Genital symptoms in children in a *Schistosomiasis haematobium* endemic area

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Abstract

Objective: It is known that *Schistosoma haematobium* infection causes gynaecological lesions in women. We sought to explore genital symptoms in schoolgirls in an endemic area, and to determine the association between symptoms and risk factors for female genital schistosomiasis (FGS) infection; present urinary schistosomiasis infection and having high-risk water contact.

Design and methods: A cross-sectional study with questionnaire and three urine specimens that were investigated for schistosome ova. The participants were 620 schoolgirls between the age of 9 and 13 years old, in rural Ugu district Kwa-Zulu Natal.

Results: Half of the study population reported to have experienced genital symptoms. Having had high-risk water contact was associated with genital symptoms (chi-square; P <0,001). Bloody discharge, malodorous discharge and genital sores were associated with high-risk water contact (chi-square; p = 0,001, p < 0,001 and p = 0,003 respectively). Bloody discharge was also highly associated with urinary schistosomiasis (chi-square; p < 0,001). However, there were no significant associations between urinary schistosomiasis and the other genital symptoms. Prior schistosomiasis infection was reported by 31 % (189/602), and this was associated with current genital symptoms (chi-square; p < 0,001). Seventeen percent of the girls (105/620) reported to have received treatment previously, and treatment had no significant effect on the association between genital symptoms and urinary schistosomiasis or high risk waterbody contact.

Conclusion: Young girls in an *S. haematobium* endemic area have genital symptoms, some of which are significantly associated with high-risk water contact, urinary schistosomiasis and

prior schistosomiasis infection. One should consider anti-schistosomal treatment at young age in *S. haematobium* endemic areas to prevent genital damage.

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We wish to thank prof. Myra Taylor, prof. Jane Kvalsvig and Pumla Mkhiva for hospitality, several enlightening meetings and good cooperation in the process of forming the questionnaire for the study. We are thankful for much good advice from our roommate and data entry clerk Roy Farai Manyaira. E-mails with good ideas and comments from dr. med. Svein G. Gundersen have increased the quality of the project and been much appreciated We are also greatful forhelp from prof. in psychology Inge Petersen in SA, Gro Ottosen and Unni Fauske the two latter working with child psychiatry at Ullevål, OUS.

We also wish to thank all the field-workers; the interviewers and the lab staff. This study could not have been done without their effort and hard work.

Preface

In the summer of 2008 we started the process of designing a questionnaire for a study on Female genital Schistosomiasis in young girls and the association with HIV in Ugu district, KwaZulu-Natal, South Africa. The questionnaire was made and processed throughout the winter and spring 2009, together with our tutor Dr. Eyrun Kjetland, with help from Dr. Jane Kvalsvig and Professor Myra Taylor, the two latter from South Africa.

In order to do the final processing of the questionnaire; we went to Durban, South Africa for 6 weeks in July-August 2009. There we had several meetings with Research assistant Pumla Mkhiva, discussing the different parts of the questionnaire and remodelling questions, adapting them to local decorum in order to make them suitable for the participants and at the same time serve the multiple purposes of the study. We also got practical help from our data entry clerk Roy Farai Manyaira and good advice from Prof. Inge Petersen.

The result was a questionnaire of 18 pages in both Zulu and English, divided in 12 subparts: Personal data page, Living and family, Water contact, You and your family, Health, Genitalia and urine, You and your friends – relations, Alcohol, Drugs, Sexual behaviour, You and your future and future participation.

We were also involved in training the interviewers in workshops, and we were honoured to be consulted in different matters concerning the project.

The questionnaire is now being used in the study of "Clinical Manifestations of Female Genital Schistosomiasis in Adults and Children" that started slowly in October 2009 in Ugu

district KwaZulu-Natal. So far 620 girls from 9 schools have been interviewed, and we are just about to explore the association between risk water contact and genital symptoms in these girls.

Kristin instructs the interviewers

Ingrid is discussing the questionnaire with the interviewers

Us together with the interviewers

Financial support

The financial support has been provided by different sponsors: Centre for Imported and Tropical Diseases at the Department of Infectious diseases (Oslo University Hospital), Skipsreder Tom Wilhelmsens Stiftelse, Generelle reisestipend and S. G. Sønneland Foundation, Oslo. We are grateful for the opportunity we have been given to be a part of this project, and it would not have been possible without their generosity.

Our hope is that this research will lead to further understanding of the pathology of female genital schistosomiasis, and we would like to participate in the dissemination of the new knowledge, to see it put to practical use and benefit for those who need it. We will be attending ASTMH (American Society of Tropical Medicine and Health) in November 2010 in Atlanta in order to present our findings and this student project will be developed into a publication.

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Introduction

The helmith infection schistosomiasis, known as Bilharzia, is endemic in South Africa, as well as in several other countries in Africa, Asia and South America [1]. An estimated 779 million people are at risk of transmission, and 207 million people are infected of whom 85% live in rural parts of Africa [1, 2]. The Schistosoma parasite is a waterborne worm that uses snails in fresh water as its host [1]. Cercariae enter the body by penetrating the human skin. A male and a female worm couple inside the body, and position themselves in the venous blood circulation where they produce thousands of eggs. Through the urinary system, intestines and genital tract, the eggs are excreted into fresh water and into the snails. Some eggs get trapped in the host tissues and cause inflammation.

Of the human schistosome parasites, *S. haematobium* mainly causes urinary schistosomiasis, as well as genital schistosomiasis [1]. The morbidity caused by species *S. mansoni* and *S. japonicum* is manifested as inflammation of the intestines and liver, but the two species have also been found in genital tissue [3]. Female genital schistosomiasis (FGS) is recognized by trapped schistosome eggs found in the mucosa of the female genitalia, and these may be seen as sandy patches associated with inflammation and fragile blood vessels. Women experience symptoms like spot bleeding, pain and genital itch, as well as dyspareunia and infertility [7-10]. FGS in women may be seen alone or together with urinary schistosomiasis [4-6] and FGS may be found in 46% of the women in high-endemic areas [11].

The previous studies carried out on FGS have been conducted on women in childbearing age (15-49 years). Young girls have been hypothesised to have predominance of *S. haematobium* egg granulomas in the vulval region [12]. Although there have been case reports on girls

under 15 years old with ova in the genital tract indicating FGS, this has never been investigated in a large scale [13-15]. This may partly be because internal gynaecological inspections are difficult in virgins, but also because the causal relationship between the genital lesions in the young females and schistosomiasis has not been thought to exist [16, 17].

This study aimed to determine the prevalence of genital symptoms and signs in young girls through questionnaires, and to explore the association between genital symptoms and schistosomiasis in KwaZulu-Natal, South Africa. In the abscens of gynaecological examinations, urinary shcistosomiasis and high-risk water behaviour were used as surrogate markers for FGS.

Methods

Location: The study was carried out between September 2009 – July 2010 in the rural Ugu district, located south in KwaZulu Natal of South Africa, a *S. haematobium* endemic area. Ugu district covers 5866 km2, predominantly rural, and partly coastal area. It has an estimated population of 700 000 almost exclusively Zulu-speaking people. 84% of the population resides in the rural areas, while the remaining 16% are urbanised. 51% are below the age of 20 years, and 55% are female [18].

Map of KwaZulu-Natal showing Ugu district.

Location of KwaZulu-Natal in South Africa.

Reference: http://en.wikipedia.org/wiki/File:Map_of_KwaZulu-Natal_with_Ugu_highlighted.svg

Study population: Girls 9-13 years of age from primary schools were interviewed with questionnaires and urine samples were taken. The study excluded girls with serious illnesses, girls who did not show up or if their guardians did not approve the informed consent.

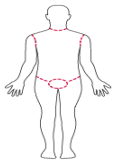
The Questionnaire: The interviews were conducted face to face in Zulu by trained female personnel who did and who did not know the study subjects. The questionnaire aimed to

disclose symptoms of a genital infection, such as itch, burn, ulcers or tumors in the genitalia, as well as malodorous or bloody discharge [7, 19]. Furthermore, enquiries were made about symptoms of urinary infection, such as dysuria, stress incontinence, urge and red urine [20].

Confounding factors: In the multivariate analyses, known confounding covariates for each genital symptom were controlled for. Menstruation or haematuria may be misinterpreted as bloody discharge. Vaginal sex and sexual abuse could cause malodorous discharge, genital tumor and itch. Dysuria may be reported as a genital burning sensation and vaginal sex may lead to this symptom. Age was forced into all the analyses.

Measuring current water contact patterns: Frequency and duration for different water activities, as well as an estimated percentage of body surface exposed to open water was assessed [21, 22]. In accordance with well-established water contact assessment questionnaires each child was asked if she carried out any of seven specific water-related activities known in the study area (playing/swimming, washing/bathing, do laundry, washing blankets, collecting water, fishing and crossing) [23]. If the child responded positively, she was asked to elaborate on frequency, duration and body surface exposures. The percentage of the body exposure was calculated from charts used to assess the severity of burns [24]. If the child reported she had daily or frequent water contact and had a duration of more than 1 hour or more than 10% body surface exposure she was classified as having high risk contact.

Table 1: Choice of answers given in the questionnaire for each water contact activity. High-risk water contact marked grey

Question	Choice of answer	Answer code
How often do you carry out activity ”X”?	Never Rarely Sometimes Often Daily	0 1 2 3 4
How long do you stay in the water during this activity?	Up to 60 minutes More than 60 minutes	1 2
How much of your body is in contact with water during this activity?	Answer drawn on body burn chart: 	Percentage: 0-100: 0-10% >10%

Parasitology: Each school was visited at least three times. Three urine samples were obtained from each girl on three consecutive days between 10 am and 2 pm. After gentle tilting 10 ml of urine was deposited into a container with 1 ml merthiolate-formalin solution (REF). Specimens were investigated the same week. After centrifuging, all of the precipitate was transferred unto microscopy slides; the last amount was washed with water before transferred onto the slide. Positive finding is defined as the presence of at least one ovum in any of the specimens examined, and high-load urinary infection was defined as mean number of eggs in the three specimen higher than 50 per 10ml urine [25].

Ethical considerations: The conducted study was approved by three ethics' committees: BREC Biomedical Research Ethics Administration, UKZN February 20th 2009, and Ref BF029/07; Department of Health, Pietermaritzburg, February 3rd 2009, Reference HRKM010-08; by REK, the Norwegian ethics committee, Ref 469-07066a1.2007.535, September 17th 2007 and by the Departments of Health and Education in Ugu District. All members of the group, including students, drivers and research assistants have passed exams in Good Clinical Practice and the Helsinki Declaration was followed. Prior to the study there were meetings for

parents, the principals and teachers of the schools, in order to give information about the procedures of investigations and data collection. Assents were given by each girl, and parents/ guardians signed informed consent. All were informed of the right to withdraw at any moment without negative consequences. Treatment for schistosomiasis was offered all, and they were informed about side effects. When other medical or psychological help were required, the girls were referred to the appropriate government clinical facility. She was given private care if government services were unavailable or was not fast enough.

Statistical analyses: Chi-square, Fisher`s exact test (for numbers below 5) and odds ratios (OR) with 95% confidence interval (CI) were used to compare prevalence of genital symptoms in both the girls with high-risk water contact, and in the girls with present urinary schistosomiasis infection. In order to study the impact of different variables, logistic regression analysis was applied with a 5% significance level; variables were included if the p-value from crude association was less than 0.2 and if the Spearman rank correlation coefficient was below 0.7. Where there were less than 10 cases, the variable was not included in regression analysis. The statistical analysis was computed using SPSS (Statistical Package for the Social Sciences) version 16.0.

Results

Characteristics of the study group

A total of 620 girls from nine schools were interviewed. The questionnaire was voluntary, and missing answers may therefore be caused by unwillingness or inability to answer the questions. The study population was distributed between 9 and 13 years of age, with a mean age of 11 (SD 0.9).

Only 45 of the 615 girls (7%) had started menstruating, and mean age of menarche in these was 11 (SD 1,9). Twentysix out of fortyfive (58%) girls had regular menstruation. Only 37 of the 576 (6,4 %) said they had been tested for HIV. One out of 575 (0.2%) knew she had HIV, as many as 315 said they did not know and 45 girls did not reply to this question. Just 6/613 (1%) reported to have had vaginal sex, 15 out of 567 (3%) reported to have been sexually abused.

Out of the 620 girls who were interviewed, 549 submitted at least one urine specimen that was examined for *S. haematobium* ova. *S. haematobium* eggs were found in 253/549 (46%) of the girls. Among these 73/253 (29 %) had high-load urinary infection, defined as mean number of eggs in the three specimen higher than 50 per 10ml urine. The mean intensity of infection was 25,6 eggs/10 ml urine (range 0-624).

Eighty one percent of the girls reported water contact (498/618), and among these 48 % (212/438) had positive urine for *S. haematobium* ova. Out of the girls who reported water contact, were 91% (452/498) were classified to a high risk water contact group.

Genital symptoms

Fifty percent reported to have had genital symptoms (307/613), and 25% (153/620) reported genital symptoms the last week. The total prevalence of girls who had ever experienced malodorous discharge was 109/617 (18 %), and 53/616 (9%) reported 'always' having this. The total prevalence of girls who ever experienced bloody discharge was 78/607 (13 %), and 28/607 (5%) reported bloody discharge every week. Other complaints from the genitals were itch 178/618 (29%), burn 20% (125/618), sore 10% (62/617) and tumors 5% (31/611).

Water contact and genital symptoms

Having had high-risk water contact was significantly associated with having genital symptoms (chi-square; P <0.001). Of the girls with high-risk water contact 71/440 (16%) experienced bloody discharge (chi-square; P = 0.001), compared to 7/165 (4%) who had low- or no-risk water contact. Likewise, malodorous discharge and genital sores were highly associated with high-risk water contact (chi-square; P <0.001 and P = 0.003, respectively). Genital tumor, itch and burn did not show a significant association with high-risk water contact in a multivariate analysis (chi-square; P = 0.07, P = 0.3 and P = 0.49, respectively).

Among the girls who reported water contact, 226 (41%) of 438 did not have *S. haematobium* ova in urine. However, these urinary negative girls with high-risk water contact had significantly more bloody discharge (Adjusted OR 0.5, 95% CI (0.3-0.9), P = 0.02) and itch (Adj OR 1.5, 95% CI (2.0-2.3), P = 0.49)

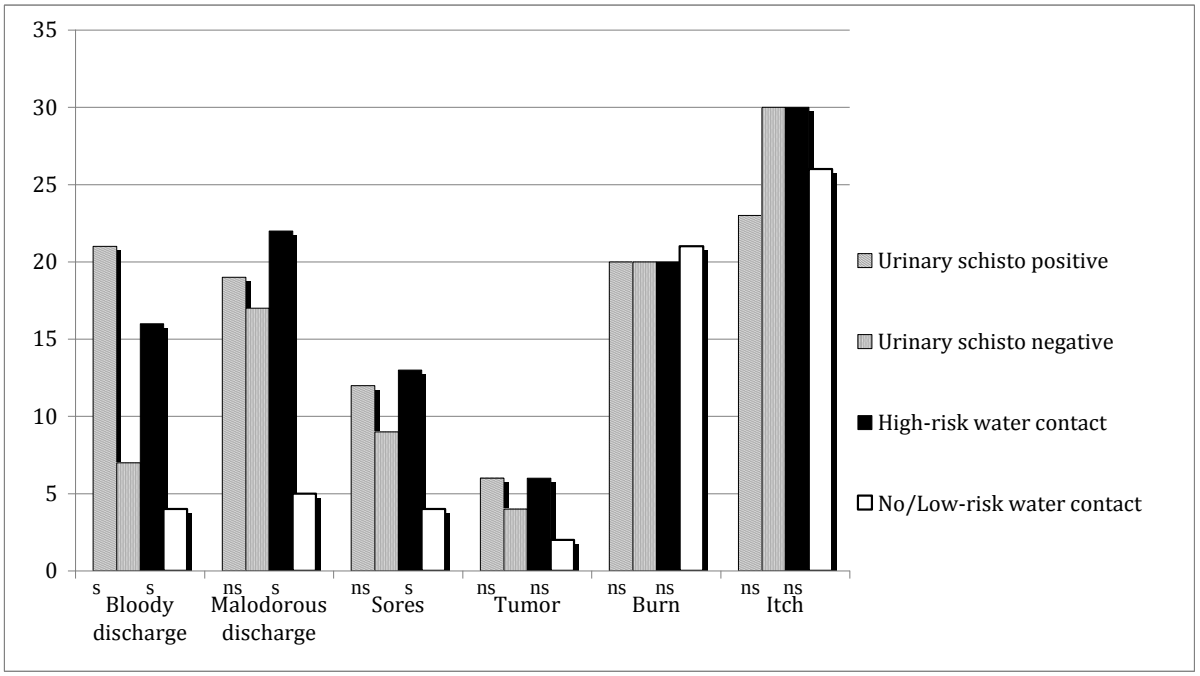
Urinary *S. haematobium* and genital symptoms

Malodorous discharge was reported in 48/252 (19%) of the girls who had urinary *S. haematobium*, and 52/249 (21%) had experienced bloody discharge. Other genital symptoms

reported from girls with urinary *S. haematobium*, were itch 58/252 (23%), sores 31/252 (12%), the sensation of burning 50/252 (20%) and tumours 15/248 (6%). Bloody discharge was highly associated with urinary schistosomiasis (chi-square; P <0.001). There were no significant association between urinary schistosomiasis and the other genital symptoms. Table 2 shows the multivariate analysis controlling for confounding covariates.

Out of the girls with high-load intensity urinary schistosomiasis infection, 22/71 (31%) had bloody discharge (chi-square; $P < 0.001$). The other genital symptoms were not associated with high excretion of *S. haematobium* ova in urine.

Figure 1: Percentage of each gential symptom found in the four different groups; urinary schistosomiasis positive and negative, high-risk water contact and no/low-risk water contact.



s = significant p-value
ns = non significant p-value

Furthermore we analyzed any water contact together with urinary *S. heamatobium* infection as a predictor for genital symptoms. In a multivariate analyses using the same confounders as in table 2, any water contact and urinary schistosomiasis were significantly associated with bloody discharge (adjusted OR = 5.6, 95% CI = 1.6-19.3, *P* = 0.007), malodorous discharge (adjusted OR = 4.2, 95% CI = 1.4-12.5, *P* = 0.009) and sores (adjusted OR = 5.4, 95% CI = 1.2-23.6, *P* = 0.025). The group who had experienced one or more genital symptom had also significantly more water contact and urinary *S. heamatobium* infection (adjusted OR = 3.2, 95% CI = 1.7-6.1, *P* < 0.001).

Prior urinary infection with *S. haematobium* and gential symptoms

Thirty one percent of the young females (189/602) reported to have had Bilharzia previously. Out of these 125/186 (67%) had experienced genital symptoms (chi-square; *P* <0.001). As many as 54/182 (30%) reported bloody discharge (chi-square; *P* <0.001), 53/189 (28%) malodorous discharge (chi-square; *P* <0.001), 29/189 (15%) sores (chi-square; *P* =0.005), and 49/189 (26%) a genital sensation of burning (chi-square; *P* < 0.05). Seventeen percent of the girls (105/620) reported to have received treatment prior to the study. Treatment had no significant effect on the association between the genital symptoms and urinary schistosomiasis or high risk waterbody contact (data not shown).

Discussion

To our knowledge, this is the first study of rural young females to determine if genital symptoms are associated with schistosomiasis. This study demonstrates that genital symptoms are common amongst young schoolgirls. Half of the study population reported to have had malodorous and bloody discharge, itch, burn, sores and tumours. In these rural South African schoolgirls, malodorous and bloody discharges as well as sores were highly associated with water contact. Whereas bloody discharge was the only gynaecological symptom also significantly associated with urinary schistosomiasis alone. Since gynaecological examination cannot be performed in virgins, genital findings could not be assessed. Less than ten percent had reached menarche, and the association was still significant after controlling for menstruation and haematuria.

Previous studies have shown that women may have genital schistosomiasis, even without urinary schistosomiasis [4-6, 9, 26, 27]. Urinary investigations may therefore be of no use in diagnosing female genital schistosomiasis, and thus deciding if genital symptoms are caused by gynaecological schistosomiasis [9]. In adults, genital grainy sandy patches have been found to be diagnostic of *S. heamatobium* infection in lower genital tract [4, 28]. However, in our young study population gynaecological investigations were not possible. Therefore, water contact and urinary schistosomiasis were explored as surrogate markers of genital schistosomiasis. Using water contact behaviour to assess children's risk of being infected with *S. heamatobium* is well known in schistosomiasis studies, but rarely applied to investigate risk factors for gynaecological schistosomiasis [9, 29].

Limitations of the study

Although this study demonstrates associations between genital symptoms and high-risk water contact as well as with urinary schistosomiasis, the findings should be carefully interpreted, due to a number of methodological limitations. The symptoms and signs assessed may be caused by other diseases. Reproductive tract infections like vulvitis and vulvovaginitis of bacterial and nonspecific origins, in addition to dermatological conditions, traumatic, neoplastic and urologic causes as well as foreign bodies, must be considered as differential diagnosis [30, 31]. Since only a few girls reported to have had vaginal sex, STDs such as chlamydial and gonococcal infections should probably not be taken into account compared to adult women [11]. This being said, underreporting of both sexual debut and sexual abuse may occur [32, 33]. To what extent the reported discomfort originates from the urinary tract, the genital tract, or both remains unclear. Although the interviewers were trained to explain the differences between genital and urinary symptoms, the children might find it difficult to distinguish the origin of their complaints. Repeated information sessions using dolls followed by more thorough questioning of genital symptoms could maybe have produced more in-depth information about symptoms or underreporting. However, this was not possible under the present conditions.

Furthermore, to determine the risk of water contact, the study relied solely on self reported waterbody contact using a questionnaire, rather than direct observations. Although, several schistosomiasis studies have successfully used questionnaires as a tool for screening of high-risk individuals [34-36]. The gold standard and most reliable and accurate method to determine water contact is by direct observation [37]. However, this is both costly and time consuming, and was not feasible in this study. Inaccurate or insufficient documentation of water contact, in addition to inadequate knowledge of how contact with a particular water

body translated into exposure to schistosomiasis, could further reduce the answers reliability. The measurement of water contact is based on recall which also poses problems for the interpretation. Considering the children's young age; their answers may further be influenced by their authorities' opinions regarding contact with infested waters. For instance, 40 out of 109 girls (37 %) who denied water contact had *S. haematobium* ova in the urine, confirming possible misreporting or forgetfulness of water contact.

The study is too small to assess the effect of antischistosomal treatment. Furthermore, clinic records were not available, parents were not asked and this information is likely inaccurate in children.

Our results and former findings

Childhood waterbody contact has been shown to be significantly associated with sandy patches in the genital mucosa in adult women [38]. Viable or dead *S. haematobium* ova may cause tissue reactions and morbidity long after contact with infested waters [39, 40]. Previous studies suggest an association between FGS and genital symptoms in women, such as intermenstrual bleeding, post-coital bleeding, malodorous and abnormally coloured discharge and genital itch, may be due to the pathological processes and anatomical changes in the lower reproductive tract [7-10]. However, none of these symptoms are specific or unique for FGS [28], and many symptoms have been found to be significantly associated with FGS in some studies, but show no correlation in others.

It is known that genital schistosomiasis causes pathologic vessel morphology with fragile blood vessels that may lead to both pre-contact and contact bleeding [4], bloody discharge may be a result of this. Malodorous discharge was highly associated with high-risk water

contact, but not with urinary schistosomiasis in our study population. As malodorous discharge has been found to be associated with FGS in women, this might be true for younger girls too, bearing in mind that FGS may be present without excreting ova in the urine [6]. Likewise genital sores were only significantly associated with high-risk water contact, not with urinary schistosomiasis. In former studies this symptom has shown variable association with FGS in women [9, 26, 41]. In the questionnaire the girls were asked if they had seen or felt any sores themselves, thus presumably a symptom of the external genitals. Schistosomiasis of the external genital organs, such as ulcers, has been described in girls from 5-20 years old [42]. Sores in the external genitalia may have other origins not controlled for in this study, such as HSV, although a very small percentage of the study population reported to have sex. Different cultural washing behaviours may also be an alternative hypothetical reason for the association between high-risk water contact and sores.

Genital itch has been found significantly associated with genital *S. haematoium* infection [4]. In our study, almost one third of the study population had complains about genital itch, which was the most common genital symptom. However, genital itch was neither associated high-risk water contact, nor urinary schistosomiasis. Genital pruritus has been said to have little or no etiologic specificity in prepubertal girls [30], and this might be such a common symptom in prepubertal girls that a higher sample size is needed, controlling for other causes. Similarly both vaginal discharge, sores and genital itch may have other casual factors not controlled for in this study, such as atopic or irritative dermatitis or other dermatoses like psoriasis or lichen sclerosus as well as vulvovaginitis of different aetiology [30, 43]. Vulvovaginitis might be a common condition in a rural area with presumably poor perineal hygiene, possibly with a higher number in the group that has limited water contact.

Around one third of the study population reported prior Bilharzia infection, and these had significantly more bloody and malodorous discharge, genital sores and genital burn. Previous studies have hypothesised that active ova excretion and development of genital lesions may be two separate processes [44-46]. Hence, though egg excretion has ceased, gynaecological morbidity might still be present [38]. A recent study on the subject has found that antischistosomal treatment with praziquantel did not give a significant decrease in lower genital morbidity after one year, although early treatment seemed to reduce gynaecological damage [38].

Anatomy and histopathology

The *S. haematobium* ova deposited in the female reproductive tract are most commonly found in the cervix and vagina [4]. Histopathological studies have shown that ova may be surrounded by eosinophils, epitheloid cells, macrophages, foreign body giant cells and multinucleated histocytes [4].

Genital sandy patches are pathognomic for female genital schistosomiasis [4, 28]. There are two morphologic subtypes of sandy patches; grainy sandy patches and yellow homogenous sandy patches. *S. haematobium* ova in genital specimens were significantly associated with genital grainy sandy patches, however homogenous yellow sandy patches were also significantly associated with other STIs and thus cannot be said to be pathognomic for presence of schistosome ova. [4].

Conclusions

One previous study has indicated that treatment received before the age of 13 years, seems to offer the best protection against genital mucosal pathology [38]. This study demonstrates that

even younger girls in an *S.haematobium* endemic area have genital symptoms, some of which are significantly associated with high-risk water contact and urinary schistosomiasis, suggesting that they may be a result of gynaecological schistosoma infection. This may indicate that antischistosomal treatment should be given at young age in *S. haematobium* endemic areas in order to prevent genital damages. Genital symptoms showed stronger association with high-risk water contact than with urinary ova excretion, indicating that for genital schistosomiasis the behavioural information is maybe more important than urine specimens in exploring the causes of young women's genital problems. However, further studies are needed to more thoroughly assess genital symptoms in young females living in *S. haematobium* endemic areas, in order to explore the pathophysiology of FGS in young girls.

References

1. King CH, Dangerfield-Cha M. The unacknowledged impact of chronic schistosomiasis. . Chronic Illness 2008;4:65–79
2. Steinmann P, Keiser J, Bos R, Tanner M and Utzinger J. Schistosomiasis and water resources development: systematic review, meta-analysis, and estimates of people at risk. . Lancet Infect Dis 2006;6:411–425
3. Sturrock RF. The schistosomes and their intermediate hosts. London: Imperial College Press, 2001 (AAF M, ed. ed. Schistosomiasis)
4. Kjetland EF, Ndhlovu PD, Mduluza T, et al. Simple clinical manifestations of genital Schistosoma haematobium infection in rural Zimbabwean women. Am J Trop Med Hyg 2005:311–319
5. Leutscher P, Raharisolo C, Pecarrere JL, et al. Schistosoma haematobium induced lesions in the female genital tract in a village in Madagascar. . Acta Trop 1997;66:27–33
6. Poggensee G, Kiwelu I, Saria M, Richter J, Krantz I and Feldmeier H. Schistosomiasis of the lower reproductive tract without egg excretion in urine. . Am J Trop Med Hyg 1998;59:782–783
7. Leutscher P, Ravaoalimalala VE and Raharisolo C. Clinical findings in female genital schistosomiasis in Madagascar. . Trop Med Int Health 1998;3:327–332
8. Poggensee G, Krantz I, Nordin P, et al. A six-year follow-up of schoolchildren for urinary and intestinal schistosomiasis and soil-transmitted helminthiasis in Northern Tanzania. Acta Trop. 2005;93:131-140
9. Kjetland EF, Kurewa E, Ndhlovu PD, et al. Female genital schistosomiasis – a differential diagnosis to sexually transmitted disease: genital itch and vaginal discharge as indicators of genital Schistosoma haematobium morbidity in a cross-sectional study in endemic rural Zimbabwe. Tropical Medicine and International Health 2008;13:1509–1517
10. Talaat M, Watts S, Mekheimar S, Farook AH and Hamed H. The social context of reproductive health in an Egyptian hamlet: a pilot study to identify female genital schistosomiasis. . Social Science & Medicine 2004;58:515-524
11. Kjetland EF, Ndhlovu PD, Gomo E, et al. Association between genital schistosomiasis and HIV in rural Zimbabwean women. AIDS 2006;20:593-600
12. Feldmeier H, Poggensee G and Krantz I. Puberty and Age-intensity Profiles in Schistosome Infections: Another Hypothesis. Parasitol Today 1998;14:435
13. Berry A. A cytopathological and histopathological study of bilharziasis of the female genital tract. . Pathol Bacteriol
1966;91:325–337
14. Badawy A. Schistosomiasis of the cervix. . BMJ 1962;5275:369–372
15. Charlewood GP, Shippel S and Renton. H. Schistosomiasis in Gynaecology. Journal of Obstetrics and Gynaecology British Empire 1949;56:367-385
16. Savioli L, Gabrielli A and Neve H. Vulvar Schistosoma haematobium lesion treated with praziquantel. Trop Doct. 1990;20:45-46
17. Laven JS, Vleugels MP, Dofferhoff AS and Bloembergen P. Schistosomiasis haematobium as a cause of vulvar hypertrophy. Eur J Obstet Gynecol Reprod Biol 1998;79:213-216
18. Statistics South Africa. Census 2001: Primary tables KwaZulu-Natal, 2001
19. The Water Dialogues South Africa. Ugu Case Study. In: Raab E, ed: The Water Dialogues South Africa, 115 Sir Duncan Road, Glenwood, Durban 4001, 2008
20. King CH. Disease in schistosomiasis haematobia. London: Imperial College Press, 2001 (AAF IM, ed. ed. Schistosomiasis)

21. Scott JT, Diakhate´ M, Vereecken K, et al. Human water contacts patterns in Schistosoma mansoni epidemic foci in northern Senegal change according to age, sex and place of residence, but are not related to intensity of infection. Tropical Medicine and International Health 2003;8 100–108
22. Rudge JW, Stothard JR, Basanez MR, et al. Micro-epidemiology of urinary schistosomiasis in Zanzibar: Local risk factors associated with distribution of infections among schoolchildren and relevance for control. . Acta Tropica 2008;105:45-54
23. Kvalsvig JD, Schutte CH. The role of human water contact patterns in the transmission of schistosomiasis in an informal settlement near a major industrial area. Ann Trop Med Parasitol 1986;80:13-26
24. Lund CC, Browder NC. The estimation of areas of burns. Surgery, gynaecology, obstetrics 1944;79:352-358
25. WHO. Report of the WHO Informal Consultation on Schistosomiasis Control. Schistosomiasis and Intestinal Parasites Control. Planning and Technical Guidance, Communicable Diseases Prevention and Control. : Geneva: World Health Organization, 1998:1–45
26. Poggensee G, Kiwelu I, Weger V, et al. Female genital schistosomiasis of the lower genital tract: prevalence and disease-associated morbidity in northern Tanzania. . J Infect Dis 2000;181:1210–1213
27. Bland KG, Gelfand M. The effects of schistosomiasis on the cervix uteri in the African female. . J. Obstet. Gynaecol. Br. Commonw. 1970;77:1127—1131
28. Poggensee G, Sahebali S, Van Marck E, Swai B, Krantz I and Feldmeier H. Diagnosis of genital cervical schistosomiasis: comparison of cytological, histopathological and parasitological examination. . Am. J. Trop. Med. Hyg 2001;65:233-236
29. Lillerud LE, Stuestoel VM, Hoel RE, Rukeba Z and Kjetland EF. Exploring the feasibility and possible eYcacy of mass treatment and education of young females as schistosomiasis influences the HIV epidemic. Arch Gynecol Obstet 2009
30. Paradise JE, Campos JM, Friedman HM and Frishmuth G. Vulvovaginitis in premenarcheal girls: clinical features and diagnostic evaluation. Pediatrics 1982;70:193-198
31. Jaquiery A, Stylianopoulos A, Hogg G and Grover S. Vulvovaginitis: clinical features, aetiology, and microbiology of the genital tract. Arch Dis Child 1999;81:64-67
32. Besharov DJ. Responding to child sexual abuse: the need for a balanced approach. Future Child. 1994;4:135-155
33. Lau JT, Liu JL, Yu A and Wong CK. Conceptualization, reporting and underreporting of child abuse in Hong Kong. Child Abuse Negl. 1999;23:1159-1174
34. Tan H, Yang M, Wu Z, et al. Rapid screening method for Schistosoma japonicum infection using questionnaires in flood area of the People's Republic of China. . Acta Trop 2004;90:1-9
35. Utzinger J, N'Goran E, Tanner M and Lengeler C. Simple anamnestic questions and recalled water-contact patterns for self-diagnosis of Schistosoma mansoni infection among schoolchildren in western Côte d'Ivoire. Am J Trop Med Hyg. 2000;62:649-655
36. Lengeler C, Utzinger J and Tanner M. Screening for schistosomiasis with questionnaires. . Trends Parasitol 2002;18:375-377
37. Friedman JF, Kurtis JD, McGarvey ST, et al. Comparison of self-reported and observed water contact in an S. mansoni endemic village in Brazil. Acta Tropica 2001;78:251-259
38. Kjetland EF, Ndhlovu P, Kurewa EN, et al. Prevention of Gynecologic Contact Bleeding and Genital Sandy Patches by Childhood Anti-schistosomal Treatment. Am. J. Trop. Med. Hyg. 2008;79:79–83
39. Friedberg D, Berry A, Schneider J and Fripp PJ. Schistosomiasis of the female genital tract. . S Afr Med J 1991;80:2–15

40. Helling-Giese G, Sjaastad A, Poggensee G, et al. Female genital schistosomiasis (FGS): relationship between gynecological and histopathological findings. . Acta Trop 1996;62:257–267
41. Feldmeier H, Poggensee G, Krantz I and Helling-Giese G. Female genital schistosomiasis. New challenges from a gender perspective. . Trop Geogr Med. 1995;47:2-15
42. Swai B, Poggensee G, Mtweve S and Krantz I. Female genital schistosomiasis as an evidence of a neglected cause for reproductive ill-health: a retrospective histopathological study from Tanzania. BMC Infect Dis. 2006;23
43. Fischer G. Vulval disease in pre-pubertal girls. Australas J Dermatol. 2001;42:225-234
44. Bergquist NR. Schistosomiasis: from risk assessment to control. . Trends Parasitol 2002;18:309–314.
45. Doehring E, Feldmeier H and Dafalla AA. Day-to day variation and circadian rhythm of egg excretion in urinary schistosomiasis in the Sudan. . Ann Trop Med Parasitol 1983;77:587–594
46. Smith J, Christie J. The pathobiology of Schistosoma haematobium infection in humans. . Hum Pathol 1986;17:333–345.

APPENDIX

Table 2: Association between genital symptoms and 1) watercontact and 2) urinary Schistosomiasis in young females in rural South Africa: seven separate multivariate analyses.

Genital symptoms	High-risk[c] watercontact n=452 (%)	Low/No- risk watercontact n=166 (%)	Bivariate OR[a] (95% CI)	*P*	Multivariate Adj OR[b] (95% CI)	*P*	Urinary Schisto positive[d] n=253 (%)	Urinary Schisto negative n=296 (%)	Bivariate OR (95% CI)	*P*	Multivariate Adj OR (95% CI)	*P*
Bloody discharge	71/440 (16)	7/165 (4)	4.3 (2.0-10.0)	<0.001	3.8 (1.7-8.7)	0.001	52/249 (21)	20/288 (7)	3.5 (2.0-6.1)	<0.001	2.8 (1.6-5.0)	<0.001
Age (years)			1.0 (0.8-1.2)	0.941	0.9 (0.7-1.2)	0.526			1.2 (1.0-1.4)	0.094	1.3 (1.1-1.6)	0.016
Menstruation	39/409 (9)	6/161 (4)	2.5 (1.0-6.1)	0.039	2.7 (1.0-7.2)	0.049	14/236 (6)	21/273 (7)	0.8 (0.4-1.6)	0.466	2.2 (1.4-3.4)	0.175
Haematuria	128/322 (28)	34/134 (20)	1.5 (1.0-2.4)	0.047	1.2 (0.8-1.9)	0.425	89/163 (35)	52/243 (18)	2.6 (1.7-3.8)	<0.001		<0.001
Malodorous discharge	99/449 (22)	9/166 (5)	4.9 (2.4-10.0)	<0.001	4.5 (2.2-9.2)	<0.001	48/252 (19)	49/294 (17)	1.2 (0.8-1.8)	0.468	1.2 (0.8-2.0)	0.412
Age (years)			1.0 (0.8-1.2)	0.941	1.0 (0.8-1.2)	0.869			1.2 (1.0-1.4)	0.094	1.2 (1.0-1.5)	0.101
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727			4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168	5.1 (0.5-51.5)	0.168
Sexual abuse	11/395 (3)	4/155 (3)	1.1 (0.3-3.4)	0.915			7/220 (3)	6/263 (2)	1.4 (0.5-4.2)	0.555		
Genital sore	56/449 (13)	6/166 (4)	3.8 (1.6-9.0)	0.002	3.7 (1.6-8.8)	0.003	31/252 (12)	27/294 (9)	1.4 (0.8-2.4)	0.240	1.5 (0.8-2.6)	0.177
Age (years)			1.0 (0.8-1.2)	0.941	1.0 (0.8-1.3)	0.936			1.2 (1.0-1.4)	0.094	1.2 (1.0-1.5)	0.080
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727			4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168	5.6 (0.5-57.6)	0.146
Sexual abuse	11/395 (3)	4/155 (3)	1.1 (0.3-3.4)	0.915			7/220 (3)	6/263 (2)	1.4 (0.5-4.2)	0.555		
Genital tumor	27/443 (6)	4/166 (2)	2.6 (0.9-7.6)	0.095	2.7 (0.9-7.7)	0.074	15/248 (6)	12/292 (4)	1.5 (0.7-3.3)	0.306	1.4 (0.6-3.1)	0.401
Age (years)			1.0 (0.8-1.2)	0.941	1.0 (0.8-1.3)	0.954			1.2 (1.0-1.4)	0.094	1.2 (1.0-1.5)	0.118
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727			4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168	4.5 (0.4-45.4)	0.202
Sexual abuse	11/395 (3)	4/155 (3)	1.1 (0.3-3.4)	0.915			7/220 (3)	6/263 (2)	1.4 (0.5-4.2)	0.555		0.723
Genital itch	135/450 (30)	43/166 (26)	1.2 (0.8-1.8)	0.320	1.2 (0.8-1.9)	0.316	58/252 (23)	88/295 (30)	0.7 (0.5-1.0)	0.073	0.8 (0.5-1.2)	0.227
Age (years)			1.0 (0.8-1.2)	0.941	1.0 (0.8-1.3)	0.822			1.2 (1.0-1.4)	0.094	1.2 (1.0-1.5)	0.097
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727			4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168	5.2 (0.5-52.3)	0.165
Sexual abuse	11/395 (3)	4/155 (3)	1.1 (0.3-3-4)	0.915			7/220 (3)	6/263 (2)	1.4 (0.5-4.2)	0.555		
Genital burn	91/450 (20)	34/166 (21)	0.9 (0.6-15)	0.943	1.8 (1.2-2.8)	0.496	50/252 (20)	58/295 (20)	1.0 (0.7-1.5)	0.958		0.881
Age (years)			1.0 (0.8-1.2)	0.941		0.779			1.2 (1.0-1.4)	0.094		0.035
Dysuria	137/311 (31)	34/134 (20)	1.7 (1.1-2.6)	0.014		0.009	72/178 (29)	72/223 (24)	1.3 (0.9-1.8)	0.247		0.250
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727		0.625	4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168		0.172
Any genital symptom	245/446 (55)	62/165 (37)	2.1 (1.4-3.0)	<0.001	2.1 (1.4-3.0)	<0.001	131/250 (52)	136/293 (46)	1.3 (0.9-1.8)	0.165	1.3 (0.9-1.9)	0.148
Age (years)			1.0 (0.8-1.2)	0.941	0.9 (0.7-1.2)	0.627			1.2 (1.0-1.4)	0.094	1.2 (1.0-1.5)	0.066
Menstruation	39/409 (9)	6/161 (4)	2.5 (1.0-6.1)	0.039	2.6 (1.0-7.0)	0.059	14/236 (6)	21/273 (7)	0.8 (0.4-1.6)	0.466	5.1 (0.5-51.3)	0.626
Has had vaginal sex	4/442 (9)	2/165 (1)	0.7 (0.1-4.1)	0.727		0.808	4/247 (2)	1/290 (0.3)	4.7 (0.5-42.3)	0.168		0.170
Sexual abuse	11/395 (3)	4/155 (3)	1.1 (0.3-3.4)	0.915		0.995	7/220 (3)	6/263 (2)	1.4 (0.5-4.2)	0.555		

[a]Odds ratio (OR) with 95% confidence interval (CI).

[b]Adjusted odds ratio, different confounding variables were included in each multivariate analysis for the specific genital symptom. Variables were included if the p-value from crude association was less than 0.2 and if the Spearman rank correlation coefficient was below 0.7.

[c]High-risk water contact = daily or frequent water contact with a duration more than 1 hour and more than 10% body surface exposure.

[d]Urinary schisto positive = presence of at least one schistosome ova in any of the urine specimens examined.

REDUCING BILHARZIA PROJECT

NB: Please use a tick where there are pre-coded responses
Name of Interviewer:_____ **Date:** |___|___|___|
day month year

A. Personal data page

1. Isibongo / *Surname(s)* _____
Amagama */ First name(s)* _____
Nickname/praise names/other names_____
2. Uneminyaka emingaki?/ *How old are you? Age (years)* |___|___|
3. Wazalwa nini? */When were you born?* |___|___|___|
day month year
4. Wazalelwaphi? /Where were you born?

_____
School: _____ *Area:* _____
Grade: |___|___| *Section:* |___|
5. Ubani igama likathisha wakho kulonyaka?/ *What is the name of your class teacher this year?* _____

6. Uhlala kuphi isikhathi esiningi? (Ikheli lala uhlala khona) */Where do you live most of the time? (Physical address)*_____
_____

7. Ujwayele ukulala kangakanani lapha? sonke isikhathi ☐ **ingxenye yesikhathi** ☐ /
How often do you sleep here? (All the time / Most of the time)
8. Ikheli leposi */ Postal address*

_____
a. Inombolo kamakhalekhukhwini/*Cell phone number*
|___|___|___| -|___|___|___|___|___|___|___|
b. Inombolo yocingo lwasekhaya/*Landline number* |___|___|___| -|___|___|___|___|___|___|___|
9. Kungani ubelapha isikhathi esiningi? */ Why are you here most of the time?*

_____
a. Ubani okunakekelayo lapha? (igama)/ Who is looking after you here? *(name*)
_____
b. Igama lombheki */Name of a guardian*_____ sex M/F ☐☐
c. Ubuhlobo umama ☐ **/umalume /umngani** ☐ **omunye (chaza).** */ Relation (mother /uncle /friend /other (specify)*_____
d. Ngubani oyinhloko yekhaya?/ *Who is the head of the household?*_____
***e*. Ngubani ongumninimuzi?** */Who owns the house?* _____

10. Ingabe ikhona enye indawo ohlala kuyo ngezimpelasonto, amaholide noma ezinye izinsuku? yebo ☐ **cha** ☐ **Uma kungu CHA → 11/**_*/Is there another place where you stay on weekends, holidays or other days? (Yes, no) (IF NO →11)*
a. Ujwayele ukulala kangakanani lapho? ngezinye zezinsuku zesikole ☐ **ngezimpelasonto** ☐ **amaholide** ☐ **okunye (chaza)** **/***/How often do you sleep there?(some school days,weekends, holidays, other –explain))* _____
b. Ikheli lapho uhlala khona */ Physical address*

_____

_____

c. Ikhelileposi */ Postal address*_____

_____

d. Inombolo kamakhalekhukhwini/*Cell phone number*

|___|___|___||___|___|___|___|___|___|___|

e. Inombolo yocingo lwasekhaya /*Landline number* |___|___|___||___|___|___|___|___|___|___|

f. Kungani uhlala lapha ngesinye isikhathi? */ Why do you stay here sometimes?*

_____

g. Ubani okunakekelayo lapha? (igama)/ *Who is looking after you here? (name)*

_____ sex F/M ☐

h. Ubuhlobo umama☐ **/umalume**☐ **/umngani** ☐ **etc.** */ Relation (mother /uncle /friend etc.other (specify)* _____

i. Ngubani oyinhloko yekhaya?(ubuhlobo) */ Who is the head of the household?(Relationship)*

_____

***j*. Ngubani ongumninimuzi?** */ Who owns the house?* _____

11. Unaso esinye isihlobo esisondele kuwe esihlala kwenye indlu? yebo☐ **cha** ☐

uma kung CHA → 12 / *Do you have any other close relative living in another household? (Yes, no) (If no go to 12)*

a. Ubani igama? */What is the name* _____

b. Ubuhlobo umama☐ **/umalume** ☐ **etc** */ Relation (mother/uncle etc)*

_____

c. Ingabe uhlala endaweni efanayo njengeyakho yebo ☐ **cha** ☐ */Does he/she live in the same area as you? (Yes, no)*

d. Ikheli lapho uhlala khona */ Physical address* _____

_____

e. Ikhelileposi */ Postal address* _____

_____

f. Inombolo kamakhalekhukhwini */Cell phone number*

|___|___|___|-|___|___|___|___|___|___|___|

g. Inombolo yocingo lwasekhaya */ Landline number*

|___|___|___| -|___|___|___|___|___|___|___|

12. Uma ungase ube nohambo noma usuke kulendawo, ubani ongaba nemininingwane yakho yokukuthinta (ngaphandle kwalena engenhla)?/*If you were to travel or move away, who would have your contact details (other than the above)?*

a. Igama/*Name* _____

b. Ubuhlobo umama☐ **/umalume** ☐ **etc** */ Relation mother/uncle etc*

_____

c. Ikheli lapho ahlala khona */ Physical address*_____

_____

d. Ikhelileposi */ Postal address* _____

_____

e. Inombolo kamakhalekhukhwini/*Cell phone number*

|___|___|___|-|___|___|___|___|___|___|___|

f. Inombolo yocingo lwasekhaya */ Landline number* |___|___|___| -|___|___|___|___|___|___|___|

13a. Ubani osayine ifomu lakho lemvume? (ubuhlobo, igama) */ Who signed your consent form? (relation, name)* _____

b. Kungani kunguyena*?* */ Why this person?* _____

14. Awukakamusho/yiphathi u/ekamama wakho noma ubaba wakho okuzalayo.
*/*You haven't yet mentioned your biological mother and/or biological father.

a. Ingabe umama wakho usaphila? Yebo ☐ cha ☐ angazi ☐ */Is your mother still alive? (Yes, no, DK)*

b. Ingabe ubaba wakho usaphila? Yebo ☐ cha ☐ angazi ☐ */Is your father still alive? (Yes, no, DK)*

Uma kungu CHA: Ngiyadabuka ukuzwa ukuthi umama noma ubaba wakho usashona. Ngizokubuza ngomzali osaphilayo.*/ I'm sorry to hear that your mother or father has passed away. I am going to ask you about the parent who is alive.*

c. Uma kungu CHA kubo bobabili abazali yiya ku15.*/ If No for both parents go to 15.*

14d.	**Igama likamama okuzalayo /** *Biological mother*	**Igama likababa okuzalayo /** *Biological father*
i) Unako ukuthintana nomama/ubaba wakho? *Do you have contact with your mother/father?*	**yebo** ☐ **cha** ☐ **akwenzeki** ☐ yes no NA	**yebo** ☐ **cha** ☐ **akwenzeki** ☐ yes no NA
ii) Ingabe umama/ubaba wakho uhlala eduze kwala uhlala khona? *Does your mother/father live near you?*	**yebo** ☐ **cha** ☐ **akwenzeki** ☐ yes no NA	**yebo** ☐ **cha** ☐ **akwenzeki** ☐ yes no NA
iii) Ingabe yiliphi izinga lemfundo eliphezulu likamama/baba wakho? */What is your mother/father's top education?*	**Ayikho imfundo esemthethweni** ☐ No formal education **Imfundo ephansi** ☐ Primary school **Imfundo ephezulu** ☐ High school **Imfundo ephakeme** ☐ Tertiary **Angazi** ☐ Don't know	**Ayikho imfundo esemthethweni** ☐ No formal education **Imfundo ephansi** ☐ Primary school **Imfundo ephezulu** ☐ High school **Imfundo ephakeme** ☐ Tertiary **Angazi** ☐ Don't know
iv) Ubani igama likamama/baba wakho? */What is your mother/father's name?*		
v) Lithini ikheli likamama/baba wakho? */What is your mother/father's address?*		

e. Ingabe ubaba wakho uhlala nawe ekhaya? Yebo ☐ cha ☐ Uma kungu CHA → 15a)*/Does your father live **with you** at home? (Yes, no)* ***(If no → 15a)***

f. Ingabe ubaba wakho uyakusiza ngomsebenzi wakho wesikole uma udinga usizo? Yebo ☐ cha ☐ /*Does your father help you with schoolwork if you need help? (Yes, no)*

g. Ingabe ubaba wakho uke akujezise ngokwenza okungalungile? Yebo ☐ cha ☐
/Does your father ever punish you for doing wrong? (Yes, no)

h. Ingabe lokho kuyakuvimba/gwema ukuthi ungakwenzi futhi? Yebo ☐ cha ☐
/Does that stop you from doing it again? (Yes, no)

i. Ungasho uthi ubaba wakho unomthetho oqinile? Yebo ☐ cha ☐
/Would you say that your father is too strict? (Yes, no)

j. Ingabe unomthetho oqinile kunobaba womngane wakho? Yebo ☐ cha ☐ angazi ☐
/Is he stricter that your friends' fathers? (Yes, no, D/K)

15a. Ingabe umama wakho uhlala nawe ekhaya? Yebo☐ cha ☐ Uma kungu CHA → */Does your mother live **with you** at home? (Yes, no)* ***(If no → 16a)***

b. Ingabe umama wakho uyakusiza ngomsebenzi wakho wesikole uma udinga usizo? Yebo ☐ cha ☐ */Does your mother help you with schoolwork if you need help? (Yes, no)*

c. Ingabe umama wakho uke akujezise ngokwenza okungalungile? Yebo ☐ cha ☐
IDoes your mother ever punish you for doing wrong? (Yes, no)

d. Ingabe lokho kuyakuvimba/gwema ukuthi ungakwenzi futhi? Yebo ☐cha ☐
IDoes that stop you from doing it again? (Yes, no)

e. Ungasho uthi umama wakho unomthetho oqinile? Yebo ☐ cha ☐ *IWould you say that your mother is too strict? (Yes, no)*

f. Ingabe unomthetho oqinile kunomama womngane wakho? Yebo ☐ cha ☐angazi ☐
IIs she stricter that your friends' mothers? (Yes, no, D/K)

16a. Ngubani omandla ekukunakekeleni?
Who is your main caregiver?

M = mother		F = father		B = brother		S = sister	
Gm = grandmother		Gf = grandfather		U = uncle		A = aunt	
C = cousin		Sf = step-father		Sm = step-mother		Sb= step-brother	
Ss= step-sister		N = none		O = other (please list)			

16b. Ingabe uyakusiza ngomsebenzi wakho wesikole uma udinga usizo? Yebo ☐ cha☐ *IDoes she/he help you with schoolwork if you need help? (Yes, no)*

16c. Ingabe uke akujezise ngokwenza okungalungile? Yebo ☐ cha ☐ */Does she/he ever punish you for doing wrong? (Yes, no)*

16d. Ingabe lokho kuyakuvimba/gwema ukuthi ungakwenzi futhi? Yebo ☐ cha ☐
IDoes that stop you from doing it again? (Yes, no)

16e. Ungasho ukuthi unomthetho oqinile? Yebo☐ cha☐ */Would you say she/he is too strict? (Yes, no)*

16f. Ingabe unomthetho oqinile kunombheki womngane wakho? Yebo ☐ cha ☐ angazi ☐ */Is he stricter that your friends' caregiver? (Yes, no, D/K)*

B. Family and living

1. Usuhlale isikhathi esingakanani lapha? |___|___|*/How long have you lived here? (years)*

2. Wake wahlala edolobheni? Yebo ☐cha ☐ angazi ☐ */Have you ever lived in a city? (Yes, no, D/K)*

Uma kungu CHA yiya ku Q5: *If no :go to Q5*

Uma kungu YEBO:*/If yes:*

3. Wawuneminyaka emingaki ngesikhathi uhlala edolobheni? */ How old were you when you lived in the city? (D/K)* **|___|___|/ angazi ☐**

4. Wahlala isikhathi esingakanani lapho? Isikhathi esingaphansi konyaka ☐ 1-5 iminyaka ☐ ngaphezulu kuka 5 weminyaka ☐ */For how long did you live there?(Less than 1 year, 1-5 years, more than 5 years)*

5. Qala ngomdala kunabobonke endlini:/*Start with the oldest in the household:*

Ubani ohlala kulendlu yakini? *Who lives in your house?*	**Isilinganiso seminyaka** *Approximate age*	**Umsebenzi Yebo, cha,** *Work (Yes/No)*		**Umfundi (Yebo, cha,)** *Student (Yes/No)*		**Izinga lemfundo eliphezulu (Ayikho/Ephansi/ Ephezulu/Ephakeme)** *Top education (0=None/1=Primary/ 2=High/3=Tertiary)*
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	
		Yes	No	Yes	No	

M = mother
F= father
B = brother
S = sister
Gm = grandmother
Gf = grandfather
U = uncle
A = aunt
C = cousin
Sf = Step-father
Sm = Step-mother
Ss = Step-sister
Sb =Step-brother
O = other (friend, housekeeper etc)
OC = Our Child
Ne = nephew
Ni = niece

6. Ngubani omandla ekunihlinzekeni/pheni ekhaya? (igama nobuhlobo)
/Who is the main provider in the household? (name and relation) _____________________
____

C. Ukuthinta amanzi / *Water contact*

Manje ngizokubuza imibuzo ngokuthinta amanzi.
Now I will ask you some questions about water contact.

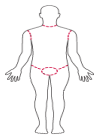
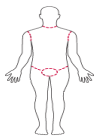
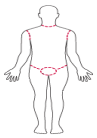
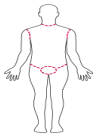
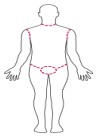
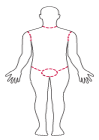
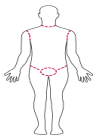
1. Uwatholaphi amanzi okuphuza? emfuleni ☐ **empompini/womphakathi** ☐ **esiphethwini esivikelekile** ☐ **esiphethwini esingavikelekile** ☐ **kuxubene** ☐ **empompini ongaphakathi** ☐ */Where do you get drinking water? (river, stand pipe/communal stand pipe, protected spring, unprotected spring, mixed, indoor tap)*

2. Ingabe amantombazane ekilasini lakho ayabhukuda emfuleni noma edamini ezinsukwini ezishisayo? yebo ☐ **cha** ☐ **angazi** ☐ / *Do girls in your class swim in the river or dam on hot days?(Yes, no, D/K)*

3. Ingabe umngane wakho omkhulu uyakwenza lokho? yebo ☐ **cha** ☐ **angazi** ☐
/ *Does your best friend do this?(Yes, no, D/K)*

4. Uyakwenza wena? yebo ☐ **cha** ☐ / *Do you do this? (Yes, no)*

5. Manje ngizokubuza ngezinhlobo zezinto ozenzayo ngamanzi, nizenza kangakanani, isikhathi eside kangakanani osihlala emanzini nokuthi uthintana kangakanani umzimba wakho namanzi? */Now I will ask you what kind of water activity you do, how often you do them, for how long you stay in the water and how much of your body that is in contact with the water.*

Umfula/river **Amadamu**/dam **Amanzi amile**/standing water **Amanzi avela kulezisuka**/water from these sources	**Kangaki/** *How often?* **Daily (4)***/Daily (4)* **Kujwayele (3**)/*Often(3)* **Kwesinye isikhathi (2)** /*Sometimes (2)* **Kuthukela/qabukela (1)** / *Rarely (1)* **Ngeke (0)** / *Never (0)*	**Uhlala kangakanani emanzini? /** *For how long do you stay in the water?* **Ngaphezulu kuka 5 h (4)** *More than 5 h (4)* **3-5 Amahora (3)/** *3-5 hours (3)* **Ngaphansi kwamahora amathathu (2)** *Less than 3 hours (2)* **Kuze kube yimizuzu ewu-60 (1)** *Up to 60 minutes (1)*	**Umzimba uwathinta kangakanani amanzi ngesikhathi wenza lezizinto** */How much of your body is in contact with water during this activity?*
Uyadlala / Uyabhukuda?/Do you play / swim?			
Uyawasha / uyageza *Do you wash / bathe?*			
Uyazihlanza izingubo?/*Do you do laundry?*			
Uyazihlanza izingubo zokulala? /Do you wash blankets?			
Uyawakha amanzi? */Do you collect water?*			
Uyadoba?/Do you *fish?*			
Uke uwele emanzini?*/Do you ever cross the water?*			

D. Wena nomndeni wakho */ You and your family*

1. Imibuzo elandelayo ingobudlelwane nomndeni wakho kanye nontanga bakho. Ngizokufundela isitatimende kumele ucabange ngesitatimende ungitshele uma kungekona, ingxenye ingekona, ingxenye iyiqiniso noma iqiniso/ *The next questions are about your relationships with your family and peers. I will read out a statement, and you must think about the statement and tell me if it's false, partly false, partly true or true.*

1.	**Isitatimende /** *Statement*	**Akukona/** *False*	**Ingxenye Ayikona/** *Partly false*	**Ingxenye yiqiniso/** *Partly True*	**Iqiniso/** *True*
1a.	**Kukhona abantu obaziyo emndenini wakho abenza zinto ukukujabulisa/** *There are people you know amongst your family who do things to make you happy*				
1b.	**Kukhona abantu obaziyo emndenini wakho abakwenza uzizwe uthandeka/** *There are people you know amongst your family who make you feel loved*				
1c.	**Kukhona abantu obaziyo emndenini wakho ongathembela kubo noma kwenzekani/***There are people you know amongst your family who can be relied on no matter what happens*				
1d.	**Kukhona abantu obaziyo emndenini wakho abangabona ukuthi uyanakekelwa uma udinga lokho /** *There are people you know amongst your family who would see that you are taken care of if you needed to be*				
1e.	**Kukhona abantu obaziyo emndenini wakho abakumukela njengoba unjalo** */There are people you know amongst your family who accept you just as you are*				
1f	**Kukhona abantu obaziyo emndenini wakho abakwenza uzizwe uyingxenye ebalulekile emindenini yabo./***There are people you know amongst your family who make you feel an important part of their lives*				
1g.	**Kukhona abantu obaziyo emndenini wakho abakuxhasayo nabakuqguqguzelayo./***There are people you know amongst your family who give you support and encouragement*				

NB: Siza ufunde isitatimende 2 kuzozonke izitatimende ezingezansi.*/NB: Please read this for all statements below:*

2. Uma umbheki/mzali wakho ekucela ukuba uhlale ekhaya uwashe ngesikhathi engekho bese: */If your caregiver asked you to stay at home and do the washing while she/he was out, and then:*

	Isitatimende / *Statement*	**Yebo /** *Yes*	**Cha /** *No*
2a.	**Abangani bakho bakucele ukuthi uphumele emnyango uyodlala nabo ungahamba?***/Your friends asked you to come out and play with them, would you go?*		
2b.	**Abangani bakho bakucele niyobhukuda emfuleni nabo ungahamba?***/Your friends asked you to go swimming in the river with them, would you go?*		
2c.	**Umhambi akucele ukuthi uye naye esitolo niyothola amaswidi ungahamba?***/ A stranger asked you to go to the shop with him to get sweets, would you go?*		

NB: Siza ufunde isitatimende 3 kuyoyonke imibuzo yesitatimende ngasinye*/NB: Please read statement 3 for questions below each statement*

3	**Ingabe umbheki/mzali wakho usuke esekhaya uma usekhaya** */Is your caregiver at home when you are home:*	**Ngeke** *Never*	**Ngesinye isikhathi** *Sometimes*	**Izinsuku eziningi** *Most days*	**Nsukuzonke** *Every day*
3a.	**Emini** */ In the daytime?*				
3b.	**Ebusuku** */ At night?*				
3c.	**Ngempelasonto** */On the weekend?*				

NB: Siza ufunde isitatimende 4 kuyoyonke imibuzo yesitatimende ngasinye*/NB: Please read statement 4 for questions below each statement*

4	**Ingabe umbheki/mzali wakho uyathanda ukwazi /** *Does your caregiver want to know*	**Ngeke** *Never*	**Ngesinye isikhathi** *Sometimes*	**Izinsuku eziningi** *Most days*	**Nsukuzonke** *Every day*
4a.	**Ukuthi kuqhubeka kanjani esikoleni?***/How you are getting on at school?*				
4b.	**Ukuthi uyaphi uma nizikhipha nabangani bakho?***/Where you are going when you go out with friends?*				
4c.	**Ukuthi ubani ozikhipha naye?***/Who you go out with?*				

E. Ezempilo / *Health*

Imibuzo elandelayo ingezempilo yakho./*The next questions are about your health.*

1. Ingabe uyazi siyini isichenene? yebo ☐ **cha** ☐ **anginasiqiniseko** ☐*/Do you know what Bilharzia is? (Yes, no, unsure)*

Isichenene yisifo ongasithola ngokuthinta amanzi angcolile./*Bilharzia is an infection you can get through contact with infected water.*

2. Ingabe kukhona emndenini onaso noma owake wabanesichenene yebo ☐ **cha** ☐ **Angazi** ☐ **/** *Has anyone in your family ever had Bilharzia?*

3. Wake waba naso isichenene? yebo ☐**cha** ☐ **angazi** ☐ */ Have you ever had Bilharzia? (Yes, no, D/K)*

Uma kunguyebo:*/If yes:*

4a. Wake walashelwa isichenene phambilini? yebo ☐ **cha** ☐*/Have you ever been treated for Bilharzia before?Yes, no)*

Uma kungu CHA yiya ku Q5*/If No go to Q5*

Uma kungu YEBo yiya ku4b*/ If Yes go to 4b.*

4.b Walashelwa nini isichenene (iminyaka) |___|___| |___|___| |___|___| /*When were you treated for Bilharzia (age)* 1st time 2nd time 3rd time

Ngaphambi kokuba uphendule imibuzo elandelayo sifuna ukukuqinisekisa ukuthi lolulwazi luyimfihlo futhi angeke lwatshelwa noma ubani. / *Before you answer the next questions, we want to assure you that the information you give will not be told to anybody.*

5. Unako ukukhwehlela, inkinga yokuphefumula, isifo esiqhubekayo noma ukukhubazeka? Siza chaza*/Do you have a cough, breathing problems, a chronic disease or a disability? Please describe.*_____
_____

6. Ingabe uyaye uye kohlolwa emtholampilo noma kudokotela? yebo ☐**cha** ☐ **akwenzeki** ☐ */ Do you regulary go to a clinic or a doctor? (Yes, no, NA*)

Ingculazi yisifo esithathelana ngegazi noma ngokuhlangana ngokocansi nasobisini lwebele. /*HIV is a disease that is transmitted through blood, sexual contact and breast milk.*

7. Wake wezwa ngengculazi? yebo ☐ **cha** ☐ */Have you heard about HIV before? (Yes, no)*

8. Usuke wahlolelwa ingculazi? yebo ☐ **cha** ☐ **angazi** ☐ */Have you ever been tested for HIV? (Yes, no, DK)*

9. Ingabe uyazi ukuthi unayo ingculazi? yebo ☐ **cha**☐ **angazi**☐ */Do you know if you have HIV?(Yes, no, DK)*

Uma kungu CHA yiya ku Section F*?If No go to Section F*

Uma kunguYEBO: Ngiyadabuka ukuzwa ukuthi unengculazi kodwa kukhona imishanguzo emihle yazo zonke lezizifo eziqhubekayo. */(If yes:) I am so sorry to hear that you have HIV, but nowadays there is good treatment for all of these chronic diseases.*

10. Kukhona obheka izinga lakho leCD4-count emtholampilo? yebo ☐**cha** ☐ **angazi**☐ */ is there someone at the clinic monitoring your CD4-count? (Yes, no, DK)*

F. Okuphathelene nezitho zokuzala nomchamo */ Genitalia and urine*

Mhlawumbe uyazi ukuthi abesifazane bayopha zinyanga zonke. Lokhu kubizwa ngokuthi ukuya esikhathini. Ungaya esikhathini kusukela eminyakeni eyisikhombisa (7) kuya kwengamashumi amabili (20) ubudala */ Maybe you know that women bleed every month. This is called menstruation. You can start your menstruation from 7 up to 20 years of age.*

1. Usuqalile ukuya esikhathini? Yebo ☐ **cha** ☐ */Have you started menstruating? (Yes/no)*

Uma kungu YEBO yiya kuQ2*/If No go to Q2* **Uma kungu CHA yiya kuQ4***/If No go to Q4*

2. Waqala nini ukuya esikhathini |__|__|(iminyaka)/ *When did you first get menstruation(age)*
3. Uma kunguyebo, ingabe uya esikhathini njalo nje?/ Yebo ☐ cha ☐*/If yes, do you get your menstruation regularly?Yes, no*

SEBENZISA ICHART YEMIBALA BESE UFAKA INAMBA YOMBALA kuColour 2a No 2b
USE COLOUR CHART AND INSERT ONE COLOUR NUMBER FOR 2a AND ONE COLOUR NUMBER FOR 2b.

4	**Wake waba nakho okuphumayo noma okusagazana ungekho esikhathini ungasiza ukhombe ukuthi kumbala muni** / *Have you ever had discharge or trace of blood when it's not your menstruation and can you please point out the colour.*	**Njalo ngesonto** *Every week*	**Njalo ngenyanga** *Every month*	**Kanye** *Once*	**Akukaze** *Never (0)*	**Njalo (3) kwesinye isikhathi (2) akukaze (0)** */Always(3) sometimes (2) never (0)*
4a.	**Okuphumayo** /*Discahrge (Grade 1-8)*					
4b.	**Okusagazana***/Trace* of blood *(Grade 1-6)*					
4c.	**Ingabe kunephunga (njalo, kwesinye isikhathi, akukaze)** *Does it smell (always, sometimes, never)*	→				

Emantombazaneni isitho sangasese sinezimbobo/gudu ezintathu. Imibuzo elandelayo igxile ikakhulu embotsheni yesibili ebizwa ngokuthi yinkomo (Isitho sangasese sowesifazane)*/In girls the private parts consist of three openings. The next questions focus mostly on the second opening, called the vagina.*

5	**Wake wezwa ukungaphatheki kahle esithweni sakho sangasese njengo:** */Have you ever felt any discomfort in your private parts like:*	**Esontweni eledlule** *This last week*	**Kudala phambilini** *Sometime before*	**Akwenzeki** */Never*
5a	**Ukulunywa** */ Itch*			
5b	**Ukushisa/Ukushoshozela** */ Burn/Sting*			
5c	**Uzozo/isilonda** */ Sore (ulcer)*			
5d	**Isimila/isigaxa** */ Lump (tumour)*			
6	**Wake waba nayo inkinga noma yiphi ngokuchama njenge:***/Have you ever had any problems with urination like:*	**Esontweni eledlule** */This last week*	**Kudala phambilini** */Sometime before*	**Akwenzeki** */Never*
6a	**Zinhlungu uchama** */ Pain when you urinate*			
6b	**Ukuzwa sengathi ufuna ukuchama esithubeni** */Sudden urge to urinate*			
6c	**Iconsi lomchamo uma ugxuma, ukhohlela noma uhleka** */ Drop of urine if you jump, cough or laugh*			
6d	**Umchamo obomvu** */ Red urine*			

G. Wena nabangani bakho - Ubuhlobo / *You and your friends – Relations*

Manje ngizokubuza imibuzo ngabangane bakho nokuhlobana kwenu. Lezi yizitatimende, ngizokufundela izitatimende kufuneka ungitshele ukuthi akukona, ingxenye ayikona, ingxenye iyiqiniso, iqiniso. */Now I will ask you some questions about your friends and relationship. These are statements, and I will read the statement for you, and you must tell me if it is false, partly false, partly true or true.*

1	**Isitatimende** */Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
1a.	**Kukhona abantu obaziyo kubangane bakho abenza izinto ukukujabulisa***/There are people you know amongst your friends who do things to make you happy*				
1b.	**Kukhona abantu obaziyo kubangani bakho abakwenza uzizwe uthandeka.** */There are people you know amongst your friends who make you feel liked.*				
1c.	**Kukhona abantu obaziyo kubangani bakho abangathenjwa noma kwenzakalani.** /*There are people you know amongst your friends who can be relied on no matter what happens.*				
1d.	**Kukhona abantu obaziyo kubangane bakho abangabona ukuthi unakekelekile uma udinga lokho***/There are people you know amongst your friends who would see that you are taken care of if you needed to be*				
1e.	**Kukhona abantu obaziyo kubangane bakho abakwenza uzizwe uyingxenye ebalulekile ezimpilweni zabo** */There are people you know amongst your friends who make you feel that you are an important part of their lives*				
1f.	**Kukhona abantu obaziyo kubangani bakho abakumukela njengoba unjalo**. / *There are people you know amongst your friends who accept you just as you are.*				
1g.	**Kukhona abantu obaziyo kubangani bakho abakuxhasayo nabakugqugquzelayo.** /*There are people you know amongst your friends who give you support and encouragement.*				

H. Okudakayo / *Alcohol*

Imibuzo elandelayo ingophuzo oludakayo. Izimpendulo onginika zona angeke zatshelwa yinoma ubani.*/The following questions are about alcohol. The answers you give will not be told to anybody.*

1. Umbono kabani owazisa kakhulu mayelana nezophuza (ukusebenzisa utshwala) (abazali noma ogogo ☐ /ababheki ☐ abafowenu ☐ /odadewenu ☐ abangani ☐ abanye abadala */Whose opinion do you value most about the use of alcohol? (parents, grandparent, guardian, brother, sister, friend, other person, who (relation).*

_____

2. Wake wabuphuza utshwala? Yebo ☐ cha ☐ akukhompendulo ☐ */Have you ever drunk alcohol? Yes, no, NR*

Uma kungu YEBO yiya ku Q3*/If Yes go to Q3*
Uma kungu CHA → izitatimende ngotshwala emva kuka Q5*/If NO → statements about alcohol after Q5*

3. Yisiphi isikhathi sokuqala uzwa utshwala? (iminyaka) */When was the first time you tasted alcohol? (age) .* |__|__|

4. Ubuphuza utshwala ezinyangeni ezintathu ezedlule? yebo ☐ **cha** ☐ **akwenzeki** ☐ */Have you been drinking alcohol the past 3 months? (Yes, no, NA)*

Manje ngizokufundela izitatimende ngotshwala, kumele ungitshele uma isitatimende singekona, ingxenye ingekona, ingxenye iyiqiniso noma iqiniso /
Now I will read you some statements about alcohol, and you have to tell me if the statement is false, partly false, partly true or true.

5	**Isitatimende** */Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
5a.	**Uma udakwa utshele abangani bakho bangacasuka baphoxeke.** / *If you got drunk and you told your friends, they would be angry and disappointed.*				
5b.	**Abangani bakho bakhuluma kakhulu ngokungabinesidingo sokuphuza utshwala.** / *Your friends talk a lot about the need to not drink alcohol.*				
5c.	**Wena nabangani bakho niyagqugquzelana ukuthi ningaphuzi (utshwala).** / *Your friends and you encourage each other not to drink.*				
5d.	**Ucabanga ukuthi akulungile ukudakwa.** / *You think it's bad to get drunk.*				
5e.	**Uma udakwa abangani bakho bangakukhathalela baqiniseke ukuthi uphephile.** / *If you got drunk, your friends would care and make sure you were safe.*				
5f.	**Wake wadakwa** /You were once drunk.				
5g.	**Ungathanda ukuthi uke udakwe** /You would like to get drunk.				

I. Izidakamizwa / *Drugs*

1. Ingabe abangani bakho bayazisebenzisa izidakamizwa? yebo ☐ **cha** ☐ **angazi** ☐ / *Do your friends use drugs? (Yes, no, DK)*

2. Uyazisebenzisa izidakamizwa? yebo ☐ **cha** ☐ / *Do you use drugs?(Yes, no)*

3.Wake wasebenzisa okunye noma okungaphezulu kwalokhu okulandelayo? / *Have you ever used one or more of the following*	**Insangu** dagga	**Yiglue** glue	**Yibensin** bensin	**umgwinyo** ecstacy	**Okunye 1** Other 1 (specify)	**Okunye 2** Other 2 (specify)
	Yebo ☐ Cha ☐	Yebo ☐ Cha ☐	Yebo ☐ Cha ☐	Yebo ☐ Cha ☐		

J. Ukuziphatha ngokocansi */ Sexual behaviour*

Imibuzo elandelayo ingokuziphatha ngokocansi nokucabangayo wena nabangani bakho ngocansi. / Ngiyazi eminye yalemibuzo inzima ukuyiphendula kodwa ngicela usize wenze okusemandleni akho. */The next questions are about sexual behaviour and what you and your friends think about sex. I know some of these questions are hard to answer, but please do your best.*

1. Umbono kabani owazisa kakhulu mayelana nokuziphatha kwezocansi ? abazali ☐ umkhulu nogogo ☐ umbheki ☐ umfowenu ☐ udadewenu ☐ umngani ☐ omunye umuntu ☐ (ubuhlobo nengane) */ Whose opinion do you value most with regards to your sexual behaviours? (parent, grandparent, guardian, brother, sister, friend, other person,(relationship with the child)* _____

2. Hloboluni locansi owake walwenza? */ What kind of sex have you had?*

2a	**Ukuphathaphatha isitho sangasese kuphela** */ Petting*	Yebo	Cha
2b	**Ukusoma** */ Thigh sex*	Yebo	Cha
2c	**Olokukhotha isitho sangasese** */ Oral*	Yebo	Cha
2d	**Olwasesithweni sowesifazane** */ Vaginal*	Yebo	Cha
2e	**Olwasembotsheni yokuzikhulula** */ Anal*	Yebo	Cha
2f	**Alukho** */ None*	Yebo	Cha

Uma kungu YEBO yiya kuQ3*/If Yes go to Q3*
Uma kungu CHA kwelesitho sangasese sowesifazane noma olwesitho sokuzikhulula yeqela embuzweni 10 / *If no vaginal or anal, jump to* question 10.

3. Wawungakanani ngesikhathi wenza ucansi lwesitho sowesifazane okokuqala ngqa?|__|__| (iminyaka) */ How old were you when you had vaginal sexual intercourse for the first time?(age)*

4. Empilweni yakho usuwenze ucansi nabantu besilisa abangaki? |__|__| (inamba) */ During your life, with how many males have you had sexual intercourse?(number)*

5. Ezinyangeni ezintathu ezedlule usuwenze ucansi nabantu besilisa abangaki? |__|__|(abesilisa)/ *During the past 3 months, with how many males did you have sexual intercourse? (males)*

6. Uke waphuza uphuzo oludakayo noma izidakamizwa ngaphambi kokuba wenze ucansi ngesikhathi ugcina? yebo ☐ cha ☐ NA ☐ */ Did you drink alcohol or use drugs before you had sexual intercourse the **last time?**(Yes, no, NA)*

7. Esikhathini sokugcina wenza ucansi ikhona indlela owayisebenzisayo ukuvikela ukukhulelwa? (khetha impendulo ibe yinye) */ The **last time** you had sexual intercourse, did you use a method to **prevent pregnancy**?*

7a	**Ayikho indlela eyasetshenziswa**	*No method was used*	Yebo	Cha
7b	**Amaphilisi okuhlela**	*Birth control pills*	Yebo	Cha
7c	**Amakhondomu**	*Condoms*	Yebo	Cha
14d	**Depo-Provera (umjovo wokuvikela inzalo)**	*Depo-Provera (injectable)*	Yebo	Cha
14e	**Ukukhipha (ngaphambi kokuqeda)**	*Withdrawal*	Yebo	Cha
14f	**Ezinye izindlela (yisho)**	*Other method (specify)*	Yebo	Cha
14g	**Anginasiqiniseko**	*Not sure*	Yebo	Cha

8. Wake wakhulelwa? yebo ☐ **cha** ☐ */Have you ever been pregnant? (Yes, no)*

9. Uma kunguyebo: *If yes*: **Usumasu/khulelwe kangaki** [___] / *How many pregnancies have you had? (number)*

10. Ingabe kukhona owake wakunika imali, izinto noma wakwenzela okuthile ngokwenza ucansi?yebo ☐ **cha** ☐ / *Has someone ever given you money, things or favours for having sex?*

11. Ingabe kukhona owake wakuphoqa ukuba wenze ucansi? yebo ☐ **cha** ☐ */Has someone ever forced you to have sex? (Yes, no)*

Uma kunguYEBO: Ngiyadabuka ukuzwa ukuthi kukhona owake wakuphoqa ukuba wenze ucansi naye. Okuningi sizokhuluma ngaloku kamuva engxoxwenimbuzo yethu. */If yes: I'm sorry to hear that someone has forced you to have sex. We will talk more about this later in the interview.*

Yikuphi kulezizitatimede ezilandelayo mayelana nemibono yezocansi okuxhaswa ngabangani bakho? Siza ukhethe isitatimende ESISODWA / *Which of the following statements regarding sexual ideas is supported by your friends? Please choose* ***one*** *statement:*	
Uma wenza ucansi akumele usebenzise ikhondomu NOMA */If you do have sex, you should not use a condom at all OR*	☐
Uma wenza ucansi kumele usebenzise ikhondomu kuphela nomuntu ongamazi NOMA */If you do have sex, you should use a condom only with someone you do not know OR*	☐
Uma wenza ucansi kumele usebenzise ikhondomu ngasosonke isikhathi NOMA / *If you do have sex, you should use a condom every time OR*	☐
Akumele nhlobo wenze ucansi / *You should not have sex at all*	☐

Imibuzo elandelayo ingawe nabangane bakho indlela abayiyo ngokwenza ucansi oluphephile. Ngizokufundela izitatimende ungaphendula ukuthi akukona, ingxenye ayikona, ingxenye iyiqiniso, iqiniso. */The following questions are about* ***you and your friends' attitudes towards practicing safe sex****. I will read out a statement and you can answer if it's false, partly false, partly true or true.*

12.	**Isitatimende** */Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
12a.	**Uma wenze ucansi ngaphandle kwekhondomu utshele abangani bakho bangacasuka baphoxeke.** / *If you had sex without a condom and you told your friends, they would be angry and disappointed.*				
12b.	**Abangani bakho baxoxa kakhulu ngokuzithiba noma ukwenza ucansi oluphephile njengokusebenzisa ikhondomu.** */Your friends talk a lot about the need to abstain or practice 'safe' sex i.e. use a condom.*				
12c.	**Wena nabangani bakho niyagqugquzelana ngokuzithiba noma nenze ucansi oluphephile njengokusebenzisa ikhondomu.** / *Your friends and you encourage each other to abstain or practice 'safe' sex i.e. use a condom.*				
12d.	**Uma umngani wesifazane azi ukuthi wenze ucansi uzikhiphile angeke abanandaba ukuthi uyisebenzisile noma awuyisebenzisanga ikhondomu.** / *If a female friend knew that you had sex on a date, she wouldn't care if you had used a condom or not.*				

12e.	**Uma umngani wesilisa azi ukuthi wenze ucansi uzikhiphile angeke abanandaba ukuthi uyisebenzisile noma awuyisebenzisanga ikhondomu.** / *If a male friend knew that you had sex on a date, he wouldn't care if you had used a condom or not.*				
12f.	**Uma ucabanga ukuthi omunye wabangani bakho angase alingeke enze ucansi ungabagqugquzela ukuthi bazithibe noma basebenzise ikhondomu.** / *If you think that one of your friends may be tempted to have sex, you would encourage them to abstain or use a condom.*				

K. Wena nekusasa lakho / *You and your future*

Imibuzo elandelayo ingendlela ozizwa ngayo ngekusasa. */The following questions are about your feelings and **attitude towards the future.***

1. Ezinyangeni ezingu 12 ezedlule uke wazizwa udangele uphelelwa yithemba cishe zonke izinsuku amasonto amabili noma ngaphezulu kulandelana ingangokuthi wayeka ukwenza ojwayele ukukwenza? yebo ☐ cha ☐ akwenzeki ☐

/ During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?

2. Manje ngifuna sikhulume ngemizwa yakho esontweni eledlule. Ngizokufundela izitatimende kumele uphendule uma kungekona, ingxenye ingekona, ingxenye iyiqiniso noma iqiniso. */ Now I want to talk about your feelings the last week. I will read out a statement and you have to answer if it's false, partly false, partly true or true.*

	Isitatimende/*Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
2a	**Ungamane udele ngoba akukho ongakwenza ukuzenzela izinto kangcono.** / *You might as well give up because there is nothing you can do about making things better for yourself.*				
2b	**Uma izinto zizimbi uyasizwa ukwazi ukuthi angeke zahlala zinjalo unomphela**/*When things are going badly, you are helped by knowing that they cannot stay like that forever*.				
2c	**Ulindele ukuphumelela ngokufunayo ngengomuso.** /*In the future, you expect to succeed in what you want.*				
2d	**Ikusasa lakho kuwena libukeka limnyama lingenathemba.** / *Your future seems dark and hopeless to you.*				
2e	**Ikusasa lakho kuwena linokungacaci futhi liyakungabazisa .** /*The future seems vague and uncertain to you.*				
2f	**Ulilangazelele/phokophelele/ ikusasa lakho.** / *You look forward to your future*.				
2g	**Akusizi ukuzama ukuthola noma yini oyifunayo ngoba vele angeke uyithole**/*There's no use in really trying to get anything you want because you probably won't get it.*				

3. Imibuzo elandelayo ingendlela ozizwa ngayo ngawe. Ngizofunda isitatimende kumele uphendule ukuthi akukona, ingxenye ayikona, ingxenye iyiqiniso noma iqiniso. / *The following questions are about **how you generally feel about yourself**. I will read out a statement and you have to answer if it's false, partly false, partly true or true.*

	Isitatimende*/Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
3a	**Uzizwa ungumuntu obalulekile.** / *You feel you are a person of worth.*				
3b	**Uzizwa ungumuntu onezinto ezinhle zeqophelo (izenzo).** / *You feel you have many good qualities*.				
3c	**Kukonke uzizwa ukuthi uyisahluleki** */All in all, you feel that you're a failure.*				
3d	**Uzwa ukuthi uyakwazi ukwenza izinto njengabanye abantu abaningi.** / *You feel you are able to do things as well as most other people.*				
3e	**Uzwa ukuthi awunakho okungakanani ongabaneqholo ngako.** /*You feel you do not have much to be proud of.*				
3f	**Sekukonke ugculisekile ngawe.** / *On the whole you are satisfied with yourself*.				
3g	**Ufisa sengathi ungaba nokuzihlonipha okuthe xaxa.***/You wish you could have more respect for* yourself.				

4. Izitatimende ezilandelayo zingendlela owenza ngayo uma ubhekene nezingqinamba. Emva kokuba sengizifundile lezizitatimende, siza uphendule uma kungekona, ingxenye ingekona, ingxenye iyiqiniso noma iqiniso.*/The next statements are about **how you react when facing difficulties**./ After I've read the statement, please answer if it's false, partly false, partly true or true.*

	Isitatimende*/Statement*	**Akukona** *False*	**Ingxenye Ayikona** *Partly false*	**Ingxenye yiqiniso** *Partly True*	**Iqiniso** *True*
4a	**Uma unenkinga ucabanga ukuthi ungayixazulula.** / *When you have a problem, you think you can solve it.*				
4b	**Uma omunye ekuphikisa ungazithola izindlela zokuthola okufunayo.** / *If someone opposes you, you can find the ways to get what you want.*				
4c	**Kulula kuwena ukugxila ezinhlosweni zakho futhi ufeze izinjongo zakho.** / *It is easy for you to stick to your aims and accomplish your goals.*				
4d	**Uyazethemba ukuthi ungamelana nezimo ongazilindele.** / *You are confident that you could deal efficiently with unexpected events.*				
4e	**Ungaxazulula izinkinga eziningi uma ungenza imizamo efanele.** / *You can solve most problems if you invest the necessary effort.*				

4f	**Ungabeka umoya phansi uma ubhekene nezinkinga ngoba ungathembela ekwazini ukubukela.** / *You can remain calm when facing difficulties because you can rely on your coping abilities.*				
4g	**Uma ubhekwe yinkinga ujwayele ukuthola izixazululo eziningi.** / *When you are confronted with a problem, you can usually find several solutions.*				

L. Okunye ukubamba iqhaza */ Further participation*

Sithanda ukukubonga ngokubamba kwakho iqhaza kulokhu. Sizama ukusiza abanye ngalolucwaningo. / *We want to thank you for participating in this. We are trying to help others by this research.*

2. Singathanda ukuba sithintane nawowonke amantombazane ngokuzayo.Ungasisiza ukugcina umkhondo wabangani bakho? yebo☐ cha ☐ NA☐ / *We would like to contact all the girls in the future. Would you help us keep track of your friends? (Yes, no, NA)*

3. Ingabe uyathanda ukungenela olunye ucwaningo lapho sikuhlola khona futhi? Lokhu kuzosisiza sifunde okuningi ngesichenene yebo ☐cha ☐ NA ☐ */ Are you interested in joining an extra project where we take a few more tests from you? This will help us to learn more about Bilharzia.(Yes, no, N/A)*

☆ **Summery of questions with a star attached: (Read only the part(s) that corresponds with what the participant mentioned earlier on)**

Ngesikhathi sengxoxombuzo ngikubuze imibuzo enzima ukuba uyiphendule. Ngiyabonga ngezimpendulo zakho ezithembekile. Ungitshele ukuthi:*/During the interview I've asked you questions that are hard to answer. I thank you for your honest answers. You told me that:*

- **4. Wahlolwa watholwa unegciwane lengculazi futhi neCD4-count ayibhekwa. Ingabe lokhu kuyiko?***/ You have been tested positive for **HIV** and your CD4-count is not monitored. Is this correct?*

  Uma kunguYEBO: Sifuna ukuthi umbheki wakho azi ngalokhu, sibonisa ukuthi uhlolisiswe ngokushesha okukhulu. Ngakhoke, uzothola incwadi evela kithina ezokusiza wena nombheki wakho ukuba nithintane nomtholampilo.*/If yes: We want your caregiver to know about this, and we recommend that you have a thorough investigation as soon as possible. Therefore, you will receive a letter from us that will help you and your caregiver to contact a clinic.*

- **5. Usuke wahlangabezana nokungaphatheki kahle esithweni sakho sangasese. Singathanda ukukusiza ngaloko. Lokho kusho ukuthi kumele uthintane nomthalampilo uthole okokwelashwa ukuze kuphele lokhu kungaphatheki kahle.***/You have experienced **discomfort in your private parts**. We would like to help you with this. That means you should get in contact with a clinic and get the necessary treatment to take away the discomfort.*

- **6. Uye waphoqwa ukwenza ucansi. Akekho onemvume yokuba akuphoqe ukuthi wenze ucansi naye, futhi ngiyadabuka kakhulu ukuzwa ukuthi usuke wahlangabezana nalokho. Uyafisa ukukhuluma ngalokho nomunye osebenza nathi? Uma ungakakulungeli ukuba ukhulume ngako, ungathola inombolo yocingo ongasithinta kuyo uma ushintsha umqondo.***/You have been **forced to have sex**. No one is allowed to force you to have sex with them, and I'm sorry to hear that you've experienced this. I know it is very difficult for you to talk about this. It's a very heavy load to have to carry on your own. And I wonder if you would like some help from somebody… We would like to offer you …… If you're not ready to talk about it now, you can get a phone number that you can call if you change your mind.*