

Herpes Simplex Virus Type 2 (HSV-2) and HTLV-1 & 2 among Female Sex Workers in Ouagadougou, Burkina Faso

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Abstract

Background: Herpes Simplex Virus type-2 (HSV-2) infection is one of the most common worldwide sexually transmitted and female sex workers are most at risk for these infections. Beside HSV-2, Human T-lymphotropic virus (HTLV) is one of these infections with a high risk of sexual transmission. HTLV-1 causes T-cell leukaemia and myelopathy. Little is known about the HSV-2, HTLV-1 and HTLV-2 infections among female sex workers in West Africa in general, and particularly in Burkina Faso. The aim of this study aimed to estimate HSV-2 and HTLV-1/2 seroprevalence among female sex workers, in Ouagadougou in order to inform HIV prevention programs. **Methods:** Archived sera samples of a biological and behavioral cross-sectional study among female sex workers (FSWs) in Ouagadougou were tested for HSV-2 and HTLV-1/2. Sera samples collected from February to May 2013 were previously tested for HIV and syphilis and stored with participants' additional consent for further infection testing. Antibodies against HSV-2 and HTLV-1/2 detection tests were performed using Enzyme-Linked Immuno-Sorbent Assay (ELISA) methods. **Results:** HSV-2 seroprevalence was approximately 75.7% (95% CI: 70.8-79.9) among FSWs. It ranged from 69.3% among FSWs under 24 years of age, to 88.5% among those who were at least 30 years old. Furthermore, HSV-2 seroprevalence was high among FSW with no formal education (87.7%) and decreased significantly among those with at least primary educa-

tion (76.0%) and others with secondary education and above (64.9%). Regarding HTLV-1/2, 11.2% (95% CI: 8.3 - 15.1) of FSWs were positive. By age group, 11.8% were positive among FSWs under 25 years of age; 15.2% among those 25 to 29 years of age, and 5.8% among those over 30 years of age. **Conclusion:** HSV-2 and HTLV-1&2 infections are common among FSWs, which confirms the need for effective and preventive interventions such as sex education and early screening.

Keywords

HSV-2, HTLV-1/2, Seroprevalence, Female Sex Workers, FSWs

1. Introduction

Herpes Simplex Virus type-2 (HSV-2) infection is one of the most common worldwide sexually transmitted [1] [2]. In fact, it is implicated in sexually transmitted infections worldwide and is strongly associated with HIV infection [1] [2] [3]. Global and regional estimates of the contribution of HSV-2 infection to HIV incidence reported about 420,000 of 1.4 million sexually acquired incident HIV infections in individuals aged between 15 and 49 years in 2016 were attributable to HSV-2 infection [1]. Authors found that the contribution of HSV-2 to HIV was likely to be greatest in areas where HSV-2 is highly prevalent, particularly in Africa (37.1% as a population attributable fraction (PAF), women (PAF = 34.8%) [1]. Africa is a region with the highest prevalence of HSV-2 [1] [2] [4] [5]. In Malawi, HSV-2 prevalence rose with age in all periods and was higher among women than men, reaching 70% by the age of 40 [4]. Pooled HSV-2 seroprevalence in Sub-Saharan Africa was found to be 37.3% in general populations and high among high risk populations such as female sex workers (62.5%) [2].

Female sex workers are most at risk for sexually transmitted infections. Besides HSV-2, the Human T-lymphotropic virus (HTLV) is one infection with a high risk of sexual transmission. HTLV-1 causes T-cell leukaemia and myelopathy [6] [7]. The other subtypes of HTLV such as HTLV-2 have been identified. The number of HTLV-1-infected people was first estimated between 10 - 20 million people [8], and more recently between 5 - 10 million, even the authors state that this number is likely to be underestimated [9]. From a systematic review conducted in 25 African countries, the HTLV-1 seroprevalence varied from 0 to 17% and that of HTLV-2 from 0 to 4% [8]. In Burkina Faso, about 4% of men who have sex with men (MSM) carried anti-HTLV 1 & 2 antibodies [10].

Little is known about the HSV-2, HTLV-1 and HTLV-2 infections among female sex workers in West Africa in general, and particularly in Burkina Faso. The aim of this study was to estimate HSV-2 and HTLV-1/2 seroprevalence in this subgroup by using archived sera samples in order to inform HIV prevention programs.

2. Materials and Methods

2.1. Study Design and Setting

We screened archived sera from a biological and behavioral cross-sectional study among Female sex workers conducted from February to May 2013 in Ouagadougou, capital of Burkina Faso in West Africa.

2.2. Study Material and Participants

Sera samples were collected from recruited FSWs following these eligible criteria: 1) being at least 18 years old, 2) assigned female sex at birth, 3) having at least 50% of annual income from sex work in the past 12 months, 4) having stayed in the city at least for the past three months, 5) having a valid study coupon and 6) being able to provide informed consent for participation in study activities. Respondent driven sampling (RDS), a peer-driven sampling method designed to reach hidden populations such as FSWs [11] [12], was selected for FSWs recruitment in order to collect rigorous, and representative data. RDS starts out with recruitment “seeds” that are used to create chains of individuals and can be adjusted for in regression models. Five seeds were selected on purpose and recruited based on diverse socio-demographic selection criteria, including popularity, sociability, age, location, type of sex work and nationality, with the assumption that each individual represented a different social network within the female sex worker population as a whole in each site. After giving informed consent, seeds were invited to complete a behavioural questionnaire and blood sampling for HIV and syphilis testing. These seeds were each provided with three coded coupons which were valid for four weeks, to recruit peer FSWs from their social network. This process continued until the target sample size was reached. In order to avoid individuals participating multiple times, a single study office was used in addition to the use of a unique identification code. Full details of the study methodology have been previously described elsewhere [13].

2.3. Sample Size

The sample size was previously calculated to recruit 345 FSWs for the primary HIV seroprevalence study. Sample size calculations were based on the assumption that populations who always use condoms, have a 75% lower HIV prevalence than populations who do not, and the effectiveness of condoms is roughly 80%, with 73% as a conservative estimate [14]. HIV prevalence was estimated at 15% with a 19% among those who did not consistently use condoms [15] [16]. A design effect of 1.5 associated with respondent driven sampling, a significance level of 0.05 and a power of 80% were employed.

2.4. Data Collection

After informed consent, each participant completed private behavioral interviewer-administered questionnaires conducted in French or the local language.

Topics included demographic and socio-economic characteristics, sexual partnership and behavior, knowledge, attitudes and practices towards sexual transmitted infections and HIV, condom use during the last 12 months. Pre-and post-test HIV and syphilis counseling, was conducted for all participants after completion of the behavioral questionnaire. Venous blood specimens were collected from each consenting participant for HIV testing, and frozen at -20°C .

2.5. Laboratory Methods

Venous blood specimens were collected and HIV and syphilis tests were performed directly in the study site. After these tests, anonymized sera were stored at the IRSS biomedical research laboratory with participant additional consents for further infections testing. All frozen samples were returned to laboratory temperature before testing. Serum samples were tested using Enzyme-Linked Immuno-Sorbent Assay (ELISA) methods for the measurement of IgG antibodies to HSV type 2 (Diagnostic BioProbes Srl, Italy), and Anti-HTLV1 & 2 Antibodies were tested by ELISA HTLV I & II Ab-DiaPro ULTRA version (Diagnostic BioProbes, Srl. Italy). All tests were performed according to manufacturer's instructions.

2.6. Data Processing

Data were entered using EpiData 3.1 (The EpiData Association, Odense, Denmark) (and exported into Stata 14 (StataCorp, College Station, TX) for analysis.

Descriptive statistics were used to describe participants' characteristics, HSV-2 and HTLV 1 & 2 seroprevalences. All proportions were adjusted to account for the RDS method. This adjustment takes into consideration the probability of each participant to be included in the study. We present population estimates and 95% confidence intervals (CI) adjusted for RDS design using the RDS Analysis Tools (RDSAT) version 6.0.1 (RDS, Inc., Ithaca, NY).

2.7. Ethical Issues and Protection of the Participants

The study received ethical approval from the Ethics Committee for Health Research (CERS) of Burkina Faso. In addition to the consent for participation to the HIV behavioral survey, individual consent was obtained for serum samples storage for further research related to sexual transmitted diseases.

3. Results

3.1. Socio-Demographic Characteristics of Study Participants

A total of 348 et 333 FSWs were included for HSV-2 testing and in this analysis. The mean age of the study participants was 24.9 ± 6.4 years. **Table 1** shows the socio-demographic and socio-professional characteristics of the female sex workers (FSWs). About 23.8% had no formal education, and one third of them had a primary level education (38.1%). More than 63% of the FSWs in the sample were single. The vast majority of the FSWs (about 70%) had at least one

Table 1. Characteristics of study participants.

	n	Unadjusted %	RDS-adjusted	
			%	(95% CI)
Current age (years)				
≤24	202	58.0	56.8	51.4 - 62.1
25 - 29	83	23.9	23.3	19.1 - 28.1
≥30	63	18.1	19.8	15.7 - 24.7
Education				
None	82	23.8	24.6	22.0 - 29.7
Primary	131	38.1	37.8	32.7 - 43.2
Secondary and above	131	38.1	37.6	32.5 - 42.9
Marital status				
Single	219	62.9	61.2	55.8 - 66.4
Married/cohabitating	33	9.5	09.8	07.0 - 13.6
Divorced/separed/widow	96	27.6	29.0	24.3 - 34.2
Occupation				
Student/pupil	20	5.8	05.4	03.5 - 08.3
Employees (public or private)	151	43.6	43.5	38.2 - 48.9
Unemployees	175	50.6	51.1	45.7 - 56.4
Number of children				
00	106	30.5	29.3	24.8 - 34.4
01	157	45.1	44.9	39.6 - 50.3
≥02	85	24.4	25.8	21.3 - 30.9
Injectable drug user				
No	342	98.3	98.4	96.4 - 99.3
Yes	6	1.7	01.6	00.7 - 03.6
HIV serological status				
Negative	321	92.2	86.9	81.7 - 90.8
Positive	27	7.8	13.1	09.2 - 18.3
Syphilis serological status				
Negative	333	95.7	95.3	92.2 - 97.2
Positive	15	4.3	04.7	02.8 - 07.8
Age at start of sex work (years)				
<20	225	64.8	64.1	58.7 - 69.1
20 to 24	81	23.3	23.7	19.4 - 28.6
≥25	41	11.8	12.2	09.0 - 16.3

Continued**Seniority in the sex work**

< 1 year	59	17.1	17.0	13.3 - 21.4
1 to 5 years	203	58.8	58.9	53.5 - 64.1
More than 6 years	83	24.1	24.2	19.8 - 29.1

Mean number of clients per week

1 to 14	214	61.7	63.0	57.8 - 68.0
15 to 29	91	26.2	25.6	21.2 - 30.5
≥30	42	12.1	11.4	08.5 - 15.1

biological child. Half of the FSWs (50.4%) declared to have no other income generating activity (except for sex work).

3.2. HSV-2 Seroprevalence

More than three-quarters of FSWs were positive for HSV-2 antibodies (75.7%, 95% CI: 70.8 - 79.9). HSV-2 seroprevalence ranged from 69.3% among FSWs under 24 years old to 88.5% among those who were at least 30 years old. Furthermore, HSV-2 seroprevalence was high among FSW with no formal education (87.7%) and decreased significantly among those with at least primary education (76.0%) and those with secondary education and above (64.9%). In bivariate analysis, factors associated with HSV-2 were aged, education, the number of children, ever be pregnant. In multivariate analysis, only none of formal education was independently associated with the HSV-2 among FSWs (**Table 2**).

3.3. HTLV-1 & 2 Seroprevalence

Table 3 shows that 11.2% (95% CI: 08.3 - 15.1) of FSWs in Ouagadougou were positive for HTLV-1/2. By age groups, 11.8% were positive among those under 25 years of age; 15.2% among those 25 to 29 years old, and 5.8% among those over 30 years of age. Although there were variations according to some socio-demographic and socio-professional characteristics, the differences observed were not statistically significant in multivariate analysis, except for FSWs who have experienced condom torn in the last 12 months (aOR = 0.39, p = 0.018).

4. Discussion

The purpose of this study was to estimate the HSV-2 and HTLV-1/2 seroprevalence among FSWs. It shows a high seroprevalence of HTLV-1/2 (11.2%), but especially of HSV-2 antibodies (76%) among FSWs, thus confirming their vulnerability to this infection. Indeed, HSV-2 infection is one of the most common sexually transmitted infections and the leading cause of genital ulceration worldwide [1] [17] [18]. Its prevalence is not uniform, with some populations being more affected than others depending on risk factors [5] [19].

The global prevalence of HSV-2 infection has been estimated at 11.3% in the

Table 2. HSV-2 seroprevalence and associated factors among female sex workers.

Variables	n	HSV-2 seroprevalence		Univariate analysis			Multivariate analysis		
		(%)	% RDS (95%C)	cOR	(95%C)	p	aOR	(95%C)	p
Age (years)									
≤24	202	68.3	69.3 (62.5 - 75.3)	1					
25 - 29	83	80.5	81.2 (71.4 - 88.2)	1.92	1.02 - 3.60	0.042	2.42	1.00 - 5.88	0.051
≥30	63	88.5	88.0 (76.2 - 94.3)	3.24	1.34 - 7.80	0.009	3.01	0.61 - 13.60	0.149
total	348	74.8	75.7 (70.8 - 79.9)						
Formal education									
None	82	87.7	88.8 (80.2 - 93.9)						
Primary	131	76.0	76.1 (67.8 - 82.8)	0.40	0.18 - 0.88	0.023	0.31	0.14 - 0.71	0.005
Secondary/Higher	131	64.9	66.1 (57.5 - 73.8)	0.25	0.11 - 0.53	<0.001	0.22	0.10 - 0.50	<0.001
Marital status									
Single	219	72.1	72.8 (66.5 - 78.3)						
Married	33	78.1	80.1 (63.3 - 90.4)	1.51	0.61 - 3.70	0.371	1.04	0.37 - 2.87	0.935
Divorced/Separated/Widowed	96	79.8	80.4 (71.0 - 87.3)	1.54	0.84 - 3.60	0.160	0.84	0.43 - 1.65	0.622
Occupation									
Student	20	75.0	75.0 (52.0 - 89.2)	1					
Employee (public or private))	151	77.9	78.1 (70.6 - 84.1)	1.19	0.40 - 3.53	0.758	--	--	--
Unemployed	175	71.8	73.4 (66.4 - 79.5)	0.92	0.31 - 2.69	0.881	--	--	--
Number of children									
0	106	66.4	67.3 (57.9 - 75.5)	1					
1	157	76.1	76.9 (69.6 - 82.9)	1.62	0.93 - 2.80	0.088	0.94	0.44 - 1.99	0.879
≥2	85	83.1	83.3 (73.3 - 90.0)	2.42	1.18 - 4.97	0.016	0.74	0.29 - 1.89	0.525
Immigrant in Burkina									
No	231	74.3	75.0 (52.0 - 89.2)	1					
Yes	114	75.0	78.1 (70.6 - 84.1)	1.07	0.63 - 1.82	0.798	--	--	--
Injectable drug user									
No	340	75.0	75.9 (71.0 - 80.2)						
Yes	5	60.0	60.0 (19.9 - 90.1)	0.47	0.07 - 2.92	0.423	--	--	--
Age at start of sex work (years)									
<20	224	74.1	74.7 (68.6 - 80.0)	1					
20 - 24	80	70.0	71.3 (60.4 - 80.2)	0.84	0.47 - 1.49	0.549	0.61	0.27 - 1.37	0.228
≥25	41	87.5	88.6 (75.2 - 95.3)	2.63	0.98 - 7.11	0.056	1.11	0.19 - 6.31	0.902
Seniority in the sex work									
Less than 1 year	58	77.6	78.7 (66.5 - 87.4)	1					

Continued

1 à 5 years	203	70.4	71.6 (64.9 - 77.4)	0.68	0.34 - 1.36	0.273	--	--	--
6 years or more	81	82.7	82.9 (72.9 - 89.7)	1.31	0.55 - 3.09	0.538	--	--	--
Number of clients per week									
1 - 14	213	77.0	77.8 (71.6 - 82.9)	1					
15 - 29	90	70.0	71.3 (61.1 - 79.6)	0.71	0.40 - 1.24	0.228	--	--	--
≥30	41	73.2	73.2 (57.7 - 84.5)	0.78	0.36 - 1.68	0.523	--	--	--
HIV status									
Positive	27	88.9	77.0 (51.1 - 91.5)	1					
Negative	321	73.5	75.6 (70.6 - 80.0)	0.33	0.09 - 1.13	0.079	2.70	0.69 - 10.54	0.151
History of STI symptoms in the past 12 months									
No	173	74.0	74.6 (67.5 - 80.6)	1					
Yes	170	75.3	76.5 (69.5 - 82.2)	1.11	0.67 - 1.82	0.685	--	--	--
Don't know	1	100.0	1.000	-					
Ever been pregnant									
No	74	63.5	63.9 (52.4 - 74.0)	1					
Yes	270	77.8	78.6 (73.3 - 83.1)	2.07	1.18 - 3.63	0.011	1.62	0.70 - 3.75	0.254
Consistent use of condoms in the past 12 months									
No	128	71.9	72.5 (64.0 - 79.5)	1					
Yes	210	77.1	78.0 (71.8 - 83.1)	1.34	0.80 - 2.24	0.254	--	--	--
Condom use at last sex with a new client									
No	36	80.6	80.6 (64.4 - 90.5)	1					
Yes	300	73.7	74.7 (69.4 - 79.3)	0.71	0.30 - 1.70	0.444	--	--	--
Condom torn in the last 12 months									
No	126	69.8	71.3 (62.8 - 78.5)	1					
Yes	219	77.6	78.1 (72.1 - 83.2)	1.44	0.87 - 2.38	0.157	0.67	0.27 - 1.65	0.381

general population aged between 15 and 49 years compared to 31.2% in the sub-Saharan African population [5]. The high prevalence of HSV-2 found in our study population is not, however, uncommon. In Uganda, the prevalence of HSV-2 in the female population was estimated at 69.3% in Rakai district [20], and 63.8% in Kampala [21]. Among FSWs, studies conducted in Kenya [22] and Tanzania [23] reported that 79% and 69% respectively were infected with HSV-2. Furthermore, as in our study, the positive association between HSV-2 infection and the age is established by several authors [22] [24] [25]. The increase in the prevalence of HSV-2 with age could be explained by the chronic nature of the infection, which is generally contracted at the beginning of sexual activity in young individuals, can be latent for a long time and reappear periodically, but also due to the accumulation of risk during sex work [26]. Of the factors

Table 3. HTLV - 1 & 2 seroprevalence and associated factors among female sex workers.

Variables	n	HTLV-1 & 2 seroprevalence		Univariate Analysis			Multivariate Analysis		
		(%)	% RDS (95%C)	cOR	(95%C)	p	aOR	(95%C)	p
Age (year)									
≤24	195	11.8	11.7 (7.8 - 17.1)	1			1		
25 - 29	79	15.2	14.6 (8.4 - 24.1)	1.29	0.60 - 2.77	0.507	0.92	0.30 - 2.82	0.883
≥30	59	6.8	5.8 (2.2 - 14.7)	0.47	0.15 - 1.43	0.182	0.31	0.05 - 2.82	0.301
total	333	11.7	11.2 (8.3 - 15.1)						
Formal education									
None	79	6.3	6.7 (2.7 - 15.5)	1			1		
Primary	124	12.9	12.3 (7.6 - 19.2)	1.95	0.66 - 5.78	0.222	1.75	0.59 - 5.15	0.305
Secondary/Higher	126	14.3	13.5 (8.6 - 20.5)	2.18	0.75 - 6.38	0.150	1.77	0.56 - 5.58	0.328
Marital status									
Single	208	13.0	12.5 (8.7 - 17.7)	1					
Married	32	15.6	14.2 (5.9 - 30.3)	1.16	0.40 - 3.30	0.781			
Divorced/Separated/Widowed	93	7.5	7.5 (3.5 - 15.3)	0.57	0.23 - 1.39	0.219			
Occupation									
Student	19	26.3	26.3 (11.3 - 49.9)	1			1		
Employee (public or private))	144	10.4	9.8 (6.0 - 15.7)	0.30	0.09 - 0.97	0.045	0.38	0.10 - 1.35	0.135
Unemployed	168	11.3	11.0 (7.0 - 16.7)	0.34	0.11 - 10.7	0.066	0.39	0.11 - 1.32	0.129
Number of children									
0	102	8.8	8.6 (4.5 - 15.7)	1			1		
1	150	15.3	14.5 (9.8 - 21.0)	1.81	0.79 - 4.11	0.156	2.08	0.90 - 4.82	0.085
≥2	81	8.6	8.6 (4.0 - 17.4)	1.01	0.35 - 2.90	0.990	1.39	0.34 - 5.64	0.640
Immigrant in Burkina									
No	220	12.7	26.3 (11.3 - 49.9)	1					
Yes	110	9.1	9.8 (6.0 - 15.7)	0.72	0.33 - 1.58	0.413			
Injectable drug user									
No	329	11.6	11.1 (8.1 - 14.9)	1					
Yes	4	25	25.0 (3.3 - 76.4)	2.68	0.27 - 26.72	0.400			
Age at start of sex work (years)									
<20	215	10.7	10.5 (7.0 - 15.4)	1					
20 - 24	79	15.2	14.1 (8.1 - 23.3)	1.40	0.65 - 2.99	0.388			
≥25	38	10.5	9.7 (3.6 - 23.4)	0.92	0.29 - 2.85	0.883			
Seniority in the sex work									
Less than 1 year	56	10.7	10.3 (4.7 - 21.2)	1					

Continued

1 - 5 years	197	11.2	10.8 (7.2 - 16.0)	1.06	0.40 - 2.78	0.905	-	-	-
6 years or more	77	13.0	12.1 (6.6 - 21.2)	1.20	0.41 - 3.56	0.737	-	-	-
Number of clients per week									
1 - 14	206	13.1	12.4 (8.6 - 17.7)	1					
15 - 29	87	8.0	7.7 (3.7 - 15.4)	0.59	0.24 - 1.41	0.234			
≥30	39	10.3	10.3 (3.9 - 24.4)	0.80	0.26 - 2.46	0.702	-	-	-
HIV status									
Positive	306	12.4	12.4 (9.2 - 16.6)	1					
Negative	26	3.8	3.8 (0.5 - 23.0)	0.28	0.03 - 2.16	0.223			
Syphilis									
Negative	318	11.6	11.5 (2.8 - 36.9)	1			1		
Positive	15	13.3	11.2 (8.2 - 15.2)	3.69	0.48 - 28.25	0.208	0.36	0.041 - 3.19	0.359
History of STI symptoms in the past 12 months									
No	170	11.2	10.5 (6.8 - 16.0)	1					
Yes	161	12.4	12.1 (7.9 - 18.1)	1.17	0.59 - 2.29	0.655	-	-	-
Ever been pregnant									
No	71	9.9	9.8 (4.7 - 19.1)	1					
Yes	261	12.3	11.6 (8.3 - 16.1)	1.22	0.51 - 2.91	0.654	-	-	-
Consistent use of condoms in the past 12 months									
No	124	14.5	13.9 (8.9 - 21.1)	1			1		
Yes	203	9.4	9.1 (5.8 - 14.0)	0.62	0.31 - 1.24	0.180	0.79	0.22 - 2.78	0.714
Condom use at last sex with a new client									
No	34	11.8	11.8 (4.5 - 27.6)	1					
Yes	290	11.7	11.2 (8.1 - 15.4)	0.95	0.31 - 2.87	0.922	-	-	-
Condom torn in the last 12 months									
No	123	15.4	15.3 (9.9 - 22.9)	1			1		
Yes	210	9.5	8.9 (5.8 - 13.4)	0.54	0.27 - 1.07	0.076	0.39	0.18 - 0.85	0.018

tested after adjustment, only the modalities of the formal education variable were associated with HSV-2 infection. Indeed, by keeping the other variables of the model constant, FSWs with a primary level and a secondary level and above have a risk reduction of 69% and 78% respectively of being infected with HSV-2. This reduction is statistically significant at the 5% level.

HTLV-1 & 2 are endemic in Africa, and particularly affect certain populations at risk. In our study, 11.2% of FSWs were positive for HTLV-1 or 2, which is 10 to 15 times higher than what was reported among pregnant women and blood donors in Nouna (1.4%) and Ouagadougou (0.5%) [27]. In Nigeria, Forbi

and Odetundé in a study published in 2007 estimated the prevalence of anti HTLV-1 & 2 antibodies in FSWs to be 22.9% while it was 16.7% among pregnant women [28]. The extent of HTLV infection among FSWs is of particular concern because the vast majority (90%) of those infected with these viruses remains asymptomatic and unaware of their infection status [29] [30]. This could sustain the transmission of the infection from one person to another, especially in a context where screening for this infection is almost non-existent. Due to the lack of a vaccine against HTLV-1 & 2 and the difficulties in managing late complications, including highly lethal leukemic cancer, prevention of transmission remains the best solution [29] [31] [32] [33]. Among sexually active populations such as FSWs, emphasis should be placed on prevention of sexually transmitted infections, including consistent condom use [34]. However, awareness of these non-HIV retroviruses in at-risk communities will need to be increased for more precautionary measures as condoms provide only partial protection. Curiously, for HTLV1 & 2, among the factors used for adjustment, only the variable “condom torn in the last 12 months” was associated with seroprevalence ($p = 0.018$) compared to those whose condom used in the last 12 months was not torn. Since condoms are used to protect from sexually transmitted infections, this result may be related to participant self-reporting, which we are not able to verify.

The main limitation of our study is that the data are based on serum samples collected several years earlier. However, the use of archived samples was an interesting alternative to provide information on HSV-2 and HTLV 1 & 2 seroprevalence in the population of FSWs. Furthermore, our study provides the first data on HTLV 1 & 2 and HSV-2 seroprevalence in FSWs in Burkina Faso. These data fill a gap and will contribute to the mapping of HSV-2 and HTLV 1 & 2 epidemiology among high-risk populations in Africa.

5. Conclusion

Herpes Simplex Virus-type 2 and Human T-lymphotropic virus 1 & 2 infections are very common among female sex workers, which confirms the need for effective preventive interventions. In absence of a vaccine against these two viruses, prevention of sexual transmission through sexual education and early screening, followed by treatment, mainly for HSV-2, should be considered for female sex workers.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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