

# Knowledge and practices of female students at university of Kara regarding sexually transmitted infections in Togo, 2021

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## Abstract

A good knowledge of sexually transmitted infections (STI) in female students is an important element in the prevention of STI transmission. The objective of this study is to describe the level of knowledge and practices on STI among female students at the University of Kara. A cross-sectional study was conducted at the University of Kara from July to September 2021. Data were collected using a standard, digitalised, self-administered questionnaire. Logistic regression analysis was used to describe factors associated with the level of knowledge of STIs. A total of 1,055 female students with a median age of 21 years (interquartile range: 20-24) participated in the study. More than one-third (33.7%) of the students had good knowledge of STI. Having already been tested for HIV (aOR=3.25; 95% CI 2.36-4.52), having already had sex (aOR=1.56; 95% CI 1.10-2.24) and the level of education (AOR=3.46; 95% CI 2.10-5.85) were significantly associated with good STIs knowledge. Among the 723 female students (68.5%) who already had sex, 32.5% reported inconsistent use of condoms during sexual intercourse and 18.9% reported having multiple sexual partners. The results of this study highlight the importance of intensifying STIs prevention efforts (awareness, screening, and vaccination) among female students at the University of Kara.

## Introduction

The World Health Organisation (WHO) estimates at more than one million the number of new cases of sexually transmitted infections (STIs) every day worldwide.<sup>1</sup> The majority of sexually transmitted infections (STIs) cases are asymptomatic.<sup>2</sup> Approximately 80-90% of the global STIs cases occur in developing countries where access to diagnosis is limited.<sup>3</sup> One third of STIs worldwide occur in people under the age of 25:<sup>4</sup> more than 40 million young people are infected with herpes simplex virus (HSV-2)<sup>5</sup> and four million are infected with HIV.<sup>6</sup> Data from sub-Saharan Africa indicate that 10-20% of young people aged 15-24 are sexually active before the age of 15.<sup>7</sup> Unprotected sex is the leading cause of STIs and is an important and widely used indirect indicator for the increased risk of HIV, other infections, and unintended pregnancies.<sup>8</sup> In developing countries, young people are at risk of STIs due to a lack of adequate knowledge about STIs,<sup>9</sup> their sexual behaviour and limited preventive practices.<sup>10</sup> Unsafe sexual behaviours among young people in developing countries is a major health, social and demographic concern.<sup>11</sup> Young women in sub-Saharan Africa remain the most vulnerable group.<sup>6,12</sup> In Togo, STIs diagnosis is done by syndromic and/or etiological approach according to WHO recommendations. In 2019, a total of 82,898 STIs cases were diagnosed and treated compared to 80,185 in 2018.<sup>13</sup> The majority of STIs cases were diagnosed and treated in people over 25 years old (54%). Young people and adolescents (10-24 years) account for 45% of all registered STIs cases.<sup>13</sup> Most female students are vulnerable and young, thus are included as a target population at risk of engaging in sexual behaviours leading to STIs.<sup>11,14,15</sup> They are at high risk of contracting STIs and HIV because of the early sexual initiation and the inconsistent use of condoms.<sup>16,17</sup> Good knowledge of STIs among this population is an important tool for preventing the transmission of these diseases. Several studies on students show that special attention should be paid to this target group.<sup>16,17</sup> Some of the results of these studies show that most young people have unprotected sex with their partners, others have several sexual partners, and some have sex under the influence of alcohol or drugs.<sup>11,18-21</sup>

In Togo, few data exist on vaccination against STIs, notably hepatitis B (HBV) and human papillomavirus (HPV). To our knowledge, there is no data on vaccination against HPV. Vaccination against HBV was introduced into the Expanded Programme on Immunisation (EPI) in 2008 and is free

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Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Ethics approval and consent to participate: Ethical approval was obtained from the national Bioethics Committee for Health Research of Togo (ethics clearance number 02/2022/CBRS of 18 January 2022). The objectives of the study were explained to the students. They were informed that their participation was voluntary and that they were free, without justification, to withdraw at any time without any negative consequences for them. They were given the necessary time to reflect before deciding whether or not to participate in the study. The anonymity of the participants and the confidentiality of the data collected were guaranteed.

Informed consent: All female students present on site at the time of the survey, who were interested in the study and who proved by their students cards that they were regularly enrolled at the university for the academic year 2020-2021 and provided informed consent, participated in the study. After verifying eligibility and collecting informed consent, the interviewers distributed the tablets containing the questionnaire to the students who agreed to participate in the study.

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of charge.<sup>22</sup> However, this program focuses on children under 5 years of age, and most adults today (*i.e.*, born before the era of HBV vaccination) have not been vaccinated.<sup>23</sup> Two studies showed respectively that less than 2% of infants under 5 years of age received the HBV vaccine as part of the EPI and 0.4% of HIV-infected patients at Sylvanus Olympio University Hospital had been vaccinated against hepatitis B.<sup>24,25</sup> Similarly, few studies have been conducted on the topic of sexuality, both in the general population and among youth in particular in Togo. No study on STIs has yet been carried out among students at the University of Kara, whereas the University of Lomé has already developed two studies on the subject.<sup>26,27</sup> These two studies reported, respectively, a prevalence of STIs among students estimated at 10.8% and an average level of knowledge of STIs estimated at 60.8%. The objective of our study was to describe the level of knowledge and practices of STI among female students at the University of Kara.

## Materials and methods

### Study design and period

We conducted a cross-sectional study with descriptive and analytical purposes from July to September 2021 at the University of Kara, located in the North of Togo, 420 km North of Lomé, the capital city. This university has five faculties (Faculty of Law and Political Science, Faculty of Economics and Management, Faculty of Arts and Humanities, Faculty of Science and Technology and Faculty of Health Sciences) and one institute (High Institute of Agricultural Trades).

### Study population and sample size

The population was the 6,614 female students enrolled at the University of Kara for the 2020-2021 academic year. Female students regularly enrolled the 2020-2021 academic year at the University of Kara,

and those who gave their consent to participate in the study were requested to participate in the study. The sample size was estimated using the single proportion formula with a 95% confidence level. The proportion of female students with a good level of knowledge about STIs was estimated to be 56% according to the survey on knowledge, attitudes, and practices on HIV, sexual and reproductive health among young people aged 10-24 years in Togo in 2014.<sup>28</sup> We assumed that 75% of the students would have a good level of knowledge with a margin of error of 5% and a non-response rate of 10%. The minimum number of participants estimated was 416 female students.

### Data collection tool

Data were collected using a standardised, digitalised, self-administered questionnaire. This questionnaire was developed by a multidisciplinary team including four epidemiologists, a medical anthropologist, and a sociologist. All sections of the questionnaire (socio-demographic characteristics; sexuality and gynaeco-obstetric history; condoms; history and current signs of STIs; STIs prevention and screening) were developed from data reported in the STIs literature.<sup>26,29-31</sup> The questionnaire was pre-tested with 30 female students at the University of Kara to rephrase questions that were difficult to understand. The students who took part in the pre-test did not participate in the final survey.

### Study procedures

Seven student interviewers were trained on: the objectives of the study; the selection of participants; the content of the questionnaire; confidentiality; and the procedure for informed consent. Students were approached randomly before or after classes and practice lessons by interviewers located at the entrances of the university and at the campus. All female students present on site at the time of the survey, who were interested in the study and who proved by their students cards that they were regularly enrolled at the university for the academic

year 2020-2021 and provided informed consent, participated in the study. After verifying eligibility and collecting informed consent, the interviewers distributed the tablets containing the questionnaire to the students who agreed to participate in the study. The questionnaires were completed individually by participants.

## Statistical analysis

### Knowledge score construction

The data collected were saved and secured in an Excel database synchronised with the digital questionnaire. An STIs knowledge score was established with 17 questions based on knowledge of STIs and their symptoms, condom use, and STIs prevention. Each correct answer was worth one point and the total score ranged from 0 (no correct answer) to 17 (all correct answers).

These seventeen questions were used to describe the level of knowledge of STI among female students at the University of Kara on STIs (the primary variable of interest). Students who answered at least 13 major questions correctly (75%) were considered to have a good level of STIs knowledge and those unable to answer correctly at least 13 major questions were considered to have a poor level of STIs knowledge.

### Descriptive analysis

The data were analysed using STATA software version 13.0. Quantitative variables were presented as median with their interquartile range (IQR) and qualitative variables were presented as proportions with their 95% confidence intervals (95% CI).

### Logistic regression analysis

Univariate and multivariate logistic regression analyses were performed to study the relationship between the dependent variable (good knowledge of STIs) and the explanatory variables (age; ever had sexual intercourse; current number of sexu-

**Table 1. Distribution of female students by institution, University of Kara 2021.**

Establishment	Registered students, n	Students approached, n (%)	Students refusing to participate, n (%)	Enrolled students, n (%)
Faculty of Arts and Humanities	4 129	673 (100)	257 (38.2)	416 (61.8)
Faculty of Economics and Management	1 300	523 (100)	241 (46.1)	282 (53.9)
Faculty of Law and Political Science	615	312 (100)	154 (49.4)	158 (50.6)
Faculty of Science and Technology	469	241 (100)	97 (40.2)	144 (59.8)
Faculty of Health Sciences	69	28 (100)	5 (17.8)	23 (82.2)
High Institute of the Agricultural Trades	32	32 (100)	0 (0.0)	32 (100)

al partners; marital status; HIV testing; ever had a gynaecological consultation; level of education) to describe the factors associated with good knowledge of STIs. The significance threshold was set at 5%.

## Results

### Study population

This survey carried out at the University of Kara showed a participation rate of 58%, *i.e.*, 1,055 students enrolled out of 1,809 students approached for this survey. The distribution by institution of students enrolled for the 2020-2021 academic year, students who refused to participate in our study, and students enrolled in this study is shown in Table 1.

### Socio-demographic characteristics

Median age of respondents was 21 years (IQR: 20-24). The majority (98.5%) of participants were Togolese. More than 8 out of 10 participants (86.3%) were single and 92.0% were studying for a bachelor's degree. The socio-demographic characteristics of the participants are summarised in Table 2.

### Knowledge of female students at the University of Kara regarding STIs

In terms of knowledge of STIs, 356 of 1055 students or one in three (33.7%) had good knowledge of STIs.

### Sexual practices and gynaeco-obstetrical history of female students at the University of Kara

On sexual activity, 68.5% of the 1,055 participants in the study had already had sexual intercourse. Of the 723 participants who already had sex, 34.5% had done so after the age of 18; 32.5% reported not using condoms consistently during sex; 18.9% had multiple sexual partners and 23.7% reported ever being pregnant. Approximately 31.0% of the 171 participants with a history of pregnancy had an abortion. Table 3 describes sexual practices and gynaeco-obstetrical history among female students at the University of Kara.

### STI prevention practices of enrolled female students

Table 4 describes the preventive practices of enrolled female students regarding STIs. Of the 1,055 respondents, 59.3%, 29.0%, 5.7%, and 2.7% had been tested for HIV, hepatitis B, syphilis, and HPV, respectively; 15.0% and 2.4% reported being vaccinated against hepatitis B (HBV) and human papillomavirus (HPV), respectively.

### Factors associated with good knowledge of STIs (n=1055)

In multivariate analysis, the factors significantly associated with good knowledge of STIs were: having already been tested for

HIV (OR=3.25; 95% CI 2.36-4.52), having already had sexual intercourse (OR=1.56; 95% CI 1.10-2.24) and the level of education (OR=3.46; 95% CI 2.10-5.85) (Table 5).

**Table 2. Socio-demographic characteristics and sexual orientation of study participants, University of Kara, 2021 (n=1055).**

Variables	n (%)
Nationality	
Togolese	1 039 (98.5)
Other	16 (1.5)
Age (years)	
Median	21 [20-24]
Marital status	
Single	910 (86.3)
Married/Couple	145 (13.7)
Level of study	
Bachelor's degree	970 (92.0)
Master	70 (6.6)
Doctorate	15 (1.4)
Place of residence	
At husband's home	83 (7.9)
At parents' home	398 (37.7)
With a friend	51 (4.8)
Lives alone	515 (48.8)
Other	8 (0.8)
Sexual orientation	
Heterosexual	969 (91.8)
Homosexual	44 (4.2)
Bisexual	42 (4.0)

**Table 3. Sexual practices and gynaeco-obstetrical history of female students at the University of Kara (n=1,055).**

Variables	n (%)
Already had sexual intercourse (sexual initiation)	
Yes	723 (68.5)
No	332 (31.5)
Age at first sexual intercourse (years) (n=723)	
≤18 years	359 (65.5)
>18 years	364 (34.5)
Already had sex with (n=723)	
Male	709 (98.1)
Female	12 (1.6)
Male and female	2 (0.3)
Current number of sexual partners (n=723)	
1	586 (81.1)
>1	137 (18.9)
Condom use at last sex (n=723)	
Yes	587 (81.2)
No	136 (18.8)
Systematic use of condoms (n=723)	
Yes	488 (67.5)
No	235 (32.5)
History of pregnancy (n=723)	
Yes	171 (23.7)
No	552 (76.3)
Have children (n=171)	
Yes	119 (69.6)
No	52 (30.4)
History of abortion (n=171)	
Yes	53 (31.0)
No	118 (69.0)



## Discussion

This study was conducted among female students of the University of Kara who were regularly enrolled for the 2020-2021 academic year. This study showed a participation rate of 58% (1055 students enrolled out of 1809 students approached) for the survey. The main reason for the non-participation of some students was their unavailability (they did not have the time or were in a hurry). To our knowledge, this is the first study that has described the level of knowledge and practices of female students at this university about STIs.

About one-third of the participants in our study had good knowledge of STIs. Among students in Bajhang, Nepal, reported good knowledge level was 38.1% in 2018.<sup>32</sup> In 2015 in Nigeria, the knowledge of STIs was 6.9% among secondary school students.<sup>33</sup> In general, the lack of integration of comprehensive health education on STIs into the school curricula could explain these low levels of knowledge.

Two studies specifically targeting STIs and HIV, conducted in Togo in 1999 among students at the University of Benin, now the University of Lomé and Madagascar in 2020 among students at the University of Fianarantsoa reported a good level of knowledge of 60.8% and 67.7% respectively.<sup>27,34</sup> The differences observed between our results and those of the other authors could be explained by the fact that the same tool was not used to measure knowledge of

STIs. Thus, comparisons with other studies should be made with caution and take into account not only the country but also the year in which the study was conducted.

Regarding sexual activity, 68.5% of the participants in our study reported having

already sexual intercourse. Inghels *et al.* conducted a study among students at Houphouët Boigny University in Ivory Coast in 2017 and 78.8% reported having already sexual intercourse.<sup>35</sup> In Ethiopia, studies conducted at the University of

**Table 4. STI preventive practices of female students at the University of Kara (n=1,055).**

Variables	n (%)
HIV testing	
Yes	626 (59.3)
No	429 (40.7)
Hepatitis B screening	
Yes	306 (29.0)
No	749 (71.0)
Hepatitis B vaccination	
Yes	158 (15.0)
No	859 (81.4)
Don't know	38 (3.6)
Syphilis screening	
Yes	60 (5.7)
No	995 (94.3)
HPV testing	
Yes	28 (2.7)
No	1027 (97.3)
HPV vaccination	
Yes	25 (2.4)
No	932 (88.3)
Don't know	98 (9.3)
Have already had a gynaecological consultation	
Yes	221 (20.9)
No	834 (79.1)
Period of time since the last consultation (n=221)	
<6 months	70 (31.7)
≥6 months	151 (68.3)

**Table 5. Factors associated with good knowledge of enrolled female students at the University of Kara (n=1,055).**

Variables	n/N	Univariate model OR	95%CI	p	Multivariate model AOR	95%CI	p
Age (years) (n=1055)							
≤21	135/528	1			1		
>21	221/527	2.10	[1.62-2.73]	<0.001	1.28	[0.95-1.71]	0.104
Already had sex (n=1055)							
Yes	293/723	2.91	[2.14-4.00]	<0.001	1.56	[1.10-2.24]	0.014
No	63/332	1			1		
Current number of sexual partners (n=1055)							
0	63/332	1					
≥1	293/723	2.91	[2.14-4.00]	<0.001			
Marital status (n=1055)							
Single	285/913	1					
Married/Couple	71/142	2.20	[1.54-3.15]	<0.001			
HIV testing (n=1055)							
Yes	286/626	4.31	[3.21-5.86]	<0.001	3.25	[2.36-4.52]	<0.001
No	70/429	1			1		
Already had a gynaecological consultation (n=1055)							
Yes	97/221	1.74	[1.28-2.35]	<0.001			
No	259/834	1					
Level of education (n=1055)							
Bachelor's degree	297/970	1			1		
Master/Doctorate	59/85	5.14	[3.21-8.44]	<0.001	3.46	[2.10-5.85]	<0.001

95%CI: 95% confidence interval; OR: Odds Ratio; AOR: adjusted Odds Ratio; HIV: Human immunodeficiency virus.

Madawalabu in 2015, the University of Bahir Dar in 2014, and among students in 2017 indicated that reported 42.7%; 36.4%; and 54.3% respectively, having already sexual intercourse.<sup>36-38</sup> In addition, about one in five sexually active female students at the University of Kara reported having multiple sexual partners. In two studies conducted in Ethiopia in 2014 and 2015, 23.5% and 33.6% of student, respectively, reported having multiple sexual partnerships.<sup>36,37</sup> These results show that multiple sexual partnerships are common among female students.

Almost all female students (98.1%) reported being heterosexual. Two studies conducted among students at the University of Lomé in Togo in 2018,<sup>26</sup> and among secondary school students in Tunisia,<sup>39</sup> respectively showed that 70.3% and 60.1% of students reported being heterosexual. Homosexuality is not legal in Togo; therefore the proportion of students reporting being homosexual could be inaccurate. Following the principle of the social desirability bias, there is a tendency to underreport socially undesirable attitudes and behaviors and to overreport more desirable attitudes, fearing social repercussions. Thus, there could have been an overestimation in the number of participants who declared themselves heterosexual and an underestimation in the number of homosexual participants.

In this study, 67.5% of sexually active female students had consistently used a condom during sexual intercourse. Other studies conducted in Ethiopia in 2014,<sup>37</sup> in 2017,<sup>38</sup> and in 2009 on five campuses in Canada and the United States,<sup>40</sup> reported respectively that 39.7%, 38%, and 55.3% of female students used condoms during sex. Overall, we note that condoms are not systematically used among students, regardless of their living environment and economic conditions.

In regard to other preventive practices, 59.3% and 29.0% of the participants in our study had, respectively, been tested for HIV and hepatitis B and 15.0% had been vaccinated against hepatitis B.

Higher proportions were reported among students at the University Houphouët-Boigny in Abidjan, Ivory Coast, in 2017, namely, 89.6% and 70.1% of students had been screened for HIV and hepatitis B respectively and 70.8% had been vaccinated against HBV.<sup>35</sup> Screening for STIs, particularly HIV and HBV, must be systematically introduced into the health check-up of students in African universities to ensure that they are managed with the availability of antivirals.

Overall, more than half of the female

students at the University of Kara were sexually active, and this is explained by their young age. The average age of first sexual intercourse in Togo is around 17 years old. The median age of female students was 21 years and we note that young people are sexually active during this period of their lives.<sup>16,17</sup>

However, the proportion of female students who use condoms during sexual intercourse remains low. This can be explained by the unavailability of condoms or by the high cost of condoms (a box of 24 condoms costs 6480 CFA Francs equivalent to 9.87 Euros). It is necessary to set up STI prevention programmes to make condom distribution devices available and accessible on campus, to include systematic STIs screening in the students' health assessment to prevent complications that could be linked to these STIs.

In multivariate analysis, factors associated with good knowledge of STIs were having already been tested for HIV, having already had sexual intercourse, and the level of education. For HIV, people who get tested in Togo receive pre- and post-test counselling on STIs in general and HIV in particular. Female students who have already had sex are more likely to develop STIs. The occurrence of these STIs leads them in most cases to seek information on STIs and to seek treatment. University is often seen as an important source of knowledge acquisition, as the level of education increases so does knowledge.<sup>41-44</sup> A study conducted in France in 2019 among health students involved in a STIs health service showed that 83.3% of participants had a good knowledge of STIs.<sup>45</sup> Another study conducted in 2017 among women in Saudi Arabia revealed a correlation between good STIs knowledge and high level of education.<sup>46</sup>

### Limitations of the study

This study has its limitations. The sampling method probably led to a selection bias. The results of this study should therefore be generalised with caution to all students at the University of Kara. A stratified approach would allow the comparison of knowledge levels according to academic background. Our study was based on a quantitative approach. Indeed, the association of qualitative and quantitative research would have provided a better understanding of sociological factors and students' perceptions of STIs. Moreover, biological samples for STIs screening were not linked to the survey; this would have allowed us to estimate the prevalence of STIs and to establish the link between students' practices and the presence of STIs.

## Conclusions

This study assessed the knowledge and described the practices of female students at Kara University with regard to STIs. Overall, one third of students who participated in this study had a good knowledge of STIs. This emphasizes the need to set up an information system on STIs at the University of Kara in order to increase students' knowledge. We also note that about one in five sexually active students reported having multiple sexual partners and one third of sexually active students used condoms inconsistently. Sexual practices of these students demonstrate the importance of increasing awareness of the risks associated with unprotected sex and of improving access to condoms by making them available on the university's site. Finally, only 15.0% of the students who participated in the study were vaccinated against hepatitis B. This result highlights the importance of implementing a specific STI prevention strategy within the university. This strategy should include screening for STIs including HIV, hepatitis B and HPV and vaccination against hepatitis B.

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