Original Research Article

Knowledge and practices toward female genital schistosomiasis among community women and healthcare workers in Anambra State, Nigeria.

ABSTRACT

Background

Schistosoma haematobium causes urogenital schistosomiasis and is widely distributed in Nigeria. In women, the parasite can cause Female Genital Schistosomiasis (FGS), a gynecological manifestation of urogenital schistosomiasis that is highly neglected and overlooked in public health programmes and by policy makers.

Aim of the study

This study aims to understand the knowledge and practices towards FGS among community women and health workers in some urogenital ~~S~~ schistosomiasis endemic areas of Anambra State Nigeria.

Methodology

This was a cross-sectional study carried out between October 2023 and March 2024, in the three senatorial zones of Anambra State. The communities involved are Omogho, Oraifite, ,Achalla, Nsugbe and Awkuzu, these towns are schisto-endemic and surrounded by streams, lakes and rivers. Pretested structured ~~O~~ open ended questionnaires was administered to randomly selected community women aged between 16 and 50 years and community health workers working in the PHCs of the study areas who consented, to determine their level of knowledge, attitude and perception for Female Genital Schistosomisis. A total of 530 participants were involved (500 community women, and 30 community health workers).

Results

One hundred and fifty two (30.4%) of the women had knowledge of urogenital schistosomiasis but all of them 500(100%) had not heard of FGS, 500(100%) of them had no idea of what causes FGS or the symptoms of FGS. All the health workers 30(100%) had knowledge of urogenital schistosomiasis but only 5(16.7%) had knowledge of FGS. Thirty (100%) of the health workers treated all vaginal cases with antibiotics, there was no linkage to urogenital ~~S~~ schistosomiasis. These community women come in contact with the infected water daily 361(72.2%) and weekly,96(19.2%), and engage in open defecation 86(17.7%) and urination 237(47.4%) into the water bodies. In the case of being infected with vaginal itching, vaginal sores or other symptoms majority 319(63.8%) of them ignore the symptoms, while 96(19.2%) use herbs, only 35(7.0%) seek medical attention. Health workers treat all reproductive cases with antibiotics and could not link those ailments to water contact.

Conclusion

This study illustrates a critical need for the national health control program to integrate public health education about FGS to health workers, and community women during the implementation of school- and community-based mass drug administration (MDA) Programs. The improvement of water, sanitation and hygiene (WASH) facilities is also recommended.

Keywords: healthcare workers, knowledge, female genital schistosomiasis

1. INTRODUCTION)

It is estimated that FGS affects 56 million women and girls in sub-Saharan Africa.[1]. Girls and women are frequently exposed to *Schistosoma haematobium* infection through percutaneous contact with contaminated water sources. [2]. The parasite is endemic in many communities characterized by low socio-economic status with poor or inadequate water, sanitation and hygiene (WASH) infrastructure[3]. In endemic areas, all community members, irrespective of their age and gender, are at risk of infection whenever their skin contacts with infested water [4]. However, specific gendered roles and norms may increase the risk of infection for some groups. For instance, girls and women of reproductive age perform household and other related activities—such as washing clothes and dishes, fetching water for domestic use, and paddy farming—these roles put them at high risk as they involve skin contact with water [5]. Clinical manifestations of FGS include vaginal bleeding, vaginal itching, pain during sexual intercourse, and formation of sandy patches on the cervix and uterus (Kjetland20008). FGS has been linked to increased susceptibility to HIV in women [6]. Untreated FGS can lead to infertility, miscarriage, ectopic pregnancies, and spontaneous abortions [6].., bladder cancer, kidney diseases, mortality of mother and child [7][8]. In addition, untreated FGS can lead to depression and social stigma in girls and women with the symptoms of this disease (because of being perceived to have a sexually transmitted infection [(STI]) or who are struggling with

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infertility [9]. Victims of female genital schistosomiasis (FGS) may lose their homes and relationships, as well as their health, due to false claims resulting from misdiagnosis of sexually transmitted infections. It is generally accepted that good knowledge and perception of a disease in endemic communities play a significant role in attaining sustainable disease control. FGS symptoms are similar to, STIs, thus a low level of knowledge of FGS among healthcare workers leads to many FGS cases going undetected and unmanaged within primary healthcare.[10]. Girls and women are frequently overlooked in these programs thus increasing the risk for FGS over time.[11][,12]. It is therefore necessary to determine the knowledge and perception level as well as practices of some women and health workers towards urogenital schistosomiasis endemic areas in Anambra State. This will expose the level of the information about FGS in the studied communities and further help health stakeholders on how to re-strategise to reduce and if possible, eliminate the infection.

3 2.0 MATERIALS AND METHODS

3 2.1 Study a Area

This study was carried out in Anambra state. The state is located in latitude 6.2758 N and longitude 7.0068E, it has a population of 4182,032 according to the 2006 Nigeria census (NPC 2006). It has an area of 1774 square meters. Anambra state has a tropical wet and dry or savanna climate with yearly temperature of 28.99c(84.18F.It has about 212.36mm of rain and 243.38 rainy days annually.(weather and climate. Com),(FIG. 1, Map of Anambra State) showing the study areas. The study sites are bounded by streams and rivers where indigenes carry out their daily chores like bathing and washing. These fresh water bodies provide

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suitable habitats to snails which are intermediate hosts of *Schistosomes*.

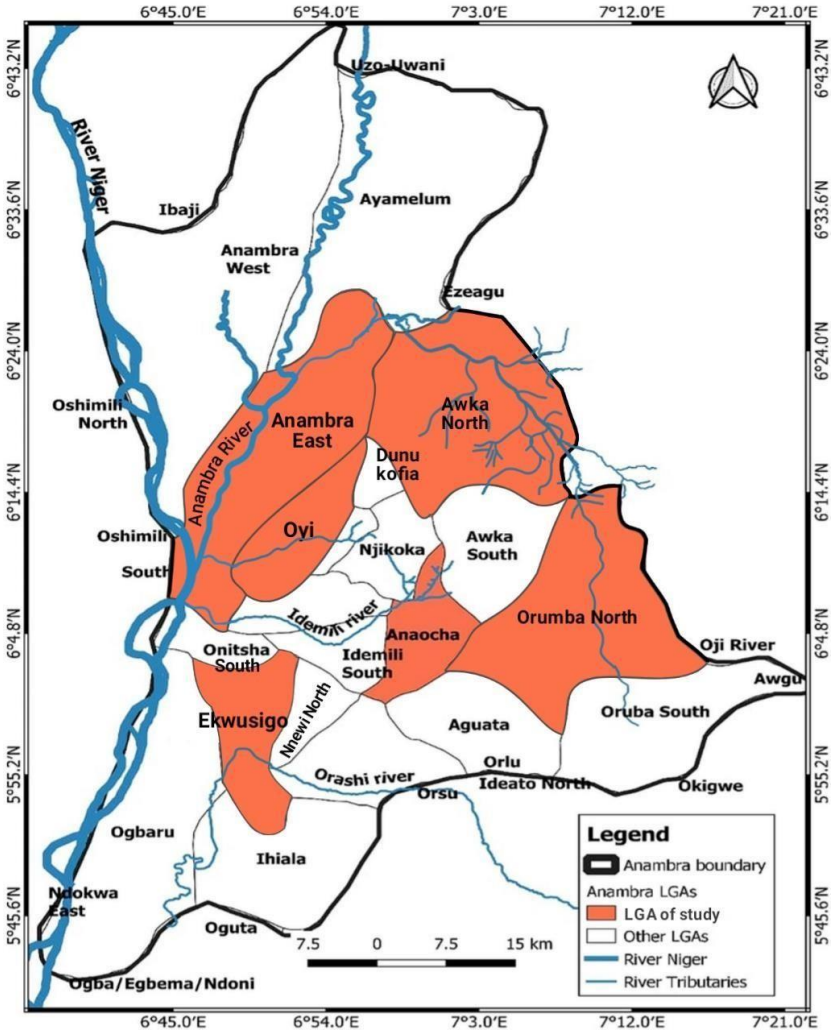

Fig1: Map of Anambra State showing the selected local government area for the study (Source: Geography Information System Laboratory, Department of Estate Survey and Geo i Informatics, Nnamdi Azikiwe University, 2023)

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3.3 2.2 Study Design

The study was carried out at the 3 senatorial zones of Anambra State. In Anambra North Senatorial Zone, 2 Local government areas were selected, (Oyi and Anambra East). In Anambra South senatorial zone, Orumba North and Ekwusigo LGAs were selected. In Anambra central senatorial zone, Anaocha and Awka North LGAs were selected. Previous studies implicated these communities as endemic areas for urogenital schistosomiasis [13],[14],[15].The study was a cross-sectional study conducted from October 2023 to March 2024 and the study participants were randomly selected. The perspectives and practices of community women and community health workers at the PHCs regarding FGS were investigated through questionnaires.

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2.3.4 Study p Population

The study population consisted of 500 women aged between 16 and 50 years who consented and were residents of the study areas and 30 community health workers working in these communities.

32.4 Inclusion Criteria

Inclusion criteria include consented women, women that have lived in these communities for at least 10 years, women aged 16- 50 years

32.5 Exclusion c Criteria

Women that did not give consent, H health workers that do not work in the study communities and women who have not lived at least 10 years in those communities.

32.6 Sample Size Estimation

The sample size for this study was calculated in accordance with Yamanes formula [16]. The formula used for the calculation is $n=N/1+N(e^2)$

where n =sample size

N=total population:

From 1991 population census , N number of females in the studied areas was as follows:

Omogho is 1664:

Number of females in Nsugbe 8,314

Achalla F females 7017

Agulu 25737

Oraifite 13,552

Awkuzu 14431

Total population =70715

e=error term at 95% confidence interval which is 0.05

n=70715/1 +70715(e2) n= 398 approximately t~~T~~he sample size for the study was 500 women plus

30 community health workers attached to the primary health centers of the study communities making a grand total of 530.

~~3.6~~ 2.7 Data collection

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Structured questionnaires were administered to participants through one-on-one interviews conducted in Igbo language only, adhering to the guidelines set by the COUNTDOWN consortium for neglected tropical diseases (FMOH 2021). The questionnaire was used to collect data on ~~K~~ knowledge and perception on FGS among the community ~~women~~ and ~~community~~ health workers ~~in the communities~~ women.

4 3. RESULTS

Community women knowledge on FGS

Few 152(30.4%) of the community had knowledge of urogenital schistosomiasis but all of them a total of 500(100.0%) had not heard about FGS. 500(100.0%) have no idea of what causes FGS. 346(69.2%) believed that FGS is transmitted through sexual intercourse. See ~~T~~ table 1.

Table1: Community women knowledge on FGS (n=500)

~~v~~ Variables	Knowledge ratio					
1-~~Knowledge~~ General information	Yes	%	No	%	Don't know	%
Have you heard of urogenital ~~S~~ schistosomiasis?	152	30.4	54	10.8	294	58.8
Have you heard of female genital schistosomiasis?	0	0	102	20.4	398	79.6
Is FGS a disease?	98	19.6	51	10.2	351	70.2
Do you know what causes FGS?	0	0	233	46.6	267	53.4
Do you pass or have you passed bloody urine?	198	39.6	203	40.6	99	19.8
2-How is FGS transmitted?						
By drinking contaminated water	43	8.6	159	31.8	298	59.6
Through sexual intercourse	346	69.2	53	10.6	101	20.2

3-What causes bloody urine?						
Schistosomiasis	**98**	**19.6**	**46**	**9.2**	**356**	**71.2**
STI	**41**	**8.2**	**258**	**51.6**	**201**	**40.2**

Women's attitude towards FGS

These women perform their washing activities and fetch water for home use from the water bodies, only 35(7.0%) of the respondents seek medical attention at the PHC when they have vaginal sores, vaginal itching, coital bleeding or any other ailments, others 319(63.8%) ignore their symptoms or resort to herbal medications 96(19.2%). ~~S~~ See table 2. ~~**Table 2**~~

Table 2: Women ~~A~~ attitude towards FGS

Attitude	**Yes**	**%**	**No**	**%**
1-When last did you take praziquantel?				
3 months ago	**48**	**9.6**	**452**	**90.4**
6 months ago	**75**	**15.0**	**425**	**85.0**
Have not received at all	**363**	**72.6**	**137**	**27.4**
2-How often do you come in contact with the water body?				
Daily	**361**	**72.2**	**139**	**27.8**
Weekly	**96**	**19.2**	**404**	**80.8**
Monthly	**18**	**3.6**	**482**	**96.4**
Yearly	**149**	**29.8**	**351**	**70.2**
Have you had a vaginal sore?	**95**	**19.0**	**405**	**81.0**
3-What do you do about the symptom you experienced?				
Bought drugs	**56**	**11.2**	**444**	**8.8**
Use herbal drugs	**96**	**19.2**	**404**	**80.8**
Visited the health ~~centre~~ center to see a doctor or nurse	**35**	**7.0**	**465**	**93.0**
Ignore the symptoms	**319**	**63.8**	**181**	**36.2**
Do you go to the hospital for routine reproductive checkup?	**65**	**13.0**	**435**	**87.0**

Practices that lead to ~~infection of~~ FGS

Based on practices that enhance transmission process, most of the respondents 316(63.2) do their recreational activities like swimming in these waters and also 325(65.0%) fetch water for domestic use from the water bodies. S ~~see~~ table 3.

Table 3: Practices that lead to ~~infection of~~ FGS

Practice	YES	%	NO	%
Do you come in contact with water body in your community?	412	82.4	88	17.6
What activities do you carry out in the water body?				
Swimming/bathing/washing	316	63.2	184	36.8
Fishing in the water	257	51.4	243	48.6
Using water for agricultural purposes	136	27.2	364	72.8
Fetching water for domestic use	325	65.0	175	35.0
What kind of indiscriminate act do you carry out in your community water body?				
Defecation	86	17.2	414	82.8
U~~r~~rination	237	47.4	263	52.6
??				

Health workers knowledge on FGS (n=30)

Almost all the health workers 25(83.3%) had knowledge of urogenital schistosomiasis but only 5(16.7%) had heard of ~~F~~ female genital schistosomiasis. All of them30(100.0%) did not know the cause of FGS and said FGS is contracted through sexual intercourse. The health workers neither know the symptoms of FGS nor other causes of vaginal sores, itching and discharge. S see table 4

Table 4: Health workers knowledge on FGS (n=30)

Knowledge	YES	%	NO	%
Have you heard of urogenital schistosomiasis?	25	83.3	5	16.7
Have you heard of FGS?	5	16.7	25	83.3
What is FGS?				
A disease	5	16.7	25	83.3
An infection	3	10.0	27	90.0
No idea	17		8	
Do you know what causes FGS?				
Drinking contaminated water	0	0	30	100.0
Sexual intercourse	30	100.0	0	0
What causes bloody urine?				

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Swimming in contaminated water	25	83.3	5	16.7
What are the signs and symptoms of FGS?				
Vagina. itching	0	0	30	100.0
Vagina. discharge	0	0	30	100.0
Painful urination	0	0	30	100.0
Do you know the risk of urinating or defaecating into the water body or near it?	3	10.0	27	90.0
What causes vagina itching/vagina discharge/painful urination?				
STI	30	100.0	0	0
Infection	26	86.7	4	13.3
FGS	0	0	30	100.0

Health care worker Attitude towards FGS

On attitude 24(80.0%) of the health workers advice women with vaginal itching or discharge praziquantel. See table 5 to take antibiotics, and do not relate vaginal problems to water contact. 29(96.7) give antibiotics to patients for vaginal sores instead of praziquantel. see table 5.

Table 5: Health care worker Attitude towards FGS

ATTITUDE	**YES**	**%**	**NO**	**%**
What do you advice a patient with vagina. - ~~D~~ischarge?				
To take antibiotic	24	80.0	6	20.0
To avoid contact with contaminated water	0	0	30	100.0
To avoid indiscriminate sex	30	100.0	0	0
Do you administer praziquantel to a female with abdominal or pelvic pain?	0	0	30	100.0
Do you relate vagina. sore to contact to infested water?	0	0	30	100.0
Do you link FGS to ~~S~~chistosomiasis?	0	0	30	100.0
When a virgin girl has vagina itch/ vagina sore/vagina discharge, what do you advice?				
drugs for STI	29	96.7	1	3.33
Praziquantel	0	0	30	100.0

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Health workers practice towards FGS

Most of the health workers 30(100.0%) had attended workshops on ~~S~~chistosomiasis but none 0(0%) had attended workshops on FGS. For treatment of coital bleeding 24(80.0%) of the health workers use antibiotic instead of praziquantel. The health workers stigmatize women with vaginal problems noting that they are promiscuous. ~~s~~ee table 6.

Table 6: Health workers practice towards FGS

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Practice	YES	%	NO	%
What do you use to treat vaginal sore?				
Antibiotic	22	73.3	8	26.7
Praziquantel	0	0	30	100.0
Have you attended any seminar on schistosomiasis?	30	100.0	0	0
Have you attended seminars or teaching on FGS?	0	0	30	100.0
Can you link vaginal discharge to water contact?	0	0	30	100.0
When do you administer praziquantel to your patients?				
When they have bloody urine	30	100.0	0	0
When they have vaginal discharge or sore	0	0	30	100.0
Do you educate women on FGS infection	0	0	30	100
Do you refer patients for FGS diagnosis when they have vaginal discharge with water contact history	0	0	30	100.0
Do you stigmatize patients with all reproductive problems as promiscous	25	83.3	5	16.7
??				

4. DISCUSSION

Few 152(30.4%) of the community had knowledge of urogenital schistosomiasis but all of them a total of 500(100.0%) had not heard about FGS. 500(100.0%) have no idea of what causes FGS. 346(69.2%) believed that FGS is transmitted through sexual intercourse

The findings from this study indicate that the majority of the women 152(30.4%) knew about urogenital schistosomiasis but none of them had heard of FGS or what causes it and were not aware that urogenital schistosomiasis may affect a woman's reproductive system. Also, the health workers had knowledge of urogenital schistosomiasis but very low knowledge of FGS. This finding is in line with a study done in Egypt, were women from urogenital schistosomiasis endemic areas and health workers had knowledge of urogenital ~~S~~chistosomiasis as a disease but did not believe that it could have any reproductive health effects [17]. Similarly, in a previous study in Ghana, none of the community members who participated in this type of study was

reported having heard of FGS [10] and only 18.9% of participants agreed that urogenital schistosomiasis could cause reproductive health diseases [18]. It was found in this study that healthcare workers' lack of knowledge of and misconceptions about FGS lead to misdiagnosis and referring patients to a wrong specialist or other treatment services. The intersection of all these situations can lead to serious consequences on women and girls' reproductive health, this is similar to a study conducted in Ghana which reported that healthcare workers with limited or no knowledge of FGS were more likely to refer women and girls—presenting with symptoms of FGS—to the STI clinic [10],[19].
From this study it was observed that because FGS is misdiagnosed as an STI women with symptoms of FGS were reluctant to seek treatment from the healthcare facilities because they feared being stigmatized and regarded as prostitutes, this was also reported in a study in Tanzania [20],[19].

This study showed that these women engage in practices, such as paddy farming in the wetlands, domestic chores such as washing clothes in contaminated rivers and ponds. These gendered roles require women to regularly come into contact with cercariae-contaminated water, also swimming in the rivers as a popular recreational activity increase their risk of being infected with these parasitic worms that can cause urogenital schistosomiasis, and FGS, this findings were observed in other studies [3]. From this study 30(100.0%) of the healthcare workers could not link FGS with urinating in the water, many community women 86(17.7%) practice open defecation and urination 237(47.4%) and do not consider avoiding contact with contaminated water sources important, this is in line with the work of Wangari et al 2023 in Congo. From this study done in schistosomiasis-endemic communities in Anambra State, lack of alternative sources of water forces them to use contaminated water sources for domestic and agricultural purposes, this was also reported by [21][3]. In this study it was observed that girls with genital symptoms of FGS were accused of promiscuity and in health facilities they were likely to be referred for STI treatment as observed in other studies [3]. Our findings and those from Ghana [3] clearly indicate that there is a need to implement public health interventions at the community and health facility levels to, first, create awareness of FGS, its symptoms/clinical signs, diagnosis, management, and prevention and, second, encourage women and girls to seek for treatment at health facilities or that it. To achieve sustainable control of urogenital schistosomiasis, specifically FGS, integrating MDA with WASH and public health education for both community members and health workers should be part of the development agenda and improvement in water supply in endemic communities.

5. CONCLUSION

One of the study's drawbacks was that only six communities were studied, this may not give a good representation of the whole state. Seminars and trainings on FGS for health workers should be held frequently to effectively address this underdiagnosed infection which has a devastating effect on women.

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6. CONSENT AND ETHICAL APPROVAL

This study received ethical approvals from Nnamdi Azikiwe University Teaching hospital ethical committee with certificate number (NAUTH/CS/66/VOL.16/VER.3/231/2022/138). Directors of health where the study was conducted granted permission to enable the study to be conducted in their jurisdiction. Adult participants aged 18 years and above gave a written informed consent. Participants below the age of 18 years and their parents or guardians gave a written informed consent for them to participate in the study. For participants who could neither read nor write, the consent form was read and interpreted for them. Prior to data collection, awareness and sensitization meetings were held with responsible authorities in every study site to create awareness of the study and its data collection procedures. Anonymity of the study participants and confidentiality of the information provided was maintained. All participants were identified using code numbers.

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