cervix without detectable egg excretion in the urine in 23% and only 43% of the FGS cases [15].

Due to the fact that the disease is focally distributed, and that the magnitude of urinary schistosomiasis among women of reproductive age is not known in Singida region, there was a need for such information.

1.3. PROBLEM STATEMENT

Urinary Schistosomiasis is a major public health problem in tropical and subtropical countries. The World Health Organization (WHO) estimates that more than 200 million people are infected with the parasites and 93% of these occur in Sub Saharan Africa. Urinary schistosomiasis is endemic in much of Africa, yet affected countries do not always treat it as a health priority. One reason for this is the perception that the disease's sequels are mild and infected people are often able to maintain an active life. In Tanzania, much of the information on urinary schistosomiasis has been documented in children of school age. There is limited information on urinary schistosomiasis in women of reproductive age especially in areas considered at high risk of infection such as areas practicing irrigation farming.

Women of reproductive age are exposed to *S. Haematobium* infection in a variety of ways. In areas where there is no protected water sources women are obligated to look for water in potentially infested water sources putting them at increased risk of acquiring the infection. In addition, domestic duties like washing and farming activities require women to come and stay in contact with infested water sources for significant amounts of time. All these activities place women at higher risk of acquiring urinary schistosomiasis. However, estimations for the prevalence and predictors for urinary schistosomiasis among women of reproductive age in Manyoni district are missing.

The ova of *Schistosoma haematobium* are known to affect the urinary tract and may also affect the genital tract. Several studies have shown that *S. haematobium* genital morbidity is almost as common as urinary tract disease in endemic areas. Female Genital Schistosomiasis (FGS) prevalence in urinary schistosomiasis endemic areas is estimated to range between 30-50%. Even in the absence of ova excretion in women, 23-41% of them are found to have genital schistosomiasis. No study has assessed the prevalence of FGS in Manyoni district, which is considered an endemic area due to its irrigation farming schemes. The pathogenesis of disease in the genital tract is thought to be caused by schistosoma ova deposition and the resulting inflammation causing mechanical blockage, scar tissue, destruction of anatomical structures, and anti-spermatozoal antibodies. FGS has been implicated in women's reproductive health. A number of case reports and pathological studies suggest that schistosomiasis may be the cause of infertility, abortion, and complicated pregnancies.

1.3.1 Research questions

This study was guided and aimed at responding to the following questions:

- What was the prevalence of urinary schistosomiasis in women of reproductive age in Chikuyu and Mwiboo villages in Manyoni District?
- What was the intensity of urinary schistosomiasis among infected women of reproductive age in Chikuyu and Mwiboo villages in Manyoni District?
- What are the risk factors for urinary schistosomiasis in women of reproductive age in Chikuyu and Mwiboo villages?
- What was the frequency of occurrence of female genital schistosomiasis (based on an algorithm of symptoms and signs) among women of reproductive age who have ever suffered from urinary schistosomiasis in Chikuyu and Mwiboo villages

1.4 Objectives of the study

1.4.1 Main Objective:

The main objective was:

- To determine the magnitude, intensity and risk factors, for urinary schistosomiasis and
- To determine the magnitude of FGS among women of reproductive age in endemic villages of Manyoni district, Tanzania.

1.4.2 Specific objectives

- To determine the prevalence of urinary schistosomiasis in women of reproductive age in Manyoni district
- To determine the intensity of urinary schistosomiasis among women of reproductive age diagnosed with urinary schistosomiasis in Manyoni district
- To identify the risk factors for urinary schistosomiasis in women of reproductive age in Manyoni district
- To determine the magnitude of female genital schistosomiasis in women of reproductive age in Manyoni district

1.5 SIGNIFICANCE OF THE STUDY

The findings from this study will generate new knowledge on the magnitude of urinary schistosomiasis and its predictors in women of reproductive age in Chikuyu and Mwiboo villages in Manyoni district. This information is needed by the district schistosomiasis control program to assess the impact of its strategies. As a newly studied group, it will provide information on the need to expand urinary schistosomiasis activities to other risk groups apart from children of school age where most of the focus has been. In addition, findings from this study will provide a point of departure for investigating the reproductive consequences of urinary schistosomiasis in this age group, as well as revising the national schistosomiasis control program to incorporate FGS in its activities. The information will also create awareness to the communities of the two villages on the risks of their daily activities on their

health. It will offer a differential diagnosis to the health personnel diagnosing and managing sexually transmitted diseases, as the two (STI and FGS) have similar symptoms, but different management approaches.

CHAPTER TWO: METHODOLOGY

2.1 Study area

2.1.1 Geography

Manyoni is one of the three districts of Singida Region located at latitudes 5.30° S to 7.30°S, longitudes 33.30° to 35.30° East of Greenwich; at an altitude of 1,250 to 1,500m above sea level, in the central plateau of the United Republic of Tanzania. The District is in the dry belt of the central plateau that drops to the main Rift Valley to the East and to the Wembere Depreciation to the West.

2.1.2 Climate, seasons and land use

The temperature ranges from 22°C to 30°C. Rainfall is seasonal, and ranges from 300mm to 600mm per annum. Main seasons are: Dry season in June to November and Rainy season December to April. The district covers an area of 28,620 km² out of which 8,586km² is forest reserve; 658.3 km² arable land; 15,741km² game reserve; 3,584.7 km² habitable and grazing and 50 km² water mass.

2.1.3 Boundaries and administrative divisions

The district is bordered with Mbeya and Iringa Region to the South, Tabora Region to the west; Singida Rural District to the North and Bahi District Dodoma Region to the East. Administratively, Manyoni district is divided into 5 divisions, 30 wards, 96 villages, 356 hamlets and has 52,513 households.

2.1.4 Main Economic activities

Agriculture, bee keeping and livestock keeping are the main economic activities in Singida region. Agriculture production is moderate due to erratic nature of rainfall. Irrigation is practiced in Makuru, Kintinku and Chikuyu wards of Manyoni district.

2.1.5 Population

The total estimated population of Manyoni district by 2011 stands at 270,294 people, according to the 2002 National census projection, (calculated by 2.3% population natural increase). Manyoni was the district found to have the highest prevalence of schistosomiasis in Singida region according to the Ministry of Health and Social Welfare's 2004 national schistosomiasis survey conducted among school children [20%]. In addition, unpublished data shows the disease is concentrated in seven wards of Manyoni, that is: Kintinku (8%), Chikuyu (6%), Sasajira (2%), Makutupora (3%), Makuru (1%), Majiri (2%) and Mvumi (3%) (24).

2.2 Study design

A population-based cross-sectional study was conducted in Chikuyu ward of Manyoni District from April 2012 to July 2012. Cross sectional studies are the best epidemiological study design to determine prevalence and are useful at identifying associations that can be used to generate hypothesis for more rigorous study designs [5].

2.3 Study population

All women aged 15-49 years who were permanent residents of Chikuyu and Mwiboo villages in Chikuyu ward were eligible to participate in this study. All eligible women who were found at home during the time of data collection and agreed to participate were included in the study. Refusals, very sick, and women who were not available at the time of data collection were excluded from the study.

2.4 Sample size calculation

The sample size was calculated by assuming the estimated prevalence of 25% (prevalence of urinary schistosomiasis among women of reproductive age in endemic areas of Ghana) [4].

Using the formula for estimation of a single proportion

$$N = \frac{Z^2 * P (100-P)}{\varepsilon^2}$$

Whereby, $Z = z$ value (1.96 for 95% confidence level)

$N =$ Sample size

$\varepsilon =$ degree of precision

$P =$ Proportion of women expected to have urinary schistosomiasis in the area

$$N = (1.96)^2 * 25 * (100-25) / (5)^2$$

$$N = 288$$

Assuming a 10% non-response, then $N = 288/0.9 = 320$

2.5 Sampling technique

Manyoni district was purposively sampled because it had a high prevalence of urinary schistosomiasis in the 2004 national urinary schistosomiasis survey. Chikuyu ward was purposively selected based on convenience to reach. Simple random sampling was employed to obtain two villages i.e. Chikuyu and Mwiboo from Chikuyu ward. A total of 459 households with 386 women aged 15-49 years were registered in Mwiboo village. In Chikuyu village, a total of 817 households with 686 women aged 15-49 years were registered. Proportional sampling was used to obtain 205 (64%) women in Chikuyu village and 115 (36%) women from Mwiboo village. A random selection of one participant in every 4th household with a woman of reproductive age was done in each village until the sample size was reached.

2.6 Research instruments

A developed interview schedule with questions on social demographic data, risk factors for urinary schistosomiasis and symptoms for female genital schistosomiasis was used. The schedule was developed in English, translated to Swahili and later on back translated to English to ensure it retained the meaning intended. The tool was finally pre-tested to find if the questions were meaningful and that they could be answered easily. The questionnaire collected information on social demographic factors and other risk factors for urinary schistosomiasis. In addition information on the symptoms and signs of female genital schistosomiasis including genital itching, abnormal vaginal discharge, pelvic discomfort, irregular menstrual cycles and post coital bleeding were collected. Parasitological samples for determining urinary schistosomiasis prevalence and intensity were collected using sterile plastic containers.

2.6.1 Data collection procedures

A verbal consent was obtained from selected participants prior to recruitment into the study where interviewers read the consent forms to the eligible population. Upon obtaining the consent, participants were interviewed regarding. After the interview, the participant was requested to provide urine sample in sterile plastic containers.

2.6.2 Parasitological data collection and testing

Sterile plastic containers labeled with the participant's ID number were used to collect urine specimens. The collected urine sample was immediately mixed with four drops of 10% formalin to prevent bacteria growth and egg hatching. The samples were then placed in cold boxes. After working hours the specimens were transferred to the district health department where they were stored in a cool place until data collection was completed. Data collection took one week. The specimens were then transferred in a cold box to the Muhimbili parasitological Laboratory. Ten milliliters (10mls) of each urine sample was syringed and filtered using a 25 mm diameter filter holder and a nuclear pore filter with 12 micrometer pore (Kent – Washington Sterlitech Corporation, US). This was later placed on a glass slide for examination of *Schistosoma haematobium* ova under light microscope ($\times 40$). Samples found

to have ova were recorded as infected and the number of ova present in each specimen was counted and recorded.

2.6.3 Laboratory quality assurance

The samples were preserved with formalin a few minutes after collection. Well-trained and experienced technicians under supervision of the researcher then worked on them. Ten percent (10%) of the specimens (30 specimens) were randomly selected and re-tested by the author. There was 100% agreement with the initial recorded results.

2.7 Variables

Dependent variables:

- Urinary schistosomiasis status was diagnosed by presence of schistosome eggs in urine (present/absent).
- Female genital schistosomiasis was a nominal variable categorized into three groups. (Fgs = 1 probable if participant reported to have vaginal itching or profuse vaginal discharge or irregular menstrual cycles and a history of urinary schistosomiasis; Fgs = 2 suspicious if participant reported to have postcoital bleeding and/or abdominal pain and a history of urinary schistosomiasis; Fgs = 3 not likely if there was no history of urinary schistosomiasis)

Independent variables:

- Age in years (continuous)
- Education level (no formal education, primary education, secondary education and above)
- Water related activities (A composite measure was developed to get domestic water related activities for those engaged with washing, swimming and bathing vs. farming water related activity for all participants engaged with farming).
- Knowledge on urinary schistosomiasis (knowledge on symptoms, transmission, and treatment, were enquired. The variable was dichotomized into those who had

knowledge and who did not have knowledge; from a summative total score of knowledge where the cutoff point was set at the mean = 21 (standard deviation = 2.29). Participants who scored ≥ 21 were categorized as knowledgeable and those who scored below 21 were categorized as not knowledgeable).

- Sanitation facility (those with toilet at home vs. those without toilet at home)
- Treatment history (those who ever got treated for urinary schistosomiasis vs. those who have never been treated for urinary schistosomiasis).

2.8 Data management

Meetings were held every morning with the research assistants to rectify data collection problems encountered in the previous day before going to the field. Cleaning of the data was done after data entry to correct for coding and data entry errors. The data were kept in soft and hard copies. The data was entered into Microsoft excel program (version 2007) and then transferred to and analyzed using SPSS statistical software, version 16.0. Data was summarized by frequency distributions. Prevalence was calculated by dividing the number of people with schistosoma ova in urine to the total number of individuals who submitted a urine sample. Intensity of urinary schistosomiasis is reported as the median (inter-quartile range as a measure of dispersion) number of eggs per 10 mls of urine. Bivariate analysis was done using 2x2 tables where the Chi-square test was used to assess statistical associations. Multivariate logistic regression analysis was done to control for potential confounding. Variables with a p-value of less than or equal to 0.2 in the bivariate analysis were included in the multivariate models. Odds ratios and their 95% confidence interval (CI) are presented. Significance level was set at $\alpha = 5\%$.

2.9. Ethical Considerations

Ethical clearance to carry out the study was obtained from MUHAS Institutional Review Board. Permission to conduct the study in the community was obtained from community leaders. Meetings were held in the villages before the study period in Swahili to inform the villagers about the study contents, objectives and implications and to request their cooperation. The meetings also conveyed information about individuals' right to withdraw from participation at any time during the study without negative consequences. Verbal informed

consents were obtained from each participant upon recruitment and recorded on the appropriate forms [Appendix D] prior to data collection. Participants found to be infected with urinary schistosomiasis and/ or with symptoms and signs of FGS were referred to the nearby health facilities for appropriate management.

CHAPTER THREE: RESULTS

Out of the total 320 eligible participants for the study, only 302 (94%) women of reproductive age from both villages participated in the study. All of the participants agreed to submit urine samples and this analysis is based on 302 participants who responded to the questions and submitted urine samples. The mean age of the study participants was 26.6 (standard deviation 10.2) years. The majority of participants (54.6%) were between 27-36 years. Fifty three percent of the participants were married or cohabiting, while 47% were single (including separated, divorced or widowed). As shown in table 1, most of the participants (49.0%) reported having primary school education. Majority (72.2%) of the participants were involved in farming activities as their main occupation. Most participants reported having more than one source of water for domestic use. A modest proportion (37.1%) used water from deep well followed by tap water (25.2%). River water and shallow well was reported to being used by 17% of the respondents. Only 3.9% of the respondents reported to using dam water for domestic use.

The overall prevalence of urinary schistosomiasis among women of reproductive age in these two villages was 4%. There was no significant difference in the prevalence of urinary schistosomiasis between the two villages (Mwiboo village 5.5% vs. Chikuyu village 3%; P value = 0.6) (Appendix A). Intensity of infection was calculated based on the number of eggs per 10mls of urine. The overall median was found to be 12 (inter quartile range =20) eggs per 10 mls of urine.

Table1: Frequency distribution of social demographic characteristics of the study population

| Characteristic | Category | N | Percentage |
|-----------------------------------|--------------------------|-----|------------|
| Age, years | ≤26 | 54 | 17.9 |
| | 27-36 | 165 | 54.6 |
| | ≥37 | 83 | 27.5 |
| Marital status | Married/cohabiting | 161 | 53.3 |
| | Single* | 141 | 46.7 |
| Education | No formal | 59 | 19.5 |
| | Primary | 148 | 49.0 |
| | Secondary | 95 | 31.5 |
| Occupation | Student | 64 | 21.2 |
| | Housewife/petty business | 20 | 6.6 |
| | Farmer | 218 | 72.2 |
| Current water source [§] | Tap water | 143 | 25.2 |
| | Shallow well | 96 | 16.9 |
| | Deep well | 211 | 37.1 |
| | River | 96 | 16.9 |
| | Dam | 22 | 3.9 |

* Divorced, separated, widowed or never married; [§] multiple responses allowed

Table 2: Frequency distribution of urinary schistosomiasis by selected risk factors

| Risk factors | Total | Urinary schistosomiasis | | P value |
|---|-------|-------------------------|----------------|---------|
| | | % Infected | % Not infected | |
| Age, years | | | | |
| <=26 | 170 | 5.3 | 94.6 | |
| 27-36 | 69 | 1.4 | 98.6 | |
| >=37 | 63 | 3.2 | 96.8 | 0.36 |
| Education level | | | | |
| No education | 59 | 10.0 | 90.0 | 0.025 |
| Primary education | 148 | 2.0 | 98.0 | |
| Secondary education+ | 95 | 3.2 | 96.8 | |
| Knowledge on urinary schistosomiasis | | | | |
| Has knowledge | 110 | 4.5 | 95.7 | 0.23 |
| No knowledge | 88 | 1.2 | 98.8 | |
| Treatment history | | | | |
| Treated | 70 | 4.3 | 95.7 | 1.34 |
| Not treated | 11 | 18.2 | 81.1 | |
| Presence of toilet facility | | | | |
| Present | 291 | 3.7 | 96.3 | 0.283 |
| Absent | 11 | 12.5 | 87.5 | |
| Main water related activities | | | | |
| Domestic | 218 | 4.6 | 95.4 | 0.5 |
| Farming | 84 | 2.4 | 97.6 | |

As shown in table 3 above, women ≥ 26 years were more affected (5.5%) compared to 1.4% in the 27-36 years category and 3.2% in the ≥ 37 years, though the difference was not statistically significant ($p = 0.36$). Education was statistically associated with infection where 10% of respondents who had no education had urinary schistosomiasis compared to 2.0%

having primary education and 3.2% with secondary education and above ($P=0.025$). Being categorized as having knowledge on the symptoms and risk factors for urinary schistosomiasis was not associated with having urinary schistosomiasis ($P=0.23$). History of treatment for previous infections was not associated with current infection ($p = 1.34$). Not having a toilet facility at home or water related activities were not associated with the current infection status ($P = 0.283$ and $P = 0.5$), respectively.

Table 3: Multivariate logistic regression models for urinary schistosomiasis by select risk factors

| Variable | Crude OR | Adjusted OR (95% CI) | P value |
|---|----------|----------------------|---------|
| Age, years | | | |
| <=26 | 1.0 | 1.0 | |
| 27-36 | 1.76 | 2.7 (0.5,15.0) | 0.237 |
| >=37 | 0.44 | 0.5 (0.04,6.3) | 0.611 |
| Education level | | | |
| No education | 3.331.0 | 6.51(1.2,32) | 0.023 |
| Primary education | 1.0 | 1.0 | |
| Secondary education+ | 0.616 | 1.2(.02,6.9) | 0.820 |
| Knowledge on urinary schistosomiasis | | | |
| Has knowledge | 1.0 | 1.0 | |
| No knowledge | 1.48 | 0.86 (0.25, 2.88) | 0.256 |
| Presence of toilet facility | | | |
| Present | 1.0 | 1.0 | |
| Not present | 0.27 | 0.4 (0.04,4.5) | 0.478 |

Table 3 above shows multivariable logistic regression models by select risk factors. Education was a significant predictor of urinary schistosomiasis infection, (OR=6.5, 95%CI: 1.2,32;P<0.05), that participants who lacked primary education had 6.5 times odds of having urinary schistosomiasis than those who had primary education.

No significant association was observed with other risk factors namely; age, knowledge on urinary schistosomiasis and having sanitation facility at home.

Table 4: Prevalence of female genital schistosomiasis based on the symptoms in the women with history of urinary schistosomiasis

| Female genital schistosomiasis | Frequency | Percent |
|--------------------------------|-----------|---------|
| Probable | 4 | 1.3 |
| Suspicious | 77 | 25.5 |
| None | 221 | 73.3 |
| Total | 302 | 100 |

Female genital schistosomiasis was likely in 26.8% of the women (probable in 1.3% and suspicious in 25.5%) of the participants.

CHAPTER FOUR: DISCUSSION

The aim of this study was to find the magnitude (prevalence and intensity) and the associated risk factors of urinary schistosomiasis among women of reproductive age in schistosomiasis endemic villages of Chikuyu and Mwiboo; as well as to estimate the magnitude of female genital schistosomiasis in the same study population. The overall prevalence of urinary

schistosomiasis was 4% with no significant differences between the two villages, or by age of the respondents.

The prevalence of urinary schistosomiasis in this population was low as compared to other areas practicing irrigation farming (4, 11, and 16). The low prevalence rate of urinary schistosomiasis in this study might reflect the low level of exposure and low dependence of the respondents on infected water bodies, and adequate health education. There are a number of protected water sources which are used for household utilization in the study area different from what has been reported in other studies (10).

The intensity of urinary schistosomiasis was medium among infected women. This intensity is high as compared to that found in a community-based study in Tanzania where a median intensity of haematobium eggs in urine of 2.2 eggs/10 ml of urine was observed [15]. This high intensity in this study population as compared to the other study in northern Tanzania could be due to the reason that there was no regular mass deworming campaign conducted in this study population. Mass treatment campaigns in this area is only conducted among school children. However, this intensity is low when compared to that observed in Madagascar, 76 ova /10 ml of urine (17).

Education level was significantly associated with the infection the multivariable logistic regression analysis. Women with no formal education were six and half times more likely to be diagnosed with urinary schistosomiasis than women who had primary education (OR = 6.5 95% CI: 1.2 – 3.2; P=0.023). These results are similar to those observed in the other studies, where subjects with no education had about two times the risk of infection (26).

Age was not found to be statistically associated with the prevalence of urinary schistosomiasis. Similar findings have been reported by some studies (29), however our findings contradict other studies that have observed age to be a significant predictor of urinary schistosomiasis (27, 28, 30). The similarity in the pattern of the infection among the individuals of different age groups within women of reproductive age in this study could be due to equal distribution of the exposure to the infected water sources among study participants. This implies that a control measure can be effective across all the women in this age group (reproductive age).

Farming, and domestic water related activities were not found to be risk factors for urinary schistosomiasis infection in this study. This is in contrast to other studies where in areas practicing irrigation farming, there were high numbers of infected women of reproductive age (10). In this study population, women did not depend on irrigation canals as sources of water for domestic use. It is also possible that women were not involved with irrigation farming. It is possible that there are other activities rather than the ones investigated which could be associated with the infection. Other sources of infection among the study participants need to be investigated.

Lack of sanitation facilities (toilet at home) was also found to not to be significantly associated with infection. This is in contrast to other studies where lack of sanitation facilities was associated with high prevalence of schistosomiasis attributed to the use of infected water sources (10, 31). In our study population, a small percentage of women (3.6%) reported to not having a toilet in their household. The availability of toilets for use in this population minimizes the risk of transmission of infection. Promotion of access and use of toilets should be made to the few populations who do not have toilets yet to control transmission of infection through this route.

In this study, having knowledge on how urinary schistosomiasis can be acquired and transmitted was not significantly associated with urinary schistosomiasis infection. This contradicts the study from southern Nigeria where 95% of the population lacked any knowledge on urinary schistosomiasis (28). The lack of an association could be due to the instrument used to assess knowledge or the cut-off points used to dichotomize the population.

Female genital schistosomiasis may be a problem in these communities. Our study observed that 1.3% of the participants had probable FGS and 25% had suspicious FGS. This prevalence appears to be low when compared with the findings from other studies where it ranged from 37% to 75% (15, 16). The symptoms used in this study were adopted from the study by Kjetland et al. in endemic rural Zimbabwe and have been reported by other studies (4, 20, 22). These symptoms and signs are non specific to genital schistosomiasis and STI hence under reporting may have occurred. However, our study shows that FGS may be a problem in this community. The possible link between FGS and HIV makes this an important health problem

that needs to be investigated further. More studies using more sensitive diagnostic approaches need to be conducted in these populations.

4.1 Limitations

Recall bias could have affected the responses on the history of urinary schistosomiasis hence affecting FGS status results. The short recall period used to refer last infection may have minimized recall bias.

Sampling error due to the use of simple random sampling may have affected our findings. However, our sample size was modest and may have reduced sampling error to have minimal effect on our results. Inferences to all women of reproductive age from endemic areas should be done with caution.

The use of symptoms and signs to diagnose FGS are non-specific to FGS. The symptoms and signs used have been reported by other studies and found to have strong correlation to true FGS infection. However, underreporting/over reporting of our estimate may have occurred as some infections are asymptomatic or could have been due to STIs which have similar clinical presentation.

4.2. Conclusions

Urinary schistosomiasis is present in women of reproductive age in Chikuyu ward though at a low magnitude. Lack of education was significantly associated with urinary schistosomiasis infection. Female Genital Schistosomiasis may be a common problem in women of reproductive age in Chikuyu ward.

4.3. Recommendations

- Women of reproductive age should be considered in schistosomiasis control programs because of the reproductive consequences of the infection in this population.

- Girls should be encouraged to go to school as exposure to school minimizes poor health outcomes such as urinary schistosomiasis.
- More studies on FGS should be done in urinary schistosomiasis endemic areas, as it may be a public health problem.
- Awareness campaigns on the effect of urinary schistosomiasis to reproductive health should be carried out among women, health personnel and the general population.
- Use of toilets in rural populations should be promoted to further reduce transmission of infections

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APPENDIX I: Questionnaire (English version) (To be filled by the interviewer)

Hello. I am coming from Muhimbili University to conduct a study in your area to determine the level of infection with urinary schistosomiasis in women of reproductive age. The results of this study will be useful to plan for interventions. We are going to ask you simple questions related to urinary schistosomiasis and at the end of the interview we will request you to provide some urine for further investigation. In case you are found with the infection we will refer you to the nearby the health facility for treatment. We promise you that the information

you will provide will be strictly confidential hence request you to be truthful in your responses.

PART A: Demographic data

1. ID.NO -----
2. Village -----
3. Hamlet - -----
- 4.How old are you? -----(years) What is your date of birth-----
- 5.Marital status- married----- not married-----
6. What is the highest level of education that you have attained? (put a tick)
 - [i] none-----
 - [ii] Primary-----
 - [iii]Secondary-----
 - [iv]College-----
 - [5.] Post secondary (specify) -----
7. How long have you lived in this village? -----
8. What is your occupation?
 - [i] student-----
 - [ii]housewife-----
 - [iii]petty business-----
 - [iv]others(specify)-----
- 9.Which water source do you depend on for domestic use?
 - (i) tap water----- [1] YES 2.[NO]
 - (ii)deep well----- [1] YES 2.[NO]
 - (iii)ponds----- [1] YES 2.[NO]
 - (iv)shallow well----- [1] YES 2.[NO]

(v)river----- [1] YES 2.[NO]

(vi)lake----- [1] YES 2.[NO]

10. Which water source did you depend on for domestic use during your childhood?

(i) tap water----- [1]Yes [2]No

(ii)deep well----- [1]Yes [2]No

-(iii)ponds----- [1]Yes [2]No

(iv)shallow well----- [1]Yes [2]No

(v)river---- [1]Yes [2]No

(vi)lake----- [1]Yes [2]No

11. What activity does bring you to the water source?

(i)agricultural activities----- [1]Yes [2]No

(ii)fetching water----- [1]Yes [2]No

(iii)fishing----- [1]Yes [2]No

(iv)washing----- [1]Yes [2]No

-(v)swimming----- [1]Yes [2]No

(vi)others(mention)-----

PART B: RISK FACTORS FOR SCHISTOSOMIASIS (put a tick)

I will now ask you some questions about urinary schistosomiasis

12. Have you ever heard of urinary schistosomiasis?

[1] Yes

[2] No-----

13. How do one acquire it?

[i] through sexual intercourse----- [1] YES 2.[NO]

[ii] contacting infected water----- [1] YES 2.[NO]

[iii] eating infected foodstuffs----- [1] YES 2.[NO]

14. Which symptoms do you think are related to urinary schistosomiasis?

[i] Coughing [1] YES 2.[NO]

[ii] Itching [1] YES 2.[NO]

[iii] Headache [1] YES 2.[NO]

[iv] Fever [1] YES 2.[NO]

[v] Stomachache [1] YES 2.[NO]

[vi] Urine in blood [1] YES 2.[NO]

[vii] Blood in feces [1] YES 2.[NO]

[ix]. diarrhea [1] YES 2.[NO]

15. Can someone with urinary schistosomiasis be cured?

1. Yes

2. No

16. How can it be treated?

1. By swallowing tablets [1] YES 2.[NO]

2. By injection [1] YES 2.[NO]

3. By being operated [1] YES 2.[NO]

4. By traditional medicine

17. Which activities can make you acquire the infection?

(i) swimming----- [1] YES 2.[NO]

-(ii) farming----- [1] YES 2.[NO]

-(iv) fetching water----- [1] YES 2.[NO]

-(v) washing utensils----- [1] YES 2.[NO]

- (vi) bathing----- [1] YES 2.[NO]
 (vii) sexual intercourse----- [1] YES 2.[NO]-
 (viii) fishing----- [1] YES 2.[NO]

18. Does your home place have a latrine

- (1) Yes-----
 -(2) No-----

19. If no where do you urinate?

- (i) to the neighbour's toilet----- [1] YES 2.[NO]
 (ii) in the bush----- [1] YES 2.[NO]

20. Is there any latrine around the areas you conduct these activities?

1. Bathing? [1] YES 2.[NO] (i) Yes----- (ii) no-----
 2. Fetching water [1] YES 2.[NO] (i) Yes----- (ii) No-----
 3. Farming [1] YES 2.[NO] (i) Yes----- (ii) No-----
 4. Fishing [1] YES 2.[NO] Yes----- (ii) No-----
 5. Swimming [1] YES 2.[NO] Yes----- (ii) No-----
 6. Washing clothes [1] YES 2.[NO] Yes----- (ii) No-----

21. Where do you urinate during the above activities?

- (i) in the nearby bush----- [1] YES 2.[NO]
 (ii) around the water source----- [1] YES 2.[NO]
 -(iii) There is a toilet [1] YES 2.[NO]

Now I will ask you questions regarding your treatment history with urinary schistosomiasis

22. Have you ever suffered urinary schistosomiasis? (i) yes----- (ii) no-----

When did you suffer?

1. Now [1] YES 2.[NO]
 2. A month ago [1] YES 2.[NO]
 3. More than 3 months ago but less than six months [1] YES 2.[NO]
 4. More than six months ago? [1] YES 2.[NO]
 5. A year ago [1] YES 2.[NO]

6. More than a year ago [1] YES 2.[NO]

23. Which symptoms did you have?-

1. Blood in urine [1] YES 2.[NO]

2. Blood in faeces [1] YES 2.[NO]

3. Fever [1] YES 2.[NO]

4. Headache [1] YES 2.[NO]

5. Stomach ache----- [1] YES 2.[NO]

24. Did you get investigated in the health facility? [1] YES 2.[NO] (i)Yes----- (ii)no-----

25. Did you get treatment? [1] YES 2.[NO] (i)Yes----- (ii)No-----

26. What medication did you get-----

27. Where did you get that medication?

(i) at the health facility----- [1] YES 2.[NO]

(ii) at the local herbalist----- [1] YES 2.[NO]

(iii) From a friend/ neighbour----- [1] YES 2.[NO]

(-iv)-Others(specify)----- [1] YES 2.[NO]

PART C (Circle the correct answer)

Now I will ask you questions on urinary schistosomiasis in the female reproductive tract (female genital schistosomiasis). Remember, the answers you provide will be kept confidentially so do not hesitate to tell the truth.

28. Have you ever heard of genital schistosomiasis in women (Female Genital Schistosomiasis)?

[1] Yes-----

[2] No-----, If you'r answer is no go to question no.31.

29. If yes, where did you get such information?

[i] At the health facility----- [1] Yes [2].No

[ii] At school----- [1] Yes [2]No

[iii] From a friend, [1] Yes [2]No

- [iv.)Radio [1] Yes [2]No
 (v) Newspaper [1] Yes [2]No
 (vi) leaflets [1] Yes [2]No
 [vii] tv [1] Yes [2]No
 (viii)Others (specify)-----[

30.Have you ever suffered female genital schistosomiasis?

[1]Yes -----

[2] No-----

[3]I don't know-----

31.Have you ever suffered the following symptoms?

[1] Vaginal itching [1] Yes 2.[No]

[2] Profuse vaginal discharge [1] Yes 2.[No]

[3] Abdominal pain [1] Yes 2.[No]

[4] Post coital bleeding [1] Yes 2.[No]

[5]Irregular menstrual cycles [1] Yes 2.[No]

32.Did you go for treatment after suffering those symptoms? If the answer is no end here.

[1] Yes

[2].No

33.What diseases were you diagnosed with?-----

34.Which medication did you get?-----

35.Did the symptoms disappear after that medication?

[1] Yes-----[2] No-----

APPENDIX II:QUESTIONNAIRE: SWAHILI VERSION

Habari.Mimi ni mwanfunzi wa shahada ya uzamili katika chuo cha afya na tiba muhimbili.Kama sehemu ya masomo yangu natakiwa kufanya utafiti wa kisayansi.Lengo la utafiti wangu ni kutaka kufahamu kiwango cha maambukizi ya ugonjwa wa kichocho cha mkojo kwa wanawake wenye umri wa kuzaa katika kata ya Chikuyu.Matokeo ya utafiti huu yatatumika na wadau wa afya kuandaa mipango madhubuti ya kuthibiti ugonjwa huu katika maeneo haya.Nitakwenda kukuuliza maswali kadhaa kuhusiana na ugonjwa wa kichocho cha

mkojo na baadae nitakuomba unipatie mkojo kwa ajili ya uchunguzi. Nakuahidi kwamba taarifa unazonipa zitakuwa siri kubwa, hivyo naomba uwe mkweli.

(Zungushia jibu sahihi litakalotolewa na mshiriki)

Sasa nitakuuliza maswali ya jumla kuhusiana na wewe taarifa zako binafsi .

1.Namba ya utambulisho -----

2. Kijiji -----

3. Kitongoji -----

4.Una umri gani? -----(miaka)

4a) Ulizaliwa tarehe ngapi? ----/----/----- (tarehe/mwezi/mwaka)

5.Hali ndoa kwa sasa

[i]Nimeolewa

[ii]Sijaolewa

[iii]Naishi na mwanamume

[iv]Nimetengana na mume

[v]Nimepewa/toa talaka

[vi].Mjane

6. Ni ngazi ipi ya juu ya elimu uliyoifikia?

[i] Sijapata elimu yoyote

[ii] Elimu ya msingi

[iii] Elimu ya sekondari

[iv] Chuo

[v] Nyingine (taja) -----

7.Ni kwa muda gani umeishi katika kijiji hiki? ----- (miaka)

8. Unafanya shughuli gani?

[i]Mwanafunzi

[ii] Mama wa nyumbani

[iii] Biashara ndogondogo

[iv] Mkulima

[v] Nyingine kama ipo (taja)-----

9. Ni aina gani ya chanzo cha maji unayoyatumia katika maisha ya kila siku?

[i] maji ya bomba [1] Ndiyo [2] Hapana

[ii] kisima kirefu [1] Ndiyo [2] Hapana

[iii] dimbwi [1] Ndiyo [2] Hapana

[iv] kisima kifupi [1] Ndiyo [2] Hapana

[v] Mto [1] Ndiyo [2] Hapana

[vi] Nyingine kama ipo(taja)-----

10. Ni chanzo cha aina gani cha maji uliyokuwa ukatumia katika muda mwingi wa maisha yako ya utoto?

[i] maji ya bomba [1] Ndiyo [2] Hapana

[ii] kisima kirefu [1] Ndiyo [2] Hapana

[iii] dimbwi [1] Ndiyo [2] Hapana

[iv] kisima kifupi [1] Ndiyo [2] Hapana

[v] Mto [1] Ndiyo [2] Hapana

[vi] Nyingine kama ipo(taja)-----

11. Ni shughuli gani unazozifanya zinazokufanya kuingia/kugusana na chanzo cha maji kilichoko wazi?

[i] Kilimo [1] Ndiyo [2] Hapana

[ii] Kuchota maji [1] Ndiyo [2] Hapana

[iii] Kuvua samaki [1] Ndiyo [2] Hapana

[iv] Kufua----- [1] Ndiyo [2] Hapana

[v] Kuoga/kuogelea [1] Ndiyo [2] Hapana

[vi] Nyingine kama ipo(taja)-----

SEHEMU B: VISABABISHI VYA KICHOCHO (Zungushia jibu lililotolewa na mshiriki)

Sasa nitakuuliza maswali kadhaa kuhusiana na ugonjwa wa kichocho cha mkojo

12. Je umewahi kusikia kuhusu kichocho cha mkojo? Kama jibu lako ni hapana nenda swali la 18.

[1]Ndiyo

[2]Hapana

13. Kama ndiyo, ni njia zipi kati ya hizi zinaweza kukusababishia kupata kichocho cha mkojo?

[i]. Kujamiiana [1] Ndiyo [2] Hapana

[ii]. Kugusa/ kukanyaga maji machafu [1] Ndiyo [2] Hapana

[iii]. Kula vyakula vichafu [1] Ndiyo [2] Hapana

14. Ni dalili zipi unazodhani zinahusiana na ugonjwa wa kichocho cha mkojo?

[i] Kukohoa [1] Ndiyo-----[2] Hapana

[ii] Kuwashwa [1] Ndiyo-----[2] Hapana

[iii] Kuumwakichwa [1] Ndiyo-----[2] Hapana

[iv] Homa [1] Ndiyo----- [2] Hapana

[v] Maumivu ya tumbo [1] Ndiyo-----[2] Hapana

[vi] Kukojoa mkojo wenye damu [1] Ndiyo----- [2] Hapana

[vii] Kujisaidia kinyesi chenye damu [1] Ndiyo-----[2] Hapana

[viii] Kuharisha [1] Ndiyo-----[2] Hapana

15. Je mtu mwenye kichocho cha mkojo anaweza kitibiwa na kupona?

[1] Ndiyo

[2] Hapana

16. Ni kwa njia gani kichocho cha mkojo kinaweza kutibiwa?

[i] Kwakumeza vidonge [1] Ndiyo-----[2] Hapana

[ii] Kuchomwa sindano [1] Ndiyo-----[2] Hapana

[iii] Kufanyiwa upasuaji [1] Ndiyo-----[2] Hapana

[iv] Madawa ya kienyeji [1] Ndiyo-----[2] Hapana

[v] Nyingine (taja)-----

17. Kwa maoni yako ni shughuli gani zinaweza kukuweka katika hatari ya kuambukizwa kichocho cha mkojo?

- [i].Kuogelea katika maji machafu [1]Ndiyo [2] Hapana
- [ii]Kilimo cha umwagiliaji [1]Ndiyo [2] Hapana
- [iii]Kuteka maji [1]Ndiyo [2] Hapana
- [iv]Kuosha vyombo katikamaji machafu[1]Ndiyo [2] Hapana -
- [v]Kuoga katika maji machafu [1]Ndiyo [2] Hapana
- [vi]Kujamiiana [1]Ndiyo [2] Hapana
- [vii] Kuvua samaki [1]Ndiyo [2] Hapana
- [viii]kufua [1]Ndiyo [2] Hapana

Sasa nitakuuliza maswali kuhusiana na hali ya usafi wa mazingira na jinsi unavyotupa taka , tafadhali kuwa mkweli, taarifa hizi zitatunzwa kwa siri.

18. Je eneo lako la makazi lina choo? kama jibu ni ndiyo nenda swali namba 20.

[1] Ndiyo-----

[2] Hapana-----,

19.Kama hakuna je, unakojoa wapi?

[i] natumia choo cha jirani [1] Ndiyo-----[2] Hapana

[ii] Kichakani--- [1] Ndiyo-----[2] Hapana

[iii]Pengine(taja)-----

20.Je kuna choo katika maeneo unayofanyia shughuli hizi?

(i)Kuoga [1]Ndiyo [2] Hapana

(ii)Kuchota maji [1]Ndiyo [2] Hapana

(iii) Kulima [1]Ndiyo [2] Hapana

(iv)Kuvua samaki [1]Ndiyo [2] Hapana

(v) Kuogelea [1]Ndiyo [2] Hapana

(vi) Kufua [1]Ndiyo [2] Hapana

21 Wakati wa shughuli tajwa hapo juu ukijisikia haja unajisaidia/ kukojoa wapi?

[i] Kichakani----- [1]Ndiyo [2] Hapana

[ii] Karibu na chanzochamaji----- [1]Ndiyo [2] Hapana

[iii] Kuna choo mahali hapo [1]Ndiyo [2] Hapana

[iv] Sehemu nyingine (itaje)-----

Sasa nitakuuliza maswali kuhusiana na matibabu ya kichocho kwa kipindi kilichopita

22. Je umewahi kuugua kichocho cha mkojo?

[1] Ndiyo-----[2] Hapana-----

Kama jibu ni hapana hamia sehemu C. Kama jibu ni ndiyo je, ni lini mara ya mwisho uliugua kichocho cha mkojo?

[i]. Naumwa sasa hivi [1]Ndiyo [2] Hapana

[ii] Mwezi mmoja uliopita [1]Ndiyo [2] Hapana

[iii] Zaidi ya miezi mitatu iliyopita lakini chini ya miezi sita [1]Ndiyo [2] Hapana

[iv] Zaidi ya miezi sita iliyopita [1]Ndiyo [2] Hapana

[v] Mwaka mzima umepita [1]Ndiyo [2] Hapana

[vi] Zaidi yamwaka uliopita [1]Ndiyo [2] Hapana

[vii] Nyingine(taja)-----

23. Ni dalili gani ulikuwa nazo kipindi unaumwa kichocho cha mkojo?

[i] Kukojoa mkojo wenye damu----- [1]Ndiyo [2] Hapana

- | | |
|---|-----------------------|
| [ii]Kujisaidia kinyesi chenye damu----- | [1]Ndiyo [2] Hapana |
| [iii]Homa----- | [1]Ndiyo [2] Hapana |
| [iv]Kuwashwa mwili----- | [1]Ndiyo [2] Hapana - |
| [v]Maumivu ya tumbo----- | [1]Ndiyo [2] Hapana |
| [vi]Nyingine(itaje)----- | |

24.Je ulipougua dalili hizo hapo juu ulifanyiwa uchunguzi katika kituo cha huduma za afya?

- [1] Ndiyo
[2]Hapana

25.Je ulipata matibabu ya kichocho cha mkojo ulipougua dalili tajwa hapo juu?

- [1] Ndiyo
[2] Hapana

26.Ulipewa matibabu gani?-----

27.Ni wapi ulipatiwa hayo matibabu?

- | | |
|--|---------------------|
| [i] Katika kituo cha afya | [1]Ndiyo [2] Hapana |
| [ii] Kwa mganga wa dawa za miti shamba | [1]Ndiyo [2] Hapana |
| [iii]Kwa rafiki/jirani | [1]Ndiyo [2] Hapana |
| [iv]Kwingine(taja)----- | |

SEHEMU C (Zungushia jibu linalotolewa na mshiriki)

Sasa nitakuhoji maswali kuhusiana na ugonjwa wa kichocho kwenye viungo vya uzazi wa mwanamke(female genital schistosomiasis).Kumbuka, taarifa hizi zitatunzwa kwa siri, hivyo niambie ukweli.

28. Je umewahi kusikia kuhusu kichocho kwenye viungo vya uzazi wa mwanamke (Female Genital Schistosomiasis)? kama jibu ni hapana nenda swali namba 31

- [1]Ndiyo
[2]Hapana

29. Kama ndiyo, ulipata wapi habari hizo?

- | | |
|---------------------------------|-------------------------|
| [i] Katika kituo cha afya----- | [1]Ndiyo-----[2] Hapana |
| [ii]Shuleni----- | [1]Ndiyo-----[2] Hapana |
| [iii] Kwa rafiki, | [1]Ndiyo-----[2] Hapana |
| [iv]Redio | [1]Ndiyo-----[2] Hapana |
| [v] Gazeti | [1]Ndiyo-----[2] Hapana |
| [vi] vipeperushi | [1]Ndiyo-----[2] Hapana |
| [vii] televisheni | [1]Ndiyo-----[2] Hapana |
| [vii]Nyingine(taja)----- | |

30. Je umewahi kuugua female genital schistosomiasis?

- [1]Ndiyo
[2]Hapana
[3]Sijui

31. Je umewahi kupatwa na dalili zifuatazo?

- | | | |
|---|-----------|------------|
| [i] Kuwashwa ukeni | [1] Ndiyo | [2] Hapana |
| [ii] Kutokwa na majimaji yasiyo ya kawaida ukeni | [1] Ndiyo | [2] Hapana |
| [iii] Maumivu ya tumbo | [1] Ndiyo | [2] Hapana |
| [iv]Kutokwa na damu mara baada ya kujamiiana | [1]Ndiyo | [2] Hapana |
| [v]Kubadilika mara kwa mara kwa mzunguko wa hedhi | [1] Ndiyo | [2]Hapana |

32. Je ulitafuta matibabu ulipopatwa na dalili tajwa hapo juu? Kama jibu ni hapana ishia hapo.

- [1]Ndiyo
[2]Hapana

33. Je, uligundulika ulikuwa na ugonjwa gani? -----

34. Je ulipewa matibabu gani?-----

35. Je dalili hizo ziliisha ulivyopatiwa hayo matibabu?

[1] Ndiyo

[2] Hapana

ASANTE KWA USHIRIKI WAKO

APPENDIX III: Consent Form (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS

INFORMED CONSENT FORM

ID-NO -----

Consent to Participate in INTERVIEW

Greetings! My name is Joseline Ishengoma and I am to working on this research project with the objective of learning about the “Prevalence, intensity and associated factors of urinary schistosomiasis and existence of the symptoms of female genital schistosomiasis among women of reproductive age in Chikuyu ward, Manyoni Disrtict.

Purpose of the study

The study is intended to collect information about urinary schistosomiasis and its reproductive sequela from women who are permanent residents of Chikuyu ward in the selected villages. Findings from the study will help the principal investigator to write a dissertation which is a partial fulfilment of MSc (TDC) for academic year 2011/2012.

What Participation Involves

If you agree to participate in the study, you will be required to answer questions and to provide urine. Do not hesitate because in this interview there is no RIGHT or WRONG answers.

Confidentiality

All collected information will be entered into computers with only the study identification number. Confidentiality will be provided and unauthorized persons will have no access to the data collected.

Risks.

We assured you that no harm will happen to you because of participation in this study

Rights to Withdraw and Alternatives

Participation in this study is completely your choice. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve penalty or loss of any benefits to which you are otherwise entitled.

Benefits

If you agree to take part in this study, you will benefit directly or indirectly. Indirectly, the information you will provide will help us to understand and know the magnitude of urinary schistosomiasis in women of reproductive age in Chikuyu ward, and the findings will be disseminated to the policymakers especially health planners so as to help in addressing the problem of urinary schistosomiasis among women of reproductive age. Directly, you may receive assistance to any problem(s) which may be known during the study period. If you will have any problem(s), please be advised to tell the researcher who may accompany you to the in-charge of the clinic for assistance.

Who to contact

If you ever have questions about this study, you may contact the study Coordinator or the Principal Investigator: Joseline Ishengoma, Muhimbili University of Health and Allied Sciences, P. O. Box 65015, Dar es Salaam. If you ever have questions about your rights as a participant, you may call Dr. Germana Leyna – the Supervisor of this study, and Dr J. Masallu, the Acting Chairman of the University Research and Publications Committee, P. O. Box 65001, Dar es Salaam. Tel: 2150302-6.

Signature:.....

Do you agree? Participant agrees..... Participant does not agree.....

I _____ have read/listened the contents in this form. My questions have been answered. I agree to participate in this study.

APPENDIX IV: Consent Form (Swahili Version)

CHUO CHA SAYANSI ZA TIBA MUHIMBILI
KURUGENZI YA UTAFITI NA MACHAPISHO
FOMU YA RIDHAA
ID-NO :-----

RIDHAA YA USHIRIKI KATIKA UTAFITI

Habari! Jina langu ni: Joseline Ishengoma, ni mwanafunzi wa shahada ya uzamili katika Chuo Kikuu cha Sayansi za Afya Muhimbili. Ninafanya utafiti kama sehemu ya masomo yangu, kuhusu Kiwango cha kichocho cha mkojo na matokeo yake yake katika afya ya uzazi kwa wanawake wenye umri wa kuzaa. Utafiti huu unafanyika katika Halamashauri ya wilaya ya Manyoni kata ya Chikuyu.

Umuhimu wa utafiti huu

Matokeo ya utafiti huu yatasaidia kuelewa kiwango cha tatizo hili na kujua viashiria vyake katika eneo hili.

Ushiriki unahusisha nini

Ushiriki unahusisha kukubali kujiunga na utafiti huu kwa hiari na kujibu maswali kama yalivyo katika dodoso la utafiti huu.

Usiri

Taarifa zote utakazo jaza katika dodoso ni siri na wala jina lako halitaingizwa katika kompyuta isipokua namba ya dodoso tu.

Uwezekano wa kutokea jambo la hatari

Sitarajii kama kuna jambo lolote baya linaweza kutokea kwa kushiriki katika utafiti huu.

Haki ya kujitoa na mambo mbadala

Ushiriki wako katika utafiti huu ni wa hiari. Hivyo unayo haki ya kujibu aukutojibu swali lolote katika dodoso. Kukataa kujibu swali lolote hakuna adhabu yoyote wala haupotezi haki zako kama mshiriki na katika kupata huduma za afya kama kama wanawake wengine.

Faida kwa Mshiriki

Endapo utakubali kushiriki katika utafiti huu unaweza ukapata faida ya moja kwa moja au isiyo ya moja kwa moja. Faida isiyo ya moja kwa moja, ni kwamba majibu yako yatakuwa mchango mkubwa katika matokeo ya jumla ya utafiti huu kwanza kwa kujua ukubwa wa tatizo hili; pili, ambayo yanatarajiwa kuleta mapendekezo yatakayosaidia kupunguza tatizo hili kwa wanawake wenye umri wa kuzaa katika eneo hili. Faida ya moja kwa moja unaweza ukapata msaada kwa matatizo yatakayojulikana wakati wa utafiti huu. Kama utakuwa na swali

au tatizo unashauriwa kumweleza mtafiti ambaye ukitaka atakupeleka moja kwa moja katika kituo cha afya kwa ajili ya msaada zaidi.

Mawasiliano

Endapo utakuwa na swali lolote kuhusu utafiti huu tafadhali wasiliana na msimamizi wa utafiti huu Dr Germana Leyna au mtafiti mkuu Joseline Ishengoma, Chuo Kikuu Kishiriki cha Sayansi za Afya, P.O.Box 65015, Dar es Salaam.

Endapo una swali lolote kuhusu haki zako kama mshiriki katika utafiti huu, wasiliana na Dr. J. Masallu, Kaimu Mwenyekiti wa Utafiti na Machapisho, SLP 65001, Dar es Salaam. Simu: 2150302-6.

Sahihi-----Je unakubali kushiriki?-----Ninakubali/
kushiriki Sikubali kushiriki

Mimi-----Nimesoma/nimesomewa na kuyaelewa vyema
maelezo yaliyomo katika fomu hii. Maswali yangu yamejibiwa. Ninakubali kushiriki katika
utafiti huu.

Sahihi ya Mshiriki-----

Sahihi ya Mtafiti -----

Tarehe ya kusaini-----