

## Clinical Manifestations of Female Genital Schistosomiasis in Zamfarawa Community of Gombe State, Northeastern Nigeria.

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### Abstract

**Background:** Female genital schistosomiasis is an emerging gynaecological disease. This study aimed to assess the prevalence of genital symptoms and clinical findings of female genital schistosomiasis among girls and women in Zamfarawa community in northeastern Nigeria.

**Methods:** A cross-sectional study was conducted among 211 girls and women selected using multistage sampling technique. They were interviewed using pretested interviewer-administered questionnaire. Urine samples were collected for microscopy while consented women with positive urine test underwent colposcopy. Data were analyzed at univariate level using SPSS version 26

**Results:** One hundred and fourteen (54.0%) respondents were girls 12-14 years of age and 97 (46.0%) were women aged 15 years and above. Seven (3.3%) of the participants practiced open defecation while 56 (73.5%) did not have access to safe water. Of the 211 respondents, 180 (85.3%) reported symptoms of female genital schistosomiasis such as vaginal itching/burning sensation; 62 (34.4%), vaginal discharge; 49 (27.2%), pain during sex; 20 (20.0%), genital ulcers; 21 (11.7%) and spotting/bleeding during sex; 12 (6.7%). Out of 211 urine specimens collected for urine microscopy, 12 (5.7%) had eggs of *S. haematobium* (3 girls and 9 women). Among the 9 women with positive urine test who consented to undergo colposcopy, 3 (33.3%) had rubbery papules, 2 (22.2%) had homogeneous yellow grainy

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sandy patches, 2(22.2%) had grainy sandy patches while 1(11.1%) each had abnormal blood vessels and contact bleeding. The prevalence of female genital schistosomiasis using colposcopic features among women aged 15 years and above was 9.3%.

**Conclusion:** The study demonstrated a high prevalence of female genital schistosomiasis in Zamfarawa community of Gombe State.

**Keywords:** clinical, community, female, genital schistosomiasis.

### Introduction

Schistosomiasis is a chronic parasitic infestation that affects more than 220 million people worldwide, particularly in Sub-Saharan Africa (SSA).<sup>1</sup> The clinical manifestation of the disease in terms of intestinal, liver, and urinary symptoms is well documented but pathological effects on the host's reproductive organs are rarely noticed or reported. Female Genital Schistosomiasis (FGS) is a genital complication of Urogenital Schistosomiasis (UGS) associated with the presence of *S. haematobium* eggs and related pathologies in the genitals of women living in or visiting schistosomiasis-endemic areas.<sup>2</sup> Despite reports that FGS is common and likely to occur in most women with symptoms of urinary schistosomiasis,<sup>3</sup> it is rarely a differential diagnosis in women with urinary schistosomiasis in endemic areas.<sup>4</sup>

Many women become infected with *S. haematobium* during childhood, and 33 to 75% of infected women may develop FGS.<sup>5</sup> It is estimated that between 20 and 56 million women in sub-Saharan Africa could be living with FGS.<sup>6</sup> A Tanzanian study reported that 43% of women with urinary schistosomiasis had concomitant FGS.<sup>7</sup> A cross-sectional study of girls in South Africa reported significantly more girls with *S. haematobium* infection resulted in gynecological symptoms and genital discomfort in 98.6% and 93.0% respectively prior to sexual debut and menstruation.<sup>8</sup> Another study of some

communities in Ogun State showed that 4.5% had egg-patent urogenital schistosomiasis<sup>9</sup> whereas a study in FCT showed 8.6% suffered egg-patent urogenital schistosomiasis.<sup>10</sup> A case of female genital schistosomiasis associated with squamous cell carcinoma of the vulva have been reported from Gombe.<sup>11</sup>

The clinical manifestation of FGS is based on an immunological response to Schistosome eggs causing granulomatous inflammation, fibrosis, and angiogenesis in the female genital organs.<sup>12</sup> Granulomas formed in the genital tract in response to laid eggs result in various pathological mucosal changes in the genital tract, such as grainy sandy patches, homogenous yellow sandy patches, rubbery papules, and abnormal blood vessels.<sup>12, 13</sup> These abnormal pathological changes in the mucosa are responsible for several clinical manifestations and complications of FGS such as vaginal discharge and itching, vaginal bleeding and spotting, post-coital bleeding, painful intercourse, infertility, ectopic pregnancy, abortions and increased risk of HIV and HPV infections.<sup>9</sup> Lesions, both benign and malignant, such as polypous and papillomatous tumours, cervical carcinoma, and others can also complicate FGS.<sup>14</sup>

Nigeria, a country in sub-Saharan Africa with the highest burden of schistosomiasis, is implementing national control program for Neglected Tropical Diseases (NTDs) though the country mass drug administration (MDA) status is not at scale

or irregular. For the fact that there were no evidence-based data to highlight the reproductive health implication of schistosomiasis, this strategy to reduce NTD burden focus mainly on school-aged children neglecting other risk groups such as women of reproductive age group. This study provides evidence-based data on female genital schistosomiasis in Zamfarawa community.

Gombe State is one of the security-strewn states in northeast Nigeria with interconnected waters that were not among the states included in the 2019 epidemiological mapping of schistosomiasis in Nigeria. Therefore, neither the burden of schistosomiasis nor FGS is known in Gombe State. This cross-sectional study was conducted to assess the prevalence of genital symptoms and clinical findings of FGS among girls and women in Zamfarawa community of Gombe State.

### Methodology

A descriptive cross-sectional design was used to conduct this study in the month of April 2022 in Zamfarawa community of Yamaltu Deba Local Government area (LGA) in Gombe State. Zamfarawa community is one of the six communities around Dadin Kowa lake with a population of 2,429 and its inhabitants are engaged in subsistence farming. Access to clean water and improved sanitation are lacking in this community.

The study populations included girls (12-14years) and women ( $\geq 15$  years) who were present during the study and consented to participate in the study. Participants who were pregnant and those on their menstrual period were excluded from the study. The calculated minimum sample size 15 using vaginal itching proportion of 80.8% from a study in Ghana<sup>16</sup> was 228 after adjusting for sample size calculation in a finite population and a 10%

non-response rate. A multi-stage sampling technique was used to select the study population which involved random selection of a ward from the eleven wards in Yamaltu Deba LGA in stage one, second stage involved selection of Zamfarawa community randomly from Kanawa-Wajari ward and the last stage was the selection of households using a table of random numbers. All the eligible respondents in each of the households selected were studied.

A questionnaire adapted from a study in Ogun State<sup>9</sup> was used to obtain information on the specific objectives of the study from the respondents. A 10ml volume of terminal, late hour morning urine specimens was collected from each participant using a clear urine bottle and transported in reverse cold chain to the laboratory for urine microscopy test. The urine specimens were spun, and sediments were examined for ova of *S. haematobium* under  $\times 100$  magnification. Nine adult participants with positive urine microscopy test and who consented, further underwent colposcopy at Federal Teaching Hospital Gombe (FTHG). The completeness of the data was checked for before entry into the SPSS version 26. Variables were analyzed at univariate level where tables and graph were used to present the data.

Ethical clearance to conduct this study was sought and obtained from the Gombe State Ministry of Health Ethics Committee (MOH/ADM/621/Vol.1/448). Advocacy visits were paid to the Local Government Chairman and Zamfarawa community leader from whom the permission to conduct the research was obtained. Written informed consent was given by the participants, and parental ascent was obtained in addition from the parents of the respondents that were less than 15 years of age before participation in the study. Serial numbers were used instead of names to

identify the participants to ensure confidentiality and privacy. The participants were informed that they could decline or withdraw from the study at any time if they wanted to. The generated data from the research were well secured and only made available to the researchers. All the participants received treatment with praziquantel at a dose of 40mg/kg of body weight as a standard of care.

## **Results**

### **Socio-demographic characteristics of the participants**

Two hundred and twenty-eight questionnaires were administered, and 211 were filled completely at the end of study giving a response rate of 92.5%. The mean age of the respondents was 28±6.7 years with more than half 114(54.0%) being girls less than 15 years. Most of the participants 135(64.0%) came from homes with family income of less than the minimum wage in Nigeria (NGN30000). About 168(79.6%) had no formal education. The majority 203(96.2%) were unemployed. Most of the participants 137(64.9%) came from a large family size. Table 1.

### **Household characteristics of the respondents**

A Small percentage 7(3.3%) of the participants practiced open defecation while 155(73.5%) did not have access to safe water. About 135(64%) of the

respondents had history of symptoms of vaginal infection while 49(23.2%) had experienced haematuria as shown in Table 2.

### **FGS symptoms and treatment seeking-behaviour among the respondents**

Table 3 shows that about 60.2% (127) of the participants did not consider FGS to be a serious problem. About 85.3% (180/211) of the respondents reported symptoms of FGS in this study such as vaginal itching/burning sensation 62(34.4%), vaginal discharge 49(27.2%), pain during sex 36(20.0%), genital ulcers 21(11.7%) and spotting/bleeding during sex 12(6.7%). Among those who reported symptoms of FGS, 76(42.2%) sought hospital treatment, 61(33.9%) self-medicated, 16(8.9%) seek traditional medicine and 27(15.0%) did nothing.

### **Results of urine microscopy test**

The results of urine microscopy test as shown in Figure 1 indicated that 3(1.4%) of the girls 12-14 years old and 9(4.3%) of women aged 15 years and above were positive for urine microscopy test.

### **Results of colposcopy test among respondents**

The results of colposcopy in this study as shown in Table 4 were, 2(22.2%) grainy sandy patches, 2(22.2%) homogeneous yellow sandy patches, 3(33.4%) rubbery papules, 1(11.1%) abnormal vessel and 1(11.1%) contact bleeding

**Table 1 Socio-demographic characteristics of the participants**

Description	Frequency n = 211	Percentage (%)
Age group (years)		
12-14	114	54
=15	97	46
Education status		
Formal education	43	20.4
No formal education	168	79.6
Employment status		
Not employed	203	96.2
Employed	8	3.8
Family income		
<NGN 30000	135	64
= NGN30000	76	36
Family size		
=5	137	64.9
<5	74	35.1

**Table 2: Household characteristics of the respondents**

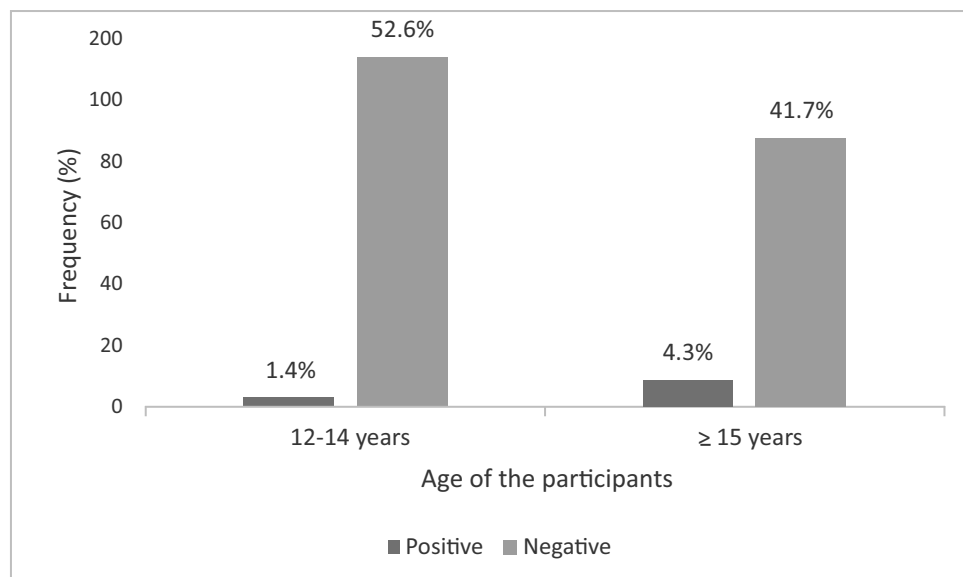
Description	Frequency (n=211)	Percentage
Toilet facility		
Open defecation	7	3.3
Pit latrine	204	96.7
Drinking water		
Safe	56	26.5
Unsafe	155	73.5
History of vaginal infection		
No	135	64
Yes	76	36
Experienced hematuria		
No	162	76.8
Yes	49	23.2

**Table 3: FGS symptoms and treatment seeking-behaviour among the respondents**

Description	Frequency	Percent
FGS is a serious disease (n=211)		
Yes	84	39.8
No	127	60.2
Symptoms of FGS (n =180)		
Vaginal itching or burning	62	34.4
Vaginal discharge	49	27.2
Pains during sex	36	20.0
Spotting/bleeding during sex	12	6.7
Genital ulcers	21	11.7
Treatment seeking behavior		
Do nothing	27	15.0
Hospital	76	42.2
Self-medication	61	33.9
Traditional medicine	16	8.9

**Table 4: Results of colposcopy test among respondents**

Colposcopy findings (n=9)	Frequency (%)
Grainy sandy patches	2 (22.2)
Homogeneous yellow sandy patches	2 (22.2)
Rubbery papules	3 (33.4)
Abnormal vessels	1 (11.1)
Contact bleeding	1 (11.1)



**Figure 1: Results of urine microscopy test**

### **Discussion**

The prevalence of FGS in this study was found to be 9.3% among women in their reproductive age group. Although other studies reported higher prevalence in Zimbabwe,<sup>5</sup> northern Tanzania<sup>17</sup> and Madagascar,<sup>18</sup> the prevalence found in Zamfarawa community is still significant to be of public health concern because of the dire health consequences of FGS such as infertility, miscarriages and ectopic pregnancies, and the negative impact of these on families and societies. A likely reason that may be ascribed to the observed prevalence of FGS in this study may not be unrelated to the small number of the participants that consented to undergo the colposcopy test. The costly nature of the test which makes it impossible for all the women who reported FGS symptoms to undergo colposcopy is also a factor for the low prevalence in this study.

Significant FGS symptoms reported in this study were vaginal itching/burning sensation, vaginal discharge, pain during sex, genital ulcers, and spotting/bleeding during sex. This is comparable to symptoms reported in the studies conducted in Madagascar<sup>18</sup> and Zimbabwean.<sup>19</sup> The treatment seeking behavior for FGS in this study was a combination of self-medication, going to the hospital and traditional medicine. Similar findings were reported in a study in Ghana.<sup>20</sup>

Of all the eleven participants that had positive results for urine microscopy, three were not sexually active and as such could not undergo colposcopy examination due to ethical reasons. However, all 9 of the sexually active women, who accepted to undergo the colposcopy had lesion of FGS according to WHO atlas with the presence of rubbery papules, followed by presence of homogenous yellow grainy sandy patches, and grainy sandy patches. Next was presence of abnormal blood vessels

and contact bleeding. The colposcopy findings in this study are similar to those obtained in studies conducted in other places<sup>9,10,19,20</sup> though the magnitudes of the lesions vary which can be explained by the variation in the age group and sample sizes of the studies.

### **Conclusion**

The findings of this study confirmed the presence of female genital schistosomiasis in Zamfarawa community of Gombe State and shows that a significant number of women living in schistosomiasis-endemic areas are affected by urogenital schistosomiasis and have female genital schistosomiasis which is being overlooked.

### **Recommendation**

As the consequences of FGS impact negatively on the reproductive health and rights of women and girls, it is recommended that scale up survey should be done, and more awareness should be created about female genital schistosomiasis in endemic areas. It should be integrated with sexual and reproductive health and rights of women and girls.

**Conflict of Interests:** The authors have no conflicts of interest whatsoever.

**Authors' Contributions:** **IR:** Conceptualization, data curation, data analysis, initial draft preparation, review & editing; **FHU:** Data curation, data analysis, methodology, review & editing; **YA:** Data Curation, data analysis, methodology; review & editing; **LAI:** Conceptualization, methodology, review & editing; **AOA:** Critical review; **EO:** Conceptualization, investigation, methodology, review & editing; **HA:** Review & editing; **NYB:** Data analysis, investigation, review & editing; **FUI:** data analysis, investigation, review & editing; **AYA:** Investigation, review & editing; **MOA:** Investigation, review & editing; **JOI:** Investigation,

review & editing: **BMG**: Investigation, review & editing

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