



ELSEVIER

JOURNAL OF  
ADOLESCENT  
HEALTH[www.jahonline.org](http://www.jahonline.org)

Original article

## Prevalence and Health Impact of Intimate Partner Violence and Non-partner Sexual Violence Among Female Adolescents Aged 15–19 Years in Vulnerable Urban Environments: A Multi-Country Study



Michele R. Decker, Sc.D., M.P.H.<sup>a,\*</sup>, Sarah Peitzmeier, M.S.P.H.<sup>a</sup>, Adesola Olumide, M.B.B.S., M.P.H.<sup>b</sup>, Rajib Acharya, M.Sc., M.P.S., Ph.D.<sup>c</sup>, Oladosu Ojengbede, B.Sc., M.B.B.S.<sup>d</sup>, Laura Covarrubias, M.S.P.H.<sup>a</sup>, Ersheng Gao, M.D., M.P.H.<sup>e</sup>, Yan Cheng, Ph.D.<sup>e</sup>, Sinead Delany-Moretlwe, M.D., Ph.D.<sup>f</sup>, and Heena Brahmabhatt, Ph.D.<sup>a</sup>

<sup>a</sup> Department of Population, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

<sup>b</sup> Institute of Child Health, College of Medicine, University of Ibadan/University College Hospital, Ibadan, Oyo State, Nigeria

<sup>c</sup> Population Council, New Delhi, India

<sup>d</sup> Department of Obstetrics and Gynecology, College of Medicine, University of Ibadan/University College Hospital, Ibadan, Oyo State, Nigeria

<sup>e</sup> Shanghai Institute of Planned Parenthood Research, Shanghai, China

<sup>f</sup> Wits Reproductive Health & HIV Institute, School of Clinical Medicine, University of the Witwatersrand, Johannesburg

Article history: Received May 14, 2014; Accepted August 20, 2014

Keywords: Adolescent; Intimate partner violence; Sexual violence

### ABSTRACT

**Purpose:** Globally, adolescent women are at risk for gender-based violence (GBV) including sexual violence and intimate partner violence (IPV). Those in economically distressed settings are considered uniquely vulnerable.

**Methods:** Female adolescents aged 15–19 from Baltimore, Maryland, USA; New Delhi, India; Ibadan, Nigeria; Johannesburg, South Africa; and Shanghai, China (n = 1,112) were recruited via respondent-driven sampling to participate in a cross-sectional survey. We describe the prevalence of past-year physical and sexual IPV, and lifetime and past-year non-partner sexual violence. Logistic regression models evaluated associations of GBV with substance use, sexual and reproductive health, mental health, and self-rated health.

**Results:** Among ever-partnered women, past-year IPV prevalence ranged from 10.2% in Shanghai to 36.6% in Johannesburg. Lifetime non-partner sexual violence ranged from 1.2% in Shanghai to 12.6% in Johannesburg. Where sufficient cases allowed additional analyses (Baltimore and Johannesburg), both IPV and non-partner sexual violence were associated with poor health across domains of substance use, sexual and reproductive health, mental health, and self-rated health; associations varied across study sites.

**Conclusions:** Significant heterogeneity was observed in the prevalence of IPV and non-partner sexual violence among adolescent women in economically distressed urban settings, with upwards of 25% of ever-partnered women experiencing past-year IPV in Baltimore, Ibadan, and Johannesburg, and more than 10% of adolescent women in Baltimore and Johannesburg reporting non-partner sexual violence. Findings affirm the negative health influence of GBV even in

### IMPLICATIONS AND CONTRIBUTION

Gender-based violence varies significantly by setting among adolescent women in economically distressed urban environments. In these settings, the association of gender-based violence with primary health threats to youth demonstrates the need for broad-based prevention and support.

**Conflicts of Interest:** The authors declare no conflicts of interest.

**Disclaimer:** Publication of this article was supported by the Young Health Programme, a partnership between AstraZeneca, Johns Hopkins Bloomberg School of Public Health, and Plan International. The opinions or views expressed in this article are those of the author and do not necessarily represent the official position of the funders.

\* Address correspondence to: Michele R. Decker, Sc.D., M.P.H., Assistant Professor, Johns Hopkins Bloomberg School of Public Health, 615 N. Wolfe St., E4142, Baltimore, MD 21205.

E-mail address: [mdecker@jhsph.edu](mailto:mdecker@jhsph.edu) (M.R. Decker).

disadvantaged urban settings that present a range of competing health threats. A multisectoral response is needed to prevent GBV against young women, mitigate its health impact, and hold perpetrators accountable.

© 2014 Society for Adolescent Health and Medicine. Open access under CC BY-NC-ND license.

Globally, one in three women experience gender-based violence (GBV) in their lifetimes [1], with 30% of ever-partnered women experiencing physical or sexual intimate partner violence (IPV) [2] and 7% experiencing non-partner sexual violence (SV) [3]. GBV research and interventions focus heavily on IPV and non-partner SV given their prevalence and health impact. Demonstrated consequences include unintended pregnancy, sexually transmitted infection (STI) and HIV, substance use and abuse, mental health issues [4–12], and injury and homicide [13]. IPV and non-partner SV are assessed distinctly within GBV-related research [1,3,4], reflective of qualitative differences in the nature and potential health impact of abuse within an ongoing dating or marital relationship as compared with instances of SV perpetrated by non-partners. Although IPV and non-partner sexual assault are experienced by men and women alike, significant gender differences exist in the prevalence, severity and nature of such abuse [14,15]. For example, a recent global review found that intimate partners are responsible for more than 35% of women's homicides, relative to 6% of men's [13].

Adolescents are at high risk for both IPV and non-partner SV; in turn, GBV prevention is highlighted among research priorities for adolescent sexual and reproductive health in low- and middle-income countries [16]. Adolescents' young age and relative inexperience can limit their power in relationships and incur risk, particularly for females involved with older men [6,17–19]. Violence during adolescence imparts risks similar to those observed among adults; prospective research links abuse during this period with subsequent health issues including depression, suicidal ideation, and chronic inflammation [20,21]. Abuse can set young women on a trajectory for future violence [21,22] and sexual risk behavior [10]. Moreover, GBV experiences and fear of such abuse undermine gender equity for adolescent women, both by conveying the notion that they are not valued and by constraining their engagement in education, employment, and general mobility in society based on fears for safety [23,24].

Women who are homeless, unstably housed, and living in distressed urban settings are also considered an at-risk population for GBV [25–27]. High levels of IPV and SV have been identified in urban settings and among homeless women [27–29], reflecting a cascade of accumulated and interacting social vulnerabilities, which include stigma and limited access to social and health resources that accompany both individual-level poverty as well as residence in neglected settings of entrenched urban poverty. Some evidence suggests that GBV can be concentrated at the neighborhood level, with poverty and other dimensions of disadvantage heightening risk in some settings [30–32]. Disadvantaged urban settings can exacerbate underlying gender-based power disparities, with young women subject to intensive gender-based harassment, pressure for early sexual activity, and a pervasive threat of physical and SV [24,27]. Adverse economic conditions may prompt violence perpetration by men seeking to reclaim power and may also strain the

couple's relationship, prompting discord that leads to violence [33]. Broader neighborhood factors including weak social ties, low collective efficacy, and constrained police protection can also impart IPV risk [34].

Developing evidence-based GBV policy and programming requires clarity on the prevalence, risk correlates, and health impact of both IPV and non-partner SV. Global GBV surveillance has improved tremendously during the past decade. After the landmark 2005 World Health Organization Multi-Country Study on Women's Health and Domestic Violence Against Women [4], the Demographic and Health Survey system integrated a domestic violence module to monitor and compare trends globally. However, its IPV assessment is limited to ever-married or cohabitating women, limiting our ability to generate internationally comparable estimates on the partner violence that can also occur in the context of dating or other casual partnerships, particularly among youth. The household-based Demographic and Health Survey sampling frame enables population-level estimates, yet risks overlooking youth who may be unstably housed.

Against this backdrop, we describe the prevalence and correlates of both IPV and non-partner SV, and evaluate their associations with key health outcomes across domains of substance use, sexual and reproductive health, and mental health among young females aged 15–19 years in five cities across the globe.

## Methods

### Sample and study design

Our cross-sectional study was conducted in 2013 with adolescents aged 15–19 years recruited via respondent-driven sampling (RDS). This multicountry study was conducted in five sites selected based on having sizable disadvantaged neighborhoods within large urban settings, research capacity, and geographic diversity: Baltimore, Maryland, USA; New Delhi, India; Ibadan, Nigeria; Johannesburg, South Africa; and Shanghai, China. Our formative research [35] identified geographically bound, economically distressed areas at each site to serve as target communities. RDS was selected because of the challenges in developing sampling frames in most study sites (i.e., housing instability and out-of-school youth). See further details of methodology and site characteristics elsewhere [35,36].

Eligible seeds (Baltimore  $n = 8$ ; New Delhi  $n = 7$ ; Ibadan  $n = 10$ ; Johannesburg  $n = 14$ ; and Shanghai  $n = 5$ ) and participants were male and female adolescents ages 15–19 and residing, or spending a majority of their time, in the study sites. Youth from Shanghai were limited to migrants as they constitute a particularly vulnerable population in this setting. After determination of eligibility and informed consent, including parental consent for minors, seed participants and subsequent recruits completed a survey. Consistent with RDS methods [37], seeds and subsequent recruits were provided with up to three recruitment coupons to recruit additional adolescents until the desired sample size was

achieved. All procedures were conducted in the local language(s) at each site [36]. To maximize confidentiality and minimize bias, participants self-administered the survey instrument via audio computer-assisted self interviewing, which can enhance accuracy in reporting on sensitive topics [38] and can overcome literacy issues via reading questions aloud. Study staff occasionally assisted participants. All participants were provided with a local resource sheet, consistent with ethical guidelines for violence-related research [39]. Across the five sites, valid participants totaled  $n = 2,339$  (range  $n = 438$ – $500$  per site) after a small number ( $n = 54$ ) were dropped for incomplete or poor quality data. This analysis focuses on female participants (total  $n = 1,112$ ; Baltimore  $n = 193$ ; New Delhi  $n = 250$ ; Ibadan  $n = 229$ ; Johannesburg  $n = 224$ ; and Shanghai  $n = 216$ ). A small number ( $n = 19$ ) were dropped for SV analyses because of incomplete responses. Of the total sample ( $n = 1,112$ ), partner violence analyses were restricted to ever-partnered women, i.e., those who reported having had sex, or having been married or in a romantic relationship ( $n = 614$ ); a small number ( $n = 9$ ) were dropped for incomplete IPV data for a final sample of  $n = 605$  (Baltimore  $n = 173$ ; New Delhi  $n = 30$ ; Ibadan  $n = 60$ ; Johannesburg  $n = 200$ ; and Shanghai  $n = 142$ ). The effective sample size fluctuated due to small amounts of missing data on health outcomes assessed.

### Measures

After extensive formative research [35], the survey was developed in English, professionally translated and back-translated into local languages, and underwent piloting in each site [36]. Demographic characteristics including age, highest grade level completed, employment, and marital status were assessed via standard, single items. Participants were defined as having housing instability if they either reported not having a regular place to stay or had a regular place to stay but stayed there on average four or fewer nights per week in the past 30 days and had stayed in four or more places in the past week. Participants described their relationship to their primary male and female caregivers, defined as either biological parent (mother or father) or nonbiological. To provide national context for each study site, we also present estimates and rankings from both the 2012 Gender Inequality Index [40], a composite measure reflecting gender inequality in achievements in reproductive health, empowerment and the labor market, and the 2012 Human Development Index [41], a composite measure of life expectancy, education, and income indices, both provided by the United Nations Development Program.

The primary exposures were IPV and non-partner SV. Past-year IPV was assessed using abbreviated physical and sexual subscales of the Conflict Tactics Scale-2 [42]. Six items assessed physical IPV, specifically: partner slapping or throwing something that could hurt; pushing or shoving; hitting with a fist or something else that could hurt; kicking, dragging, or beating; choking or burning on purpose; or threatening to use or actually using a weapon against the respondent. Sexual IPV was assessed using two items, specifically, physically forced sexual intercourse and unwanted sexual intercourse when pressured or insisted on. Item responses were considered individually; subsequently participants were classified as exposed to physical or sexual IPV if they reported any of the items.

Non-partner SV (i.e., that perpetrated by someone who was not a dating partner or spouse) was assessed over both lifetime and past 12-months reference period. Participants were directed to consider individuals who were neither dating partners nor

spouses. This two-item assessment included both forced sex (i.e., unwanted sexual intercourse because someone physically forced you), and, given extensive evidence of sexual coercion not described as physically forceful [43,44], a coercion assessment (i.e., unwanted sexual intercourse because someone insisted, pressured, or threatened you). Because of a programming error, the forced sex item at the Baltimore site did not specify non-partners, though it followed introductory text that oriented participants to consider non-partners.

Health outcomes assessed spanned domains of substance use, sexual and reproductive health, mental health, and general health. Substance use outcomes included any alcohol use in the past 30 days, any binge drinking (i.e., five or more alcoholic drinks in a row) in the past 30 days, lifetime injection drug use, and lifetime marijuana use. Sexual and reproductive health outcomes included condom nonuse at last sex, multiple ( $\geq 2$ ) sex partners in the past 12 months, and having ever been pregnant (assessed only of those who reported ever having had sex). Having ever had anal intercourse and lifetime experience of transactional sex (i.e., received money, shelter, food, drugs, school fees, or gifts other than those freely given in an ongoing relationship; the Shanghai site also included job opportunities as an option) were assessed for all respondents. Mental health domains included depressive symptoms as assessed by a simplified, 10-item Center for Epidemiologic Studies Depression Scale, where a score of 11 or higher indicates depressive symptomatology [45] (Cronbach's alpha across sites .76–.85), and lifetime suicidal ideation. Participants also reported their self-rated health on a 5-point scale [46]; responses were dichotomized, with "fair" or "poor" health compared with "excellent," "very good," and "good."

### Analyses

Sample demographics were calculated. Prevalence of item responses for IPV and non-partner SV was calculated. Small cell sizes ( $< 20$  cases) in Delhi, Ibadan, and Shanghai precluded additional analyses; thus, subsequent analyses are limited to Baltimore and Johannesburg. Using the summary IPV and non-partner SV measures, prevalence estimates were calculated and differences based on demographic characteristics assessed via chi-square tests with significance set at  $p < .05$ . Prevalence estimates of all assessed health outcomes were calculated for the total sample and by exposure to IPV and non-partner SV, respectively. Site-specific logistic regression models were constructed to evaluate associations of IPV and non-partner SV, respectively, with each assessed outcome, adjusting for demographic confounders significantly associated with the exposure at  $p < .05$ . Covariates were allowed to fluctuate across sites. Because of small cell sizes for marital status and housing instability, these covariates were dropped from some regression models where all respondents with the covariate had the same outcome. All analyses are stratified by study site to facilitate comparison, and weighted to accommodate the RDS design unless otherwise noted. Weights were generated via the RDSII estimator [47] using R and exported to Stata for analysis. Prevalence estimates and bivariate logistic regression models are also weighted for a poststratification age adjustment to facilitate comparisons across sites with different age compositions. Adjusted models used RDS-weighted data controlling for age as a covariate. All analyses were conducted using Stata statistical software using complex design procedures to accommodate the nonindependence of observations (i.e., the potential for

**Table 1**  
National-level context and sample characteristics

National context	Baltimore	Delhi	Ibadan	Johannesburg	Shanghai
	Score (rank)	Score (rank)	Score (rank)	Score (rank)	Score (rank)
UNDP gender inequality index 2012 [40]	.256 (42)	.610 (132)	NA	.462 (90)	.213 (35)
UNDP human development index 2012 [41]	.937 (5)	.554 (135)	.471 (152)	.629 (118)	.699 (91)
Sample characteristics	n = 193 % <sup>a</sup> (n)	n = 250 % <sup>a</sup> (n)	n = 229 % <sup>a</sup> (n)	n = 224 % <sup>a</sup> (n)	n = 216 % <sup>a</sup> (n)
Age (years)					
15–16	45.9 (91)	47.7 (147)	51.2 (146)	48.6 (53)	39.3 (65)
17–19	54.1 (102)	52.3 (103)	48.8 (83)	51.4 (171)	60.7 (151)
Education (highest year completed)					
8th grade or less	12.7 (26)	25.3 (60)	12.6 (36)	9.9 (15)	23.3 (34)
9th, 10th, or 11th grade	62.6 (118)	57.4 (152)	58.2 (127)	59.1 (140)	50.1 (115)
12th grade or higher	24.8 (48)	17.3 (38)	29.2 (63)	31.0 (69)	26.6 (67)
Currently employed	31.1 (58)	15.5 (46)	46.3 (101)	21.0 (48)	73.3 (176)
Housing instability	.6 (4)	15.7 (40)	10.0 (21)	7.1 (9)	6.0 (12)
Primary male caregiver figure was biological father	44.6 (76)	93.8 (235)	73.3 (167)	47.9 (98)	82.0 (184)
Primary female caregiver was biological mother	75.8 (143)	97.6 (245)	76.3 (175)	63.2 (132)	85.9 (188)
Ever-partnered					
Romantic relationship	87.9 (173)	9.0 (24)	24.4 (50)	87.9 (197)	58.0 (144)
Ever had sex	72.9 (130)	.3 (3)	17.1 (32)	55.9 (130)	8.4 (19)
Ever married	1.0 (5)	2.8 (4)	5.7 (10)	1.4 (4)	0 (0)
Ever-partnered (any of the above)	92.7 (177)	12.0 (30)	31.3 (63)	90.7 (200)	58.0 (144)

NA = not available; UNDP = United Nations Development Program.

<sup>a</sup> RDS- and age-weighted.

intercluster correlation within recruitment chain) [48]. Because of insufficient cases for past-year non-partner SV, analyses focused on lifetime experiences of non-partner SV. All procedures were approved by the Johns Hopkins Institutional Review Board and ethics review boards at each site.

## Results

Sample characteristics are presented in Table 1. History of having ever been partnered through a romantic relationship or sexual activity ranged widely across sites with upwards of

**Table 2**  
Prevalence of IPV and non-partner sexual violence among adolescent and young adult women by site

	Past-year intimate partner violence, among ever-partnered women <sup>a</sup>				
	Baltimore (n = 173) % <sup>b</sup>	Delhi (n = 30) % <sup>b</sup>	Ibadan (n = 60) % <sup>b</sup>	Johannesburg (n = 200) % <sup>b</sup>	Shanghai (n = 142) % <sup>b</sup>
Slapped, or something thrown at them that could hurt	14.8	5.2	20.4	24.3	2.9
Pushed or shoved	20.9	5.2	7.9	18.6	8.8
Hit with a fist or something hurtful	13.3	1.0	10.0	12.0	1.0
Kicked, dragged, or beat up	8.4	<1	8.8	10.3	<1
Choked or burned	5.8	2.1	3.7	2.2	<1
Threatened to use or used a weapon	6.8	2.5	4.1	7.7	<1
Any physical IPV	<b>24.3</b>	<b>16.6</b>	<b>25.9</b>	<b>30.9</b>	<b>8.8</b>
Physically forced sex	5.4	7.2	9.3	11.8	1.4
Pressured or insisted on sex when unwanted	10.3	6.1	14.7	15.9	1.2
Any sexual IPV	<b>10.6</b>	<b>7.2</b>	<b>14.7</b>	<b>18.3</b>	<b>1.8</b>
Both physical and sexual IPV	<b>7.1</b>	<b>4.4</b>	<b>7.9</b>	<b>12.6</b>	<b>&lt;1</b>
Any IPV (either physical or sexual)	<b>27.7</b>	<b>19.4</b>	<b>32.8</b>	<b>36.6</b>	<b>10.2</b>
	Non-partner sexual violence, among all women				
	Baltimore (n = 189) % <sup>b</sup>	Delhi (n = 250) % <sup>b</sup>	Ibadan (n = 218) % <sup>b</sup>	Johannesburg (n = 224) % <sup>b</sup>	Shanghai (n = 212) % <sup>b</sup>
Lifetime experience					
Unwanted sex due to insistence, pressure, or threat	10.7	1.6	7.4	9.5	<1
Physically forced sex	10.9	0.8	5.1	9.7	1.0
Either form of non-partner sexual violence, lifetime	<b>12.3</b>	<b>1.9</b>	<b>8.2</b>	<b>12.6</b>	<b>1.2</b>
Past-year experience					
Unwanted sex due to insistence, pressure, or threat	4.6	1.2	4.3	5.9	<1
Physically forced sex	5.1	<1	3.9	7.4	<1
Either form of non-partner sexual violence, past year	<b>6.2</b>	<b>1.6</b>	<b>5.1</b>	<b>9.1</b>	<b>1.0</b>

IPV = intimate partner violence.

Boldface values are used for summary measures.

<sup>a</sup> Ever-partnered is defined as reporting having had sex, been married, or been in a romantic relationship.

<sup>b</sup> RDS- and age-weighted.

**Table 3**  
Past-year IPV and non-partner sexual violence prevalence by demographic characteristics

	Past-year physical or sexual IPV among ever-partnered women <sup>a</sup>		Lifetime non-partner SV among all women	
	Johannesburg	Baltimore	Johannesburg	Baltimore
	% IPV <sup>b</sup>	% IPV <sup>b</sup>	% non-partner SV <sup>b</sup>	% non-partner SV <sup>b</sup>
Age (years)				
15–16	37.0	30.8	7.4	18.2 <sup>c</sup>
17–19	36.2	25.1	17.5	7.3 <sup>c</sup>
Education (highest year completed)				
8th grade or less	42.2	51.1	5.5	24.6
9th, 10th, or 11th grade	36.9	25.2	14.2	10.6
12th grade or higher	34.2	22.6	11.8	10.9
Currently employed				
No	36.2	25.9	12.1	14.0
Yes	37.8	31.1	14.3	8.1
Housing stability				
Stable	36.4	27.8 <sup>c</sup>	12.8	12.2 <sup>c</sup>
Unstable	38.6	0	10.5	43.2
Marital status				
Single	36.9	27.2	12.8	11.7 <sup>d</sup>
Married	15.9	75.3	0	75.3 <sup>d</sup>
Primary male caregiver figure				
Biological father	40.3	26.0	12.1	6.9 <sup>c</sup>
Other or none	32.9	28.7	13.1	16.9 <sup>c</sup>
Primary female caregiver				
Biological mother	33.7	22.7 <sup>c</sup>	14.8	10.2
Other or none	41.6	44.1 <sup>c</sup>	8.9	19.4

IPV = intimate partner violence; SV = sexual violence.

<sup>a</sup> Ever-partnered is defined as having had sex, been married, or been in a romantic relationship.

<sup>b</sup> RDS- and age-weighted row %.

<sup>c</sup> Chi-square differences across categories within site significant at  $p < .05$ .

<sup>d</sup> Significant by Fisher's exact test.

90% in both Baltimore and Johannesburg to only 12% in Delhi. In Shanghai, although more than half (58%) reported a romantic relationship, only 8% had ever had sex.

Among ever-partnered women, prevalence of past-year physical or sexual IPV ranged from 10.2% in Shanghai to 36.6% in Johannesburg (Table 2). Physical IPV was more prevalent (range 8.8% in Shanghai to 30.9% in Johannesburg) than sexual IPV (range 1.8% in Shanghai to 18.3% in Johannesburg). The most frequently reported forms of violence were being slapped or having something thrown at them that could hurt (range 2.9% in Shanghai to 24.3% in Johannesburg) or being pushed or shoved (range 5.2% in Delhi to 20.9% in Baltimore). Among all women, the prevalence of lifetime non-partner SV ranged from 1.2% in Shanghai to 12.3% in Baltimore and 12.6% in Johannesburg. Past-year non-partner sexual violence (SV), ranged from 1.0% in Shanghai to 9.1% in Johannesburg.

Both IPV and non-partner SV varied by demographic characteristics among young women in Baltimore and Johannesburg (Table 3). Among ever-partnered women, no differences in past-year physical or sexual IPV were identified based on age, education, employment status, or housing instability in Johannesburg or Baltimore. In Baltimore, past-year IPV prevalence varied by primary female care-giver, with a higher prevalence found among women who were not raised by their biological mother (44.1% vs. 22.7%,  $p < .05$ ).

Non-partner SV varied by age in Baltimore, with younger women more affected (18.2% among 15–16 year olds vs. 7.3% among 17–19 year olds). No differences were observed in either site for education, employment, or housing instability. Having a biologic father as a primary male caregiver was negatively associated with non-partner SV in Baltimore (6.9% vs. 16.9%) with

no similar differences identified in Johannesburg, nor was non-partner SV found to vary by primary female care giver in either site.

Past-year physical or sexual IPV was associated with substance use as well as dimensions of poor sexual and reproductive, mental, and self-rated health (Table 4). In Johannesburg, IPV was associated with past-month alcohol consumption (adjusted odds ratio [AOR] 3.42, 95% confidence interval [CI] 2.05, 5.69), past-month binge drinking (AOR 7.66, 95% CI 4.36, 13.47), lifetime marijuana use (AOR 4.66, 95% CI 2.21, 9.85), condom nonuse at last sex (AOR 4.50, 95% CI 2.17, 9.34), multiple past-year sex partners (AOR 6.01, 95% CI 3.41, 10.60), pregnancy (AOR 1.70, 95% CI 1.03, 2.80), transactional sex (AOR 23.32, 95% CI 18.96, 28.69), depressive symptoms (AOR 3.05, 95% CI 2.10, 4.44), suicidal ideation (AOR 2.64, 95% CI 1.85, 3.76), and poor self-rated health (AOR 6.19, 95% CI 3.01, 12.74). In Baltimore, IPV was associated with multiple past-year sex partners (AOR 2.91, 95% CI 1.95, 4.35) and anal sex (AOR 2.89, 95% CI 1.43, 5.83).

Having ever experienced non-partner SV was also associated with poor health across domains of substance use, sexual and reproductive health, mental and self-rated health (Table 5). In Johannesburg, non-partner SV was associated with past-month alcohol consumption (AOR 3.12, 95% CI 2.07, 4.72), past-month binge drinking (AOR 1.98, 95% CI 1.01, 3.88), lifetime marijuana use (AOR 2.96, 95% CI 1.53, 5.74), condom nonuse at last sex (AOR 3.04, 95% CI 1.34, 6.92), multiple past-year sex partners (AOR 4.16, 95% CI 2.76, 6.27), pregnancy (AOR 3.65, 95% CI 1.82, 7.32), anal sex (AOR 2.23, 95% CI 1.42, 3.48), transactional sex (AOR 3.88, 95% CI 2.94, 5.13), depressive symptoms (AOR 1.92, 95% CI 1.28, 2.88), and suicidal ideation (AOR 2.38, 95% CI 1.55, 3.65). In Baltimore, non-partner SV was associated with having ever had

**Table 4**

Associations of past-year physical or sexual IPV with substance use, sexual and reproductive health, mental health, and self-rated health among ever-partnered women

	Johannesburg				Baltimore			
	Sample W% (n/n)	W% among IPV-exposed	W% among IPV-unexposed	AOR <sup>a</sup> (95% CI)	Sample W% (n/n)	W% among IPV exposed	W% among IPV-unexposed	AOR <sup>b</sup> (95% CI)
<b>Substance use</b>								
Drank alcohol in past 30 days	44.2 (84/200)	64.7	32.3	<b>3.42 (2.05, 5.69)*</b>	21.8 (46/173)	25.5	20.3	1.09 (.76, 1.57)
Binge drinking in past 30 days	17.7 (37/200)	37.3	6.3	<b>7.66 (4.36, 13.47)*</b>	12.9 (20/173)	10.7	13.8	.54 (.14, 2.11) <sup>e</sup>
Marijuana use (lifetime)	16.1 (38/200)	29.0	8.7	<b>4.66 (2.21, 9.85)*</b>	58.0 (97/173)	78.3	50.2	<b>4.04 (1.75, 9.30)*</b>
Injection drug use (lifetime)	1.2 (2/200)	3.2	0	Fisher's exact test, $p = .16^c$	2.7 (5/173)	6.4	1.2	Fisher's exact test, $p = .15^c$
<b>Sexual and reproductive health<sup>f</sup></b>								
Condom nonuse at last sex <sup>f</sup>	29.9 (29/127)	46.5	17.1	<b>4.50 (2.17, 9.34)*<sup>d</sup></b>	41.2 (54/119)	38.7	42.2	1.27 (.58, 2.79)
Multiple sex partners past 12 months <sup>f</sup>	20.8 (40/130)	30.8	13.1	<b>6.01 (3.41, 10.60)*</b>	25.0 (39/123)	41.2	19.2	<b>2.91 (1.95, 4.35)<sup>e,*</sup></b>
Ever pregnant (lifetime) <sup>f</sup>	28.9 (25/130)	37.7	21.9	<b>1.70 (1.03, 2.80)*</b>	51.8 (53/129)	43.6	55.1	.91 (.29, 2.81)
Anal intercourse (lifetime)	11.7 (23/200)	16.5	9.0	1.89 (.93, 3.85)	16.3 (33/172)	33.0	10.0	<b>2.89 (1.43, 5.83)*</b>
Transactional sex (lifetime)	3.4 (9/200)	8.3	.5	<b>23.32 (18.96, 28.69)*</b>	6.2 (9/173)	12.5	3.7	1.87 (.70, 4.97) <sup>e</sup>
<b>Mental health</b>								
Depressive symptoms	44.1 (76/198)	63.4	33.0	<b>3.05 (2.10, 4.44)*</b>	34.8 (67/167)	50.3	28.5	1.82 (.96, 3.44)
Suicidal ideation	40.7 (81/200)	58.2	30.7	<b>2.64 (1.85, 3.76)*<sup>d</sup></b>	31.5 (45/169)	36.8	29.4	2.06 (.97, 4.37) <sup>d,e</sup>
Poor self-rated health	11.1 (21/200)	22.3	4.6	<b>6.19 (3.01, 12.74)*</b>	10.4 (16/169)	12.0	9.7	.82 (.53, 1.25) <sup>d,e</sup>

AOR = adjusted odds ratio; CI = confidence interval; IPV = intimate partner violence; W% = RDS- and age-weighted percent.

<sup>a</sup> RDS-weighted and adjusted for age and marital status, except where noted.<sup>b</sup> RDS-weighted and adjusted for age, mother as primary maternal figure, housing instability, and marital status, except where noted.<sup>c</sup> Unweighted.<sup>d</sup> Marital status dropped from model.<sup>e</sup> Housing instability dropped from model.<sup>f</sup> Outcomes of condom nonuse, multiple sex partners, and pregnancy assessed among sexually experienced women only (Johannesburg  $n = 130$ , Baltimore  $n = 130$ ).\* Bold values indicate significance at  $p < .05$ .

**Table 5**

Associations of lifetime non-partner SV with substance use, sexual and reproductive health, mental health, and self-rated health among women

	Johannesburg				Baltimore			
	Sample W%	W% among exposed to non-partner SV	W% among unexposed to non-partner SV	AOR (95% CI) <sup>a</sup>	Sample %	W% among exposed to non-partner SV	W% among unexposed to non-partner SV	AOR (95% CI) <sup>b</sup>
<b>Substance use</b>								
Drank alcohol in past 30 days	41.0 (87/224)	56.6	38.7	<b>3.12 (2.07, 4.72)*</b>	20.3 (47/189)	26.4	19.5	.96 (.36, 2.61)
Binge drinking in past 30 days	16.2 (38/224)	21.6	15.5	<b>1.98 (1.01, 3.88)*</b>	10.6 (20/189)	19.5	9.4	1.51 (.24, 9.58) <sup>c</sup>
Marijuana use (lifetime)	14.9 (39/224)	25.1	13.4	<b>2.96 (1.53, 5.74)*</b>	52.9 (97/189)	57.8	52.2	1.07 (.35, 3.26)
Injection drug use (lifetime)	1.1 (2/224)	8.3	0	<b>Fisher's exact test, p = .02<sup>c</sup></b>	2.5 (5/189)	13.4	.9	<b>Fisher's exact test, p = .014<sup>c</sup></b>
<b>Sexual and reproductive health<sup>f</sup></b>								
Condom nonuse at last sex <sup>e</sup>	29.9 (29/127)	43.3	26.4	<b>3.04 (1.34, 6.92)*</b>	40.7 (53/119)	41.8	40.5	1.30 (.70, 2.42)
Multiple sex partners past 12 months <sup>e</sup>	20.8 (40/130)	41.1	15.5	<b>4.16 (2.76, 6.27)*</b>	25.4 (40/123)	29.1	24.9	.78 (.19, 3.23) <sup>c</sup>
Ever pregnant (lifetime) <sup>e</sup>	29.8 (25/130)	44.6	24.6	<b>3.65 (1.82, 7.32)*</b>	51.1 (51/128)	51.5	51.0	1.01 (.24, 4.23)
Anal intercourse (lifetime)	10.6 (23/224)	17.8	9.6	<b>2.23 (1.42, 3.48)*</b>	14.6 (32/188)	50.3	9.6	<b>7.28 (3.11, 17.05)*</b>
Transactional sex (lifetime)	3.3 (10/224)	12.8	1.9	<b>3.88 (2.94, 5.13)*</b>	5.7 (9/189)	16.2	4.2	4.45 (.53, 37.16) <sup>c</sup>
<b>Mental health</b>								
Depressive symptoms	44.8 (38.5, 85/221)	54.1	43.5	<b>1.92 (1.28, 2.88)*</b>	32.0 (69/183)	88.8	25.6	<b>48.35 (28.31, 82.56)*</b>
Suicide ideation	39.6 (38.4, 86/224)	54.6	37.5	<b>2.38 (1.55, 3.65)*</b>	28.9 (45/186)	42.5	27.0	2.44 (.67, 8.95) <sup>d,e</sup>
Poor self-rated health	10.7 (23/224)	19.7	9.4	2.60 (.72, 9.33)	10.2 (18/185)	1.3	11.3	<b>.08 (.02, .40)<sup>d,e</sup></b>

AOR = adjusted odds ratio; CI = confidence interval; SV = sexual violence; W% = RDS- and age-weighted percent.

<sup>a</sup> Adjusted for age, except where noted.<sup>b</sup> Adjusted for age, primary paternal figure, housing instability, and marital status, except where noted.<sup>c</sup> Unweighted.<sup>d</sup> Not adjusted for marital status.<sup>e</sup> Not adjusted for housing instability.<sup>f</sup> Outcomes of condom nonuse, multiple sex partners, and pregnancy assessed among sexually experienced women only (Johannesburg n = 130, Baltimore n = 130).\* Boldface values indicate significance at  $p < .05$ .

anal sex (AOR 7.28, 95% CI 3.11, 17.05) and depressive symptoms (AOR 48.35, 95% CI 28.31, 82.56), and was negatively associated with poor self-reported health (AOR .08, 95% CI 0.02, .40). Although small cell sizes precluded adjusted analyses, injection drug use was significantly more prevalent among those exposed to non-partner SV in both Johannesburg (8.3% vs. 0%, Fisher's exact test  $p = .02$ ) and Baltimore (13.4% vs. .9%, Fisher's exact test,  $p = .014$ ).

## Discussion

Findings from this comparative study of GBV among adolescent women in vulnerable urban environments demonstrate a high prevalence of IPV. Non-partner SV was observed to a lesser extent, indicative of partners as the primary GBV perpetrators against young women in these settings. Prevalence estimates were highest in Baltimore and Johannesburg; moreover, estimates exceed those previously reported in population-based surveillance in these settings and are roughly comparable with estimates from adult women, despite the young age of our sample and their relatively limited relationship history in terms of years partnered. Specifically, in Baltimore we estimate that more than one in four (27.7%) of ever-partnered women had experienced past-year IPV relative to an estimated 14% of high-school women in the state of Maryland based on school-based surveillance [49]. Our current Johannesburg IPV prevalence estimate of 36.6% exceeds the 31% estimated among ever-partnered women based on nationally representative survey data from South Africa [50]. Consistent with past cross-site comparisons [4,51] and global estimates [2,3] for both IPV and non-partner SV, current prevalence estimates ranged widely across the five sites, suggesting contextual differences in GBV among young women in disadvantaged urban settings. In Baltimore and Johannesburg, where sufficient cases of IPV and non-partner SV enabled further analyses, both IPV and non-partner SV were associated with poor health outcomes across domains of substance use, sexual and reproductive health, mental health, and self-rated health, with notable differences in patterns across sites.

The heterogeneity in IPV and non-partner SV prevalence across the study sites likely reflects a confluence of factors. Contextual and structural factors, including dimensions of gender equity, social norms about the acceptability of violence, and the presence, and extent of enforcement, of GBV-related laws may explain some of the differences observed in GBV prevalence. In South Africa in particular, the backdrop of social and gender power inequity has been described in detail [26,52,53] and may underpin the high GBV prevalence identified. Both Johannesburg and Baltimore have legacies of race-based inequity and marginalization; this historic context of deeply rooted race-based power differentials maintained by abusive practices and policies may create a context that similarly tolerates and tacitly accepts maintaining gender-based power differentials through violence.

The nature of young women's relationships varied across sites as well. We defined ever-partnered as inclusive of romantic relationships in an effort to reflect common partnership patterns in adolescence and to detect violence within relationships that may not yet involve cohabitation or marriage. Yet in Delhi and Ibadan, the total number of ever-partnered women was quite low, perhaps reflecting local norms. For example, many in India prioritize abstinence before marriage [51]. That few participants in

Delhi had ever had sex was considered attributable to tight social controls over female sexuality in general and limited freedom of movement for girls as compared with boys. Married youth may be particularly secluded, so RDS may have been less successful in attracting married women despite inclusion of a married seed. In Ibadan, where the prevalence of IPV was comparable with that of Johannesburg and Baltimore, small cell sizes precluded further analyses because of lower numbers of ever-partnered women. In Shanghai, the prevalence of physical or sexual IPV (10.2%) was lowest across all study sites. Compared with Delhi, a greater number of women had been ever-partnered in Shanghai; however, their dating relationships were less likely to include sexual activity as compared with Baltimore and Johannesburg. This lack of sexual experience may signify relationships of different duration or nature as compared with those that include sexual activity, resulting in lower vulnerability to both sexual and physical IPV. The Shanghai sample was also unique in consisting of migrant youth. Finally, differences could reflect differential comfort across sites in reporting GBV or differences in the underlying profiles of our participants and study settings.

Baltimore and Johannesburg differed in the demographic correlates of both IPV and non-partner SV, and no consistent high-risk groups emerged. The relative lack of demographic factors associated with IPV and non-partner SV, particularly in Johannesburg, supports the need for universal rather than targeted prevention and intervention.

Consistent with past research [54,55], IPV was significantly associated with sexual risks in the forms of condom non-use (Johannesburg only), multiple past-year sexual partners (Johannesburg and Baltimore), pregnancy (Johannesburg), anal intercourse (Baltimore), and transactional sex (Johannesburg). Findings affirm IPV as a risk marker, if not predictor, of sexual risk even within the distressed urban settings in our study. Resulting concern for STI including HIV, is exacerbated by the HIV epidemics in these sites: while the Johannesburg epidemic is on a higher order of magnitude with an estimated 15.2% of 15–49 year olds infected in Gauteng province [56], Baltimore remains an epicenter of the US HIV epidemic, with the fourth highest case-load in the nation [57,58]. IPV is consistently associated with STI/HIV [8,53,59–61], and prospective research from both the US and South Africa confirms a temporal link of IPV with incident infection [53,59]. Sexual and reproductive health promotion efforts, including STI/HIV screening programs, may be uniquely positioned to integrate GBV prevention messaging as well as support for survivors and links to services.

Despite similar findings in the prevalence and general poor health correlates of IPV across Baltimore and Johannesburg, the differences also warrant consideration. In Baltimore, IPV was significantly associated with marijuana use, anal sex and multiple sex partners, with no associations observed in other domains. By contrast, in Johannesburg, where past-year IPV was most prevalent (36.6%), IPV was linked with past-month alcohol use, binge drinking, marijuana use, condom nonuse, multiple sex partners, pregnancy, transactional sex, depressive symptoms, suicidal ideation, and poor self-rated health. Despite their commonalities in urban vulnerability, our study sites, including Baltimore and Johannesburg, may differ qualitatively in their respective levels of intensity and the risk conferred for GBV. Differences observed may also reflect qualitative differences in the nature and experiences of IPV, including the severity and duration of exposure, differences in underlying health status, or potentially unassessed confounders.



The health correlates of non-partner SV were also most striking in Johannesburg relative to Baltimore despite comparable prevalence estimates. At both sites, non-partner SV was significantly associated with injection drug use, anal intercourse, and depressive symptoms. In Johannesburg, such experiences were also associated with past-month alcohol use, binge drinking, marijuana use, condom nonuse, multiple past-year sex partners, pregnancy, transactional sex, and suicidal ideation. This pattern of heightened health risk given exposure in Johannesburg relative to Baltimore again suggests potential differences in the underlying risk environment that may intensify the health impact of GBV. The temporal links underpinning these associations are unclear and require further investigation. For example, transactional sex and sex work are well-recognized contexts for SV [62], yet sexual assault, particularly in the form of childhood sexual abuse, is a risk marker for later transactional sex [63]. The association of non-partner SV with better self-rated health in Baltimore is surprising, and the meaning is unclear.

Findings should be considered in light of several additional limitations. Our cross-sectional design does not support temporal inferences; only prospective research can discern the outcomes for which GBV may be a risk factor versus a correlate or potentially a consequence. Small absolute numbers in some cases limited the stability of estimates. Perpetrators of non-partner SV were not assessed, although experiences likely reflect a range of perpetrators including from family members, teachers, strangers, and acquaintances [4]. Despite the use of audio computer-assisted self interview to enable comfort and confidentiality, participants may have been reluctant to report GBV or any of the health domains assessed for concern due to confidentiality, stigma, or other reasons. Despite steps to ensure accuracy in translation including professional translation, back-translation, and pilot testing to ensure comprehension, differences observed may also reflect subtleties and nuances brought forth in translation. The extent to which findings generalize to other disadvantaged urban environments remains unclear, as does the extent to which perpetrators of the GBV identified reside within or outside the target communities.

Findings hold implications for adolescent medicine as well as policy and development efforts targeting urban health. The high prevalence of IPV—in particular in Ibadan, Baltimore, and Johannesburg—demonstrates the need for multisectoral GBV prevention and support interventions that address the needs of young women in vulnerable urban settings. Health infrastructures, particularly those designated for youth, must recognize and actively anticipate that their patient populations will include survivors (i.e., trauma-informed care) [64]. Attending to the immediate and sustained physical and psychosocial health needs of adolescent survivors requires provision of violence support messages, emergency contraception and postexposure HIV prophylaxis, availability of trained professionals to obtain forensic evidence for cases of SV, and connections to community-based support and mental health services. Globally, few GBV survivors disclose their experiences and even fewer report to police or seek justice through the legal system [4]. In turn, GBV perpetrators are rarely held accountable for their actions. Changing this climate of impunity requires criminal justice systems that are safe and approachable for young women, especially those who lack social status on the basis of poverty or residence in disadvantaged communities.

Overall, findings corroborate the links of GBV with poor health demonstrated in population-based research with

adolescent and adult women, and extend prior research by demonstrating similar patterns among adolescent women in vulnerable urban settings. It is striking that even in our study areas of concentrated disadvantage, where the health threats to adolescents may be more immediate, pronounced, and pervasive, both IPV and non-partner SV were significantly associated with poor health across multiple domains. In some settings, disadvantaged urban environments can serve as incubators of GBV risk for adolescent women. In turn, GBV is associated with many of the leading causes of mortality among young women globally (e.g., self-inflicted injury, HIV/AIDS, and adverse pregnancy outcomes including maternal mortality and unsafe abortion) [65]. Evidence-based interventions are needed to prevent GBV against young women, mitigate its health impact, and ensure young women's access to justice.

### Acknowledgments

This research was supported by Young Health Programme, a partnership between AstraZeneca, Johns Hopkins Bloomberg School of Public Health, and Plan International, a leading global children's charity. In Ibadan, the study was funded by The Bill and Melinda Gates Institute at Johns Hopkins Bloomberg School of Public Health through its funding to The Centre for Population and Reproductive Health, University of Ibadan.

### References

- [1] WHO. Global and regional estimates of violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence. Geneva: World Health Organization; 2013.
- [2] Devries KM, Mak JY, Garcia-Moreno C, et al. Global health. The global prevalence of intimate partner violence against women. *Science* 2013;340:1527–8.
- [3] Abrahams N, Devries K, Watts C, et al. Worldwide prevalence of non-partner sexual violence: A systematic review. *Lancet* 2014;383:1648–54.
- [4] WHO. WHO multi-country study on women's health and domestic violence against women: Summary report of initial results on prevalence, health outcomes and women's responses. Geneva: World Health Organization; 2005.
- [5] Ellsberg M, Jansen HA, Heise L, et al. Intimate partner violence and women's physical and mental health in the who multi-country study on women's health and domestic violence: An observational study. *Lancet* 2008;371:1165–72.
- [6] Glass N, Fredland N, Campbell J, et al. Adolescent dating violence: Prevalence, risk factors, health outcomes, and implications for clinical practice. *J Obstet Gynecol Neonatal Nurs* 2003;32:227–38.
- [7] Lucea MB, Francis L, Sabri B, et al. Disordered eating among african american and african Caribbean women: The influence of intimate partner violence, depression, and PTSD. *Issues Ment Health Nurs* 2012;33:513–21.
- [8] Decker MR, Silverman JG, Raj A. Dating violence and sexually transmitted disease/HIV testing and diagnosis among adolescent females. *Pediatrics* 2005;116:e272–276.
- [9] Campbell JC. Health consequences of intimate partner violence. *Lancet* 2002;359:1331–6.
- [10] Lang DL, Sales JM, Salazar LF, et al. Rape victimization and high risk sexual behaviors: Longitudinal study of african-american adolescent females. *West J Emerg Med* 2011;12:333–42.
- [11] Koenig MA, Zablotska I, Lutalo T, et al. Coerced first intercourse and reproductive health among adolescent women in Rakai, Uganda. *Int Fam Plann Perspect* 2004;30:156–63.
- [12] Maharaj P, Munthre C. Coerced first sexual intercourse and selected reproductive health outcomes among young women in KwaZulu-Natal, South Africa. *J Biosoc Sci* 2007;39:231–44.
- [13] Stockl H, Devries K, Rotstein A, et al. The global prevalence of intimate partner homicide: A systematic review. *Lancet* 2013;382:859–65.
- [14] Gass JD, Stein DJ, Williams DR, Seedat S. Gender differences in risk for intimate partner violence among South African adults. *J Interpersonal Violence* 2011;26:2764–89.
- [15] Black MC, Basile KC, Breiding MJ, et al. The national intimate partner and sexual violence survey (NISVS): 2010 summary report. Atlanta, GA:

- National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2011.
- [16] Hindin MJ, Christiansen CS, Ferguson BJ. Setting research priorities for adolescent sexual and reproductive health in low- and middle-income countries. *Bull World Health Organ* 2013;91:10–8.
  - [17] Raj A. When the mother is a child: The impact of child marriage on the health and human rights of girls. *Arch Dis Child* 2010;95:931–5.
  - [18] Raj A, Saggurti N, Lawrence D, et al. Association between adolescent marriage and marital violence among young adult women in India. *Int J Gynaecol Obstetrics* 2010;110:35–9.
  - [19] Akintola O, Ngubane L, Makhaba L. 'I did it for him, not for me': An exploratory study of factors influencing sexual debut among female university students in Durban, South Africa. *J Health Psychol* 2012;17:143–53.
  - [20] Bertone-Johnson ER, Whitcomb BW, Missmer SA, et al. Inflammation and early-life abuse in women. *Am J Prev Med* 2012;43:611–20.
  - [21] Exner-Cortens D, Eckenrode J, Rothman E. Longitudinal associations between Teen dating violence victimization and adverse health outcomes. *Pediatrics* 2013;131:71–8.
  - [22] Gidycz CA, Orchowski LM, King CR, et al. Sexual victimization and health-risk behaviors: a prospective analysis of college women. *J Interpers Violence* 2008;23:744–63.
  - [23] Bruce J. Violence against adolescent girls: A fundamental challenge to meaningful equality. New York, NY: Population Council; 2012.
  - [24] Popkin SJ, Leventhal T, Weissman G. Girls in the 'hood: The importance of feeling safe. Washington, DC: The Urban Institute; 2008.
  - [25] COHRE. Women, Slums and Urbanisation. Geneva: Centre on Housing Rights and Evictions (COHRE); 2008.
  - [26] Oduro GY, Swartz S, Arnot M. Gender-based violence: Young women's experiences in the slums and streets of three sub-Saharan african cities. *Theor Res Edu* 2012;10:275–94.
  - [27] Misganaw AC, Worku YA. Assessment of sexual violence among street females in Bahir-Dar town, North West Ethiopia: A mixed method study. *BMC Public Health* 2013;13:825.
  - [28] Solomon S, Subbaraman R, Solomon SS, et al. Domestic violence and forced sex among the urban poor in south India: Implications for HIV prevention. *Violence against women* 2009;15:753–73.
  - [29] Sambisa W, Angeles G, Lance PM, et al. Prevalence and correlates of physical spousal violence against women in slum and nonslum areas of urban Bangladesh. *J Interpersonal Violence* 2011;26:2592–618.
  - [30] Cunradi CB, Caetano R, Clark C, Schafer J. Neighborhood poverty as a predictor of intimate partner violence among White, Black, and Hispanic couples in the United States: A multilevel analysis. *Ann Epidemiol* 2000;10:297–308.
  - [31] Fox GL, Benson ML. Household and neighborhood contexts of intimate partner violence. *Public Health Rep* 2006;121:419–27.
  - [32] Pearlman DN, Zierler S, Gjelsvik A, Verhoek-Oftedahl W. Neighborhood environment, racial position, and risk of police-reported domestic violence: A contextual analysis. *Public Health Rep* 2003;118:44–58.
  - [33] Pandey GK, Dutt D, Banerjee B. Partner and relationship factors in domestic violence: Perspectives of women from a slum in Calcutta, India. *J Interpers Violence* 2009;24:1175–91.
  - [34] Pinchevsky GM, Wright EM. The impact of neighborhoods on intimate partner violence and victimization. *Trauma Violence Abuse* 2012;13:112–32.
  - [35] Mmari K, Blum R, Sonenstein F, et al. Adolescents' perceptions of health from disadvantaged urban communities: Findings from the WAVE study. *Soc Sci Med* 2014;104:124–32.
  - [36] Decker MR, Marshall B, Emerson M, et al. Respondent-driven sampling for an adolescent health study in vulnerable urban settings: a multicountry study. *J Adolesc Health* 2014;55:S6–12.
  - [37] Magnani R, Sabin K, Saidel T, Heckathorn D. Review of sampling hard-to-reach and hidden populations for HIV surveillance. *AIDS* 2005;19-(Suppl 2):S67–72.
  - [38] Ghanem KG, Hutton HE, Zenilman JM, et al. Audio computer assisted self interview and face to face interview modes in assessing response bias among STD clinic patients. *Sex Transm Infections* 2005;81:421–5.
  - [39] Ellsberg M, Heise L. Researching violence against women: A Practical Guide for Researchers and Activists. Washington, DC: World Health Organization; 2005.
  - [40] UNDP. Gender inequality Index. Geneva: United Nations Development Program; 2012.
  - [41] UNDP. Human development Index. Geneva: United Nations Development Program; 2012.
  - [42] Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The Revised conflict tactics scales (CTS2): Development and Preliminary Psychometric data. *J Fam Issues* 1996;17:283–316.
  - [43] Moore AM, Awusabo-Asare K, Madise N, et al. Coerced first sex among adolescent girls in sub-Saharan africa: Prevalence and context. *Afr J Reprod Health* 2007;11:62–82.
  - [44] Williams CM, Clear ER, Coker AL. Sexual coercion and sexual violence at first intercourse associated with sexually transmitted infections. *Sex Transm Dis* 2013;40:771–5.
  - [45] Radloff LS. The CES-D scale a self-report depression scale for research in the general population. *Appl Psychol Meas* 1977;1:385–401.
  - [46] Idler EL, Benyamini Y. Self-rated health and mortality: A review of twenty-seven community studies. *J Health Soc Behav* 1997;38:21–37.
  - [47] Volz E, Heckathorn D. Probability based estimation theory for respondent driven sampling. *J Official Stat* 2008;24:79–97.
  - [48] Szwarcwald CL, de Souza Junior PR, Damacena GN, et al. Analysis of data collected by RDS among sex workers in 10 Brazilian cities, 2009: Estimation of the prevalence of HIV, variance, and design effect. *J Acquir Immune Defic Syndr* 2011;57(Suppl 3):S129–135.
  - [49] Eaton DK, Kann L, Kinchen S, et al. Youth risk behavior surveillance - United States, 2011. *MMWR Surveill Summ* 2012;61:1–162.
  - [50] Gass JD, Stein DJ, Williams DR, Seedat S. Intimate partner violence, health behaviours, and chronic physical illness among South African women. *S Afr Med J* 2010;100:582–5.
  - [51] International Institute for Population Sciences (IIPS) and Population Council. Youth in India: Situation and needs 2006–2007. Mumbai: IIPS; 2010.
  - [52] Jewkes R. HIV/AIDS. Gender inequities must be addressed in HIV prevention. *Science* 2010;329:145–7.
  - [53] Jewkes RK, Dunkle K, Nduna M, Shai N. Intimate partner violence, relationship power inequity, and incidence of HIV infection in young women in South Africa: A cohort study. *Lancet* 2010;376:41–8.
  - [54] Decker MR, Miller E, McCauley HL, et al. Recent partner violence and sexual and drug-related STI/HIV risk among adolescent and young adult women attending family planning clinics. *STI* 2014;90:145–9.
  - [55] Hess KL, Javanbakht M, Brown JM, et al. Intimate partner violence and anal intercourse in young adult heterosexual relationships. *Perspect Sex Reprod Health* 2013;45:6–12.
  - [56] Shisana O, Rehle T, Simbayi LC, et al. South African national HIV prevalence, incidence, behaviour and communication survey 2008: A turning tide among teenagers? Cape Town: HSRC Press; 2009.
  - [57] CDC. HIV surveillance report, 2010. Atlanta: CDC; 2010.
  - [58] Maryland Department of Health & Mental Hygiene CfHSE. HIV/AIDS in the Baltimore/Towson Metropolitan Area: An Epidemiological profile. Baltimore, MD: Maryland Department of Health & Mental Hygiene; 2011.
  - [59] Allsworth JE, Anand M, Redding CA, Peipert JF. Physical and sexual violence and incident sexually transmitted infections. *J Womens Health (Larchmt)* 2009;18:529–34.
  - [60] Seth P, Raiford JL, Robinson LS, et al. Intimate partner violence and other partner-related factors: Correlates of sexually transmissible infections and risky sexual behaviours among young adult african american women. *Sex Health* 2010;7:25–30.
  - [61] Wu E, El-Bassel N, Witte SS, et al. Intimate partner violence and HIV risk among urban minority women in primary health care settings. *AIDS Behav* 2003;7:291–301.
  - [62] WHO. Violence against sex workers and HIV prevention. Geneva: WHO; 2005.
  - [63] Cohen M, Deamant C, Barkan S, et al. Domestic violence and childhood sexual abuse in HIV-infected women and women at risk for HIV. *Am J Public Health* 2000;90:560–5.
  - [64] Harris M, Fallot RD. Envisioning a trauma-informed service system: a vital paradigm shift. *New Dir Ment Health Ser* 2001;89:3–22.
  - [65] Patton GC, Coffey C, Sawyer SM, et al. Global patterns of mortality in young people: A systematic analysis of population health data. *Lancet* 2009;374:881–92.