

## ORIGINAL RESEARCH ARTICLE

# Risk Factors for Transactional Sex among Young Females in Post-Conflict Liberia

Chinelo C. Okigbo<sup>1,2\*</sup>, Donna R. McCarraher<sup>2</sup>, Mario Chen<sup>3</sup> and Allison Pack<sup>2</sup>

<sup>1</sup>Department of Maternal and Child Health, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA; <sup>2</sup>Social and Behavioral Health Sciences, FHI360, Durham, North Carolina, USA; <sup>3</sup>Biostatistics, FHI360, Durham, North Carolina, USA.

\* For Correspondence: E-mail: cokigbo@live.unc.edu; Phone: +1-919-338-9287

## Abstract

This study aimed to examine the risk factors for engaging in transactional sex among young females in Montserrado County, Liberia. Data from an HIV behavioral survey conducted among young people aged 14 – 25 years were used. The analytical sample included 493 sexually-experienced females. Bivariate and multivariate analyses were conducted. We found that 72% of our sample had ever engaged in transactional sex. Engagement in transactional sex was associated with education (OR: 0.5); reporting no earned income (OR: 1.9); longer duration of sexual activity (OR: 3.5); early sexual debut (OR: 2.5); history of sexual violence (OR: 2.1) and multiple sexual partnerships (OR: 4.0). Respondents' age, residence, and drug/alcohol use were not associated with engagement in transactional sex. HIV interventions should incorporate educational strategies to reduce the prevalence of transactional sex among young people. These strategies should include economic opportunities to offset financial need as well as efforts to eradicate sexual violence. (*Afr J Reprod Health* 2014; 18[3]: 133-141)

**Keywords:** Transactional sex, Young women, HIV risk behaviors, Post-conflict, Liberia.

## Résumé

Cette étude vise à examiner les facteurs de risque associés au rapport sexuel transactionnel chez les jeunes femmes dans le comté de Montserrado, Liberia. Nous avons utilisé les données d'une enquête sur le comportement des jeunes gens âgés de 14 - 25 ans face au VIH. L'échantillon d'analyse comprenait 493 femmes sexuellement expérimentées. Des analyses bivariées et multivariées ont été effectuées. Nous avons constaté que 72% de notre échantillon avait déjà eu des rapports sexuels transactionnels. L'engagement dans le rapport sexuel transactionnel a été associé à l'éducation (OR: 0,5); celles qui déclarent qu'elles n'ont gagné aucun revenu (OR: 1,9); une plus longue durée de l'activité sexuelle (OR: 3,5); le début précoce du rapport sexuel (OR: 2,5); des antécédents de violence sexuelle (OR: 2,1) et les partenariats sexuels multiples (OR: 4,0). L'âge, le domicile des interviewées et l'usage de la drogue ou l'alcool n'étaient pas associés à l'engagement à des rapports sexuels transactionnels. Les interventions contre le VIH devraient intégrer les stratégies éducatives pour réduire la prévalence des rapports sexuels transactionnels chez les jeunes. Ces stratégies devraient inclure des possibilités économiques pour compenser les besoins financiers ainsi que les efforts qui visent à éradiquer la violence sexuelle. (*Afr J Reprod Health* 2014; 18[3]: 133-141)

**Mots-clés:** rapports sexuels transactionnel, jeunes femmes, comportements à risque par rapport au VIH, de l'après-conflit, Libéria.

## Introduction

Vulnerability to human immunodeficiency virus (HIV) infection is driven by structural, community, and individual level factors. Research has shown that young people, especially young women, are most at-risk for HIV infection<sup>1,2</sup>. Their vulnerability to HIV infection can be attributed to biological factors as well as socioeconomic

dependence driven by lack of employment and unfavorable gender/cultural norms<sup>2</sup>. In sub-Saharan Africa, widespread poverty, gender-based violence, and risky sexual experimentations are some of the factors that increase the vulnerability of young women to sexually transmitted infections (STIs)<sup>2</sup>. These risk factors are heightened in emergency, conflict, and/or post-conflict communities due to the disruption of civil and

familial structures<sup>3,4</sup>. Liberian youth face daily challenges that put them at risk for HIV infection, as a decade-long civil war led to high rates of poverty and unemployment<sup>5</sup>. Moreover, the fragmented educational and healthcare systems thwart young people's ability to understand their risk for HIV and to seek HIV testing, counseling, and treatment<sup>5</sup>. These realities in Liberia predispose young people to risky sexual behaviors in order to meet their basic socioeconomic needs. These risky sexual behaviors include transactional sex, cross-generational sexual partnerships, and multiple sexual partnerships<sup>5</sup>. Moreover, research has shown that young people who engage in these behaviors are less likely to use condoms – the most available HIV prevention method in Liberia<sup>5,6</sup>. Limited access to health care, such as HIV testing and treatment services, further exacerbates the potential for the spread of HIV in the country<sup>6</sup>.

As in other countries, young females in Liberia are more affected by HIV than their male counterparts. The HIV prevalence is approximately three times higher among young females (1.2% among those aged 15-19; 2.0% among those aged 20-24) compared to their male counterparts (0.4% among 15-19 year olds; 0.7% among 20-24 year olds)<sup>7</sup>. These rates may increase if the social and health situations in Liberia continue as status quo. In most conflict/post-conflict situations, HIV rates tend to be lower, primarily due to the isolation and high mortality of affected communities<sup>3</sup>. However, the emergence of sexual networks with peacekeeping personnel, especially those from countries with high HIV rates, has the potential to rapidly increase the spread of HIV in the affected communities<sup>8,9</sup>. Therefore, there is a need to understand the risk factors for HIV and the situations that promote such risk factors in Liberia. The Ministry of Health and Social Welfare has identified transactional sex as an important factor in the spread of HIV in Liberia<sup>5</sup>.

### ***Transactional sex and HIV***

Transactional sex, defined as engagement in sexual activity in exchange for material gifts, has been cited by several studies from sub-Saharan

Africa as a risk factor for HIV and other STIs<sup>8,10-12</sup>. Transactional sex increases the risks and prevalence of HIV infection through various ways such as multiple sexual partnerships, sex with older men who are more likely to be HIV infected, and engagement in sexual activity under the influence of drugs and alcohol<sup>10-13</sup>. A study in Ghana found that 84% of the HIV infections among males aged 15-59 years were attributable to transactional sex<sup>10</sup>. Transactional sex has also been associated with gender-based violence, substance abuse, and poverty<sup>11</sup>. Interventions that address transactional sex will only be successful if the reason for engaging in this behavior is understood. Males and females have been reported to engage in transactional sex for different reasons; males for sexual gratification and females for financial benefits and access to basic necessities such as food, shelter, and protection<sup>8,10,11</sup>. According to a 2011 youth study in Liberia, transactional sex was reported to have emerged during the conflict and post-conflict periods as a source of economic resources<sup>8</sup>. Some of the youth acknowledged that their first sexual encounter was non-transactional but became transactional when they realized the potential for financial gains. These sexual encounters often took place in entertainment centers such as video clubs that sprang up with the arrival of the peacekeeping missions during and after the conflict. As reported by Jennings (2010), peacekeeping economies buoy the sex trade industry in post-conflict regions<sup>14</sup>.

The information on transactional sex in Liberia among young people is limited. We found one peer-reviewed qualitative study conducted among 36 in-school youths (aged 13-19) in Monrovia, Liberia, which reported that parents encouraged their daughters to engage in transactional sex to help with providing for their family needs<sup>8</sup>. Information from a non-peer reviewed study highlighted the role conflict-related displacement of families had played in encouraging young Liberians to exchange sex for food, housing, and survival<sup>15</sup>. This study, together with two other studies conducted in 2008 and 2011, found that parents encouraged young women to engage in these behaviors with older and potentially wealthier men as an additional source of income for the family<sup>4,9,15</sup>. Similarly, focus group

discussions from a vulnerability assessment conducted in Monrovia revealed that transactional sex was seemingly culturally-acceptable for females; hence, many young women reported pressure from their family members to engage in transactional sex<sup>16</sup>. Another qualitative study conducted by ‘Save the Children’ reported higher levels of transactional sex among teenage girls compared to adult women<sup>17</sup>. So far, most of, if not all, the studies from Liberia on transactional sex have emanated from qualitative studies conducted among in-school youths. This study adds to the existing literature by providing quantitative information on young women aged 15-24 (both in-school and out-of-school) found socializing at locations identified by community members as places where people meet new sexual partners and engage in high-risk behaviors. The objectives of this study are: 1) to estimate the prevalence of transactional sex among sexually-experienced young women found in high-risk venues in Montserrado County, Liberia; and 2) to identify socio-demographic and behavioral characteristics associated with a history of engagement in transactional sex.

## Methods

### Sample

Data was collected in Montserrado County, Liberia between September and December 2011 during a cross-sectional behavioral survey using the Priorities for Local AIDS Control Efforts (PLACE) methodology<sup>18</sup>. The PLACE method has been used to identify and describe HIV risk behaviors occurring at locations where high risk behaviors (e.g. injection drug use or unprotected heterosexual or homosexual sex) take place, such as bars and brothels. Locations were identified by key community informants and a random sample of venues was selected for recruitment of eligible study participants. Data were collected from 1,119 young people (571 males and 548 females) aged 14 – 25 years who were found at selected venues. Ethical approval was provided by the Liberian Institute for Biomedical Research and the FHI360 Protection for Human Subjects Committee. We focused our analysis on 493 sexually-experienced

females who answered questions on the transactional sex module.

### Measures

The key outcome variable is engagement in transactional sex. As in previous studies<sup>8,13</sup>, we defined transactional sex as having ever received gifts in exchange for sex. Respondents were asked if they had ever received “money, food, clothing, shelter, school fees, drugs, or liquor” in exchange for sex. The responses were coded as ‘yes/no’. The respondents’ socio-demographic characteristics included in the analysis were: age (< 20 years vs. ≥20 years); educational attainment (some primary education or less, completed primary education, some secondary education, or completed secondary education and more); living arrangement (live alone vs. with someone else such as family/relatives, spouse/partner, or peers/friends); and whether they earned income in the month prior to survey. The behavioral factors assessed were risky sexual behaviors and use of drugs and/or alcohol. Sexual initiation was defined as early (≤15 years) vs. not early (≥16 years). The duration of sexual activity was created from subtracting the respondent’s age at sexual initiation from her age at the time of survey. This variable was dichotomized as ‘≤ 1 year’ vs. ‘> 1 year’. For respondents who had ever engaged in transactional sex, the age at first transactional sex was also assessed as well as the type of gifts they had ever received in exchange for sex. To assess recent multiple sexual partnerships, respondents were asked the number of men they had sex with in the month prior to survey. This information was coded as ‘none or one sex partner’ vs. ‘two or more sex partners’. The age difference between the respondent and her first and/or last sex partners was used to create the cross-generational sexual partnership variable. The respondent was coded as having had a cross-generational sex partner if her first and/or last sex partner was ten years older than she was. Respondents were also asked about the consistency of condom use during sex in the 12 months prior to survey. The response categories included ‘never’, ‘rarely’, ‘sometimes’, ‘usually’, and ‘always’. The consistency of condom use variable was coded as ‘yes’ if the respondent

answered 'always' or 'no' if she answered any of the other response categories. Condom use at last sex was also assessed. In addition, respondents were asked if their first sex had been forced and if they had ever been forced to engage in sexual intercourse against their will. The respondents' history of pregnancy was also assessed. They were also asked if they had ever had any symptom indicative of STIs (such as vaginal discharge, burning itch in vagina, abnormal vaginal bleeding, sores or warts in vagina, painful urination, or swelling in groin) in the 12 months prior to survey. Their responses were coded as 'yes' if they had any of the above symptoms or 'no' if they hadn't experienced any symptoms. Respondents were asked if they had ever tested for HIV—response coded as yes/no. The lifetime history of drug use (cocaine, heroin, or opium) among respondents was assessed as well as the frequency of alcohol consumption in the month prior to survey. The response categories for drug use were 'yes/no' while those for alcohol frequency were 'daily' vs. 'once a week or less'.

### **Statistical Analysis**

We conducted bivariate analyses to test for differences in socio-demographic and behavioral factors between respondents who had ever engaged in transactional sex and those who had not, using t-tests for continuous variables and chi-square tests for categorical variables. Logistic regression models were then used to assess the associations between these factors and the outcome variable – engagement in transactional sex. A final logistic regression model included all the variables identified from the literature to significantly influence engagement in transactional sex<sup>19-24</sup>. We also fitted two separate models considering only socio-demographic factors and only behavioral factors to assess for possible confounding and endogeneity biases among included variables. Associations were consistent with the full model, so we present the results of the full model. All tests and models were adjusted for clustering effects in line with the multi-stage sampling design. All tests were assessed as two-sided tests at a 5% significance level. Analyses were conducted using Stata 13<sup>25</sup>.

## **Results**

A history of engagement in transactional sex was reported by 72% of our sample (95% C.I.: 68% - 76%). A comparison of socio-demographic and behavioral characteristics between those who reported engagement in transactional sex and those who did not is presented in Table 1. The mean age for our sample was 19.7 years and similar between the two groups. Approximately one-half of the respondents were teenagers with a slightly lower proportion of teenagers reporting transactional sex compared to those aged 20-25 years (46.8% vs. 53.2%). Respondents who had ever engaged in transactional sex were less educated, lived alone, and were less likely to have earned money in the month prior to survey. The behavioral risk profile of those who had ever engaged in transactional sex was riskier than that of those who had not. There were higher rates of reports of early sexual debut (66.5% vs. 31.2%); longer duration of sexual activity (mean of 5.0 years vs. 3.5 years); multiple sexual partnerships (91.2% vs. 58.7%); pregnancy (61.4% vs. 36.2%); and STI symptoms in the prior year (64.5% vs. 47.8%) among those who had ever engaged in transactional sex compared to those who had not. A greater proportion of the respondents who had ever engaged in transactional sex reported a history of sexual violence (32.5% vs. 22.5%) and cross-generational sex partnerships (32.2% vs. 21.2%), compared to those who had not. Only 12.7% of our sample reported consistent condom use in the 12 months prior to survey, and 59% reported condom use at last sex. We also found that 17% of our sample had ever used hard drugs (cocaine, heroin, or opium) and 25.7% reported that they drank alcohol daily. Respondents who had ever engaged in transactional sex were more likely to report daily alcohol use compared to those who had not (30.5% vs. 13.1%). Only 22.1% of our sample had ever tested for HIV; this proportion is lower among those who had ever engaged in transactional sex compared to those who had not (19.6% vs. 28.4%). Among the 355 women who had ever engaged in transactional sex, the mean age at first transactional sex was 16 years. Approximately 90% reported they received money in exchange for sex while the remaining 10% received other types

**Table 1:** Socio-demographic and behavioral characteristics of respondents, by transactional sex status

	Total (N=493)	Transactional sex	
		Yes (N=355)	No (N=138)
<b>SOCIO-DEMOGRAPHIC CHARACTERISTICS</b>			
<b>Age in years, (%)*</b>			
Mean age in years (SD)	19.7 (2.6)	19.8 (2.6)	19.6 (2.6)
14 – 19 years	48.9	46.8	54.4
20 – 25 years	51.1	53.2	45.6
<b>Educational attainment, (%)*</b>			
Some primary or less	24.9	29.0	14.5
Completed primary	22.1	21.9	22.5
Some secondary	31.4	29.0	37.7
Completed secondary or more	21.6	20.1	25.3
<b>Living arrangement, (%)*</b>			
Alone	24.3	28.2	14.0
With partner/spouse	15.1	13.6	19.1
With family/relatives	36.5	30.5	52.2
With peers	24.1	27.7	14.7
<b>Earned money in past month, (%)*</b>			
Yes	50.9	47.0	60.9
No	49.1	53.0	39.1
<b>BEHAVIORAL CHARACTERISTICS</b>			
Mean age at sexual debut (SD) *	15.2 (1.9)	14.8 (1.8)	16.1 (1.9)
Mean time since sexual debut (SD) *	4.6 (2.6)	5.0 (2.5)	3.5 (2.6)
Mean age at transactional sex debut (SD)	---	16.0 (1.9)	---
Duration of sexual activity, (%)*			
≤ 1 year	13.0	7.0	28.3
≥ 2 years (range: 2 – 12 years)	87.0	93.0	71.7
Early sexual debut, (% Yes) *	56.6	66.5	31.2
Multiple sexual partnerships in last 4 weeks, (% Yes) *	82.0	91.2	58.7
Consistent condom use in last 12 months, (% Yes)	12.7	10.9	17.3
Condom use at last sex, (% Yes)	59.0	61.7	52.2
Ever experienced sexual violence, n (% Yes) *	29.7	32.5	22.5
Experienced sexual violence at sexual debut, (% Yes) *	20.0	22.4	13.8
Cross-generational sex partners (>10 years age difference), (% Yes) *	29.0	32.2	21.2
Ever pregnant, (% Yes) *	54.4	61.4	36.2
Ever use of hard drugs (cocaine, heroin, or opium), (% Yes)	16.8	18.3	12.8
Alcohol frequency in last 4 weeks, (%)*			
Daily	25.7	30.5	13.1
Once a week or less	74.3	69.5	86.9
STI symptom in the last 12 months, (% Yes) *	59.8	64.5	47.8
Ever tested for HIV, (% Yes) *	22.1	19.6	28.4
Type of gifts received in exchange for sex, (%)			
Money	---	90.4	---
Other gifts (food, cloth, shelter, school fees, alcohol/drugs)	---	9.6	---

\* Groups statistically different at  $p < 0.05$  using Chi-square test or t-test where appropriate  
SD: Standard deviation; % : percentage

of gifts such as food, clothing, shelter, school fees or alcohol/drugs.

Table 2 shows the results of the bivariate and multivariate logistic regression of factors associated with engagement in transactional sex.

In the bivariate analysis, higher education and not living alone were negatively associated with engagement in transactional sex while not earning money, longer duration of sexual activity, early sexual debut, multiple sexual partnerships, history

of sexual violence, cross-generational sexual partnerships, and daily alcohol use were positively associated with engagement in transactional sex. In the multivariate analysis, some of the aforementioned associations retained their significance while others didn't. The direction of the associations remained consistent and for most factors the magnitude of the association as measured by odds ratios remained consistent as well. We noticed a drop in the strength of the associations between transactional sex and the duration of sexual activity, early sexual debut and multiple sexual partnerships in the last month, which indicate some confounding effects in the association as assessed by the bivariate analyses. However, the significance of the associations remained consistent. Based on the full model, respondents who reported primary or higher

education (vs. less than primary education) were half as likely to report engagement in transactional sex ( $p < 0.05$ ). Those who did not earn money in the month prior to survey were twice as likely to report transactional sex compared to those who earned money (OR: 1.9;  $p < 0.05$ ). Some of the risk behaviors that were positively associated with engagement in transactional sex were: longer duration of sexual activity (OR: 3.5;  $p < 0.001$ ); early sexual debut (OR: 2.5;  $p < 0.01$ ); multiple sexual partnerships (OR: 4.0;  $p < 0.001$ ); and history of sexual violence (OR: 2.1;  $p < 0.001$ ). Respondent's age, living arrangement, engagement in cross-generational sexual partnerships, history of drug use, and frequency of alcohol consumption were not found to be associated with report of transactional sex in the multivariate analysis ( $p > 0.05$ ).

**Table 2:** Factors associated with ever exchanging sex for gift among respondents, N=493

Factors	Bivariate analysis Unadjusted OR (95% CI)	Multivariate analysis Adjusted OR (95% CI)
<b>Age groups</b>		
14 – 19 years	1.0	1.0
20 – 25 years	1.4 (0.9 – 2.1)	1.1 (0.6 – 1.8)
<b>Educational attainment</b>		
Some primary or less	1.0	1.0
Completed primary	0.5 (0.3 – 0.9)*	0.5 (0.2 – 0.9)*
Some secondary	0.4 (0.2 – 0.6)***	0.5 (0.2 – 0.9)*
Completed secondary or more	0.4 (0.2 – 0.7)**	0.5 (0.2 – 1.2)
<b>Living arrangement</b>		
Alone	1.0	1.0
With partner/spouse	0.4 (0.2 – 0.7)**	0.5 (0.2 – 1.2)
With family	0.3 (0.2 – 0.5)***	0.5 (0.2 – 1.1)
With peers	0.9 (0.5 – 1.7)	0.8 (0.4 – 1.8)
<b>Earned money in the past month</b>		
Yes	1.0	1.0
No	1.8 (1.1 – 2.8)*	1.9 (1.1 – 3.1)*
<b>Duration of sexual activity, n (%)</b>		
≤ 1 year	1.0	1.0
≥ 2 years (range: 2 – 12 years)	5.2 (3.2 – 8.5)***	3.5 (1.9 – 6.4)***
<b>Early sexual debut</b>		
No	1.0	1.0
Yes	4.4 (2.7 – 7.0)***	2.5 (1.3 – 4.8)**
<b>Multiple sexual partnerships in last 4 weeks</b>		
No	1.0	1.0
Yes	7.3 (4.3 – 12.1)***	4.0 (2.1 – 7.6)***
<b>Ever experienced sexual violence</b>		
No	1.0	1.0
Yes	1.7 (1.1 – 2.5)*	2.1 (1.4 – 3.3)***
<b>Cross-generational sex partners (&gt;10 years age difference)</b>		
No	1.0	1.0

Yes	1.8 (1.1 – 3.0)*	1.4 (0.7 – 2.6)
<b>Ever use of hard drugs (cocaine, opium, or heroin)</b>		
No	1.0	1.0
Yes	1.5 (0.7 – 3.2)	0.5 (0.2 – 1.2)
<b>Alcohol frequency in last 4 weeks</b>		
Once a week or less	1.0	1.0
Daily	2.9 (1.6 – 5.4)***	1.7 (0.9 – 3.4)

Statistical significance: \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

## Discussion

This study revealed three important findings about transactional sex among young women living in an urban area in post-conflict Liberia. First, transactional sex is pervasive among our sample—seven out of every ten sexually-experienced females socializing in high-risk venues had ever engaged in transactional sex. Our finding is consistent with findings from other studies on transactional sex<sup>8,10,11</sup>. Second, this study found that socio-demographic factors are associated with engagement in transactional sex in urban Liberia. As was noted, two out of the four studied socio-demographic factors were significantly associated with engagement in transactional sex in our sample. Having completed at least primary education and having earned money in the last month were found to be protective factors against engagement in transactional sex. This finding is consistent with previous transactional sex studies conducted in South Africa and Somalia<sup>11,26</sup>. Education is expected to be a protective factor for young girls as those in school are likely to be occupied with school work and assignments and may not have the extra time to socialize in venues where they will be predisposed to engage in risky behaviors. Research emanating from sub-Saharan Africa has found that the school environment is a safe haven for young girls and has informed several cash transfer programs aimed at keeping girls in school for a longer period. In addition, educated youths are more likely to have gained skills that will enable them obtain gainful employment—eliminating the need to engage in transactional sex for money. We found that 90% of those who had ever engaged in transactional sex received money in exchange for sex, further reinforcing that financial benefit is the main motivator behind transactional sex, as consistent

with previous research<sup>8,13,19,20,27</sup>. Respondents' age and living arrangement were not associated with engagement in transactional sex. Singh and colleagues also found that age was not significantly associated with transactional sex among women in Zambia<sup>19</sup>. Finally, we found that sexually-experienced young females who had ever engaged in transactional sex had a riskier sexual behavioral profile compared to those who had never engaged in transactional sex. According to a literature review by Luke (2003), adolescent girls who engage in sexual relationships for economic benefit are more likely to report unsafe sexual behaviors<sup>12</sup>. In our study, respondents who had ever engaged in transactional sex were significantly more likely to have had an early sexual debut; been sexually active for a longer duration; had multiple sexual partners; and had a history of sexual violence compared to those who had never engaged in transactional sex. The sexual violence may have occurred within the context of the transactional sexual activity further reinforcing the dangers these young girls face within a transactional sexual relationship. All these risky sexual factors increase their risk of contracting STIs such as HIV and human papilloma virus (HPV), which is a known cause of cervical cancer<sup>28</sup>. This predisposition is especially true for the teenage girls whose reproductive organs and tracts are still in the developmental stage and prone to damage and abnormal cell mutations<sup>28</sup>. Elimination of transactional sex in Liberia is a priority set by the Ministry of Health and Social Welfare for the control of HIV in Liberia. To the best of our knowledge, this is the first study to quantify the magnitude of transactional sex in urban Liberia and to examine factors associated with transactional sex in post-conflict Liberia. Recent transactional sex studies in Liberia have only used qualitative methods. Therefore, the

results of this study may inform national core strategies for reducing the spread of HIV/AIDS in Liberia described in Liberia's National HIV/AIDS Strategic Framework for the years 2010 – 2014<sup>5</sup>.

This study is not without some limitations. Due to its cross-sectional design, methodology, and restriction to sexually-experienced females who live in urban Liberia, the results of this study may not be generalizable to the rest of the country. Young women who live in rural areas or who do not socialize in high-risk venues may face other challenges that are not observed in this study. Perceived risk to HIV infection is known to be an important factor in the study of vulnerability to HIV infection; however, this study lacks this information. Nonetheless, it can be assumed that young women in Liberia perceive unintended pregnancy as a higher risk compared to HIV infection, as the female respondents in a qualitative study conducted in Liberia mentioned condoms as a means of preventing pregnancy and not HIV<sup>8</sup>. Therefore, there is a need to encourage HIV education in Liberia to inform young people about their risk to HIV infection and to encourage safer sex practices.

The findings of this study bring to light the magnitude of transactional sex in urban Liberia and its burden on young women. It provides the much needed information for policies and interventions focused on eliminating transactional sex in Liberia. With these results, it is paramount that education and provision of employment should be emphasized in risk-reduction interventions targeted towards the youth in Liberia. Empowering young women with skills necessary for appropriate employment is essential for reducing the prevalence of transactional sex. Further research on transactional sex among young people in Liberia is still needed. For example, we need to understand if young people who engage in transactional sex perceive the practice a risk to their health and if they are willing to explore alternative means of financial income. In addition, evidence-based interventions targeted at reducing transactional sex among young people should be priority in Liberia HIV prevention efforts. These interventions should include efforts to build skills and foster education as a means of attaining gainful employment.

## Acknowledgement

This study was funded by the United Nations Children's Fund (UNICEF) Liberia and FHI360 (PHSC Research #10275). The authors thank the funders of this study; LISGIS Liberia for data collection; and Steve Sortijas, Bolatito Aiyenigba, and Sam Wambugu for their assistance with data collection. They also thank their colleagues at FHI360 for their contributions to the overall study.

## Contribution of Authors

This analysis was conceived by CCO and DRM. All authors participated in the data collection and analysis. While CCO wrote the first draft, all authors participated in the editing, revisions, and approval of the manuscript. The authors declare no conflict of interest.

## References

1. World Health Organization. HIV and adolescents: Guidance for HIV testing and counselling and care for adolescents living with HIV. WHO: Geneva, Switzerland. 2013.
2. World Health Organization. Integrating gender into HIV/AIDS programmes in the health sector. WHO: Geneva, Switzerland. 2009.
3. Mills EJ, Singh S, Nelson BD and Nachege JB. The impact of conflict on HIV/AIDS in sub-Saharan Africa. *Int J STD & AIDS*. 2006; 17(11): 713-717.
4. Muhwezi W, Kinyanda E, Mungherera M, et al. Vulnerability to high risk sexual behaviour following exposure to war trauma as seen in post-conflict communities in eastern Uganda: a qualitative study. *Conflict & Health* 2011; 5(1): 22-36.
5. National AIDS Commission, Republic of Liberia. National HIV/AIDS Strategic Framework II, 2010-2014. 2010.
6. Granich RM, Gilks CF, Dye C, De Cook KM and Williams BG. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *Lancet* 2009; 373(9657): 48-57.
7. Liberia Institute of Statistics and Geo-Information Services (LISGIS) [Liberia], Ministry of Health and Social Welfare [Liberia], National AIDS Control Program [Liberia], and Macro International Inc. Liberia Demographic and Health Survey 2007. Monrovia, Liberia, 2008.
8. Atwood KA, Kennedy SB, Barbu EM, et al. Transactional sex among youths in post-conflict Liberia. *J Health Popul Nutri* 2011; 29(2): 113-122.

9. Otti P and Barh B. A study on socio-cultural barriers to HIV/AIDS prevention initiatives in Monrovia Liberia. UNDP: Liberia, 2001.
10. Côté AM, Sobela F, Dzokoto A, et al. Transactional sex is the driving force in the dynamics of HIV in Accra, Ghana. *AIDS* 2004; 18(6): 917-925.
11. Dunkle KL, Jewkes RK, Brown HC, Gray GE, McIntyre JA and Harlow SD. Transactional sex among women in Soweto, South Africa: prevalence, risk factors and association with HIV infection. *Soc Sci Med* 2004; 59(8): 1581-1592.
12. Luke N. Age and economic asymmetries in the sexual relationships of adolescent girls in sub-Saharan Africa. *Stud Fam Plann* 2003; 34(2): 67-86.
13. Maganja R, Maman S, Groves A and Mbwambo JK. Skinning the goat and pulling the load: transactional sex among youth in Dar es Salaam, Tanzania. *AIDS Care* 2007; 19(8): 974-981.
14. Jennings KM. Unintended consequences of intimacy: political economies of peacekeeping and sex tourism. *Int Peacekeeping* 2010; 17(2): 229-243.
15. Kennedy SB, Atwood KA, Harris AO et al. HIV/STD risk behaviors among in-school adolescents in post-conflict Liberia. *J Assoc Nurses AIDS Care* 2011; 23(4): 350-360
16. Abril MER. Girls' vulnerability assessment. Government of Liberia, Nike Foundation, World Bank: Liberia, 2008.
17. Save the Children-UK. From Camp to Community: Liberia study on exploitation of children. 2006, 1-20.
18. McCarraher DR, Chen M, Wambugu S et al. Informing HIV prevention efforts targeting Liberian youth: a study using the PLACE method in Liberia. *Reprod Health* 2013, 10:54
19. Singh K, Buckner B, Tate J, Ndubani P and Kamwanga J. Age, poverty and alcohol use as HIV risk factors for women in Mongu, Zambia. *Afr Health Sci* 2011; 11(2): 204-210.
20. Norris AH, Kitali AJ and Worby E. Alcohol and transactional sex: how risky is the mix? *Soc Sci Med* 2009; 69(8): 1167-1176.
21. Parry C, Dewing S, Petersen P, et al. Rapid assessment of HIV risk behavior in drug using sex workers in three cities in South Africa. *AIDS Behav* 2009; 13(5): 849-859.
22. Njue C, Voeten H and Remes P. Porn video shows, local brew, and transactional sex: HIV risk among youth in Kisumu, Kenya. *BMC Public Health* 2011;11(1):635-642.
23. Scorgie F, Chersich M, Ntaganira I, Gerbase A, Lule F and Lo YR. Socio-demographic characteristics and behavioral risk factors of female sex workers in sub-Saharan Africa: a systematic review. *AIDS Behav* 2011; (4): 920-933
24. Pettifor AE, Van der Straten A, Dunbar MS, Shiboski SC and Padian NS. Early age of first sex: a risk factor for HIV infection among women in Zimbabwe. *AIDS* 2004; 18(10): 1435-1442.
25. StataCorp LP. Stata Statistical Software: Release 10 College Station. Texas: 2013.
26. Kriitmaa K, Testa A, Osman M, et al. HIV prevalence and characteristics of sex work among female sex workers in Hargeisa, Somaliland, Somalia. *AIDS* 2010; 24(2):61-67.
27. Wamoyi J, Fenwick A, Urassa M, Zaba B and Stones W. "Women's Bodies are Shops": beliefs about transactional sex and implications for understanding gender power and HIV prevention in Tanzania. *Arch Sex Behav* 2011; 40(1): 5-15.
28. Aral SO. Sexually transmitted diseases: magnitude, determinants and consequences. *Int J STD AIDS* 2001; 12(4): 211-215.