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The impact of violence on sex risk and drug use behaviors among women engaged in sex work in Phnom Penh, Cambodia

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ABSTRACT

Background: Violence, substance use, and HIV disproportionately impact female entertainment and sex workers (FESW), but causal pathways remain unclear.
Methods: We examined data from an observational cohort of FESW age 15–29 in Phnom Penh, Cambodia for associations between violence exposure and sexual risk and drug use. Validated measures of physical and sexual violence were assessed at baseline. Self-reported outcomes measured quarterly over the next 12-months included past month sexual partners, consistent condom use by partner type, sex while high, and amphetamine type stimulant (ATS) use. Biomarkers measured quarterly included prostate specific antigen (PSA) and urine toxicology. Generalized estimating equations were fit adjusting for age, education, marital status and sex work venue.
Results: Of 220 women, 48% reported physical or sexual violence in the preceding 12-months. Physical violence was associated with increased number of sex partners (adjusted incidence rate ratio [aIRR] 1.33; 95% CI: 1.04–1.71), greater odds of sex while high (adjusted odds ratio [aOR] 2.42; 95% CI: 1.10–5.33), increased days of ATS use (aIRR 2.74; 95% CI: 1.29–5.84) and increased odds of an ATS+ urine screen (aOR 2.80, 95%CI: 1.38–5.66). Sexual violence predicted decreased odds of consistent condom use with non-paying partners (aOR 0.24; 95% CI: 0.10–0.59) and greater odds of a PSA+ vaginal swab (aOR 1.83; 95% CI: 1.13–2.93).
Conclusions: Physical and sexual violence are prevalent among Cambodian FESW and associated with subsequent sexual risk and drug use behaviors. Clinical research examining interventions targeting structural and interpersonal factors impacting violence is needed to optimize HIV/AIDS prevention among FESW.

1. Introduction

Women engaged in sex work are disproportionately impacted by human immunodeficiency virus (HIV; Shannon et al., 2014); they are over 13 times more likely to be living with HIV compared to all reproductive age women in low and middle income countries (Baral et al., 2012). Female entertainment and sex workers (FESW) comprise the group with the highest HIV incidence and prevalence in Cambodia with HIV prevalence of 13.9–17.4% in direct or brothel-based female sex workers and 3.6–9.8% in indirect or entertainment-based workers (Couture et al., 2011; National

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Center for HIV/AIDS Dermatology and STDs, 2010; Page et al., 2013). HIV risk in women engaged in sex work is widely recognized as attributable to overlapping individual (e.g., drug use), interpersonal (e.g., relationship factors impacting condom negotiation including violence exposure), and structural level factors (e.g., criminalization of sex work; Shannon et al., 2014). However, few studies examined temporal relationships among these overlapping risks prospectively, and knowledge gaps remain (Argento et al., 2014; Shannon et al., 2014). One longitudinal study found violence exposure from an intimate partner was associated with inconsistent condom use with non-paying partners, but did not account for violence exposure from others, such as paying clients (Argento et al., 2014).

Previous cross-sectional studies demonstrate that physical and sexual violence are prevalent among women engaged in sex work and also associated with sexual risk and drug use behaviors. Violence exposed women engaged in sex work report more frequent anal sex (Patra et al., 2012), higher numbers of sex partners (Go et al., 2011), less frequent condom use (Beattie et al., 2010; Go et al., 2011) and are at higher risk of sexually transmitted infections than those who have not experienced recent violence (Shannon et al., 2014). Violence is also associated with increased alcohol (Surratt, 2007), illegal drug use (Hong et al., 2013; Surratt, 2007), including marijuana and cocaine (Surratt, 2007) as well as injection drug use (Ulibarri et al., 2011).

Drug use in female sex workers ranges between 17% in Cambodian entertainment based workers (Couture et al., 2012) to 31–68% in Canadian street-based workers (Duff et al., 2011) or 37–49% in a combined sample of Egyptian street and entertainment based workers (Kabbash et al., 2012). Drug use in women engaged in transactional sex has been associated with increased numbers of sex partners (Sherman et al., 2011; Surratt, 2007), inconsistent condom use (Shannon et al., 2014; Surratt, 2007) and sexually transmitted infection incidence (Couture et al., 2012; Shannon et al., 2014; Surratt, 2007). Amphetamine type stimulant (ATS) use is especially prevalent among women in Cambodia, and has been linked to increased risk of HIV (Couture et al., 2012, 2011; Maher et al., 2011b) in this population and others (Colfax et al., 2010). Women may engage in risk behaviors to escape or avoid the enduring psychological effects of violence (Baker et al., 2004; Vanwesenbeeck, 2001). In our previous work, ATS was described as a "power drug" women took to be able to serve more customers, and to "feel happy" (Maher et al., 2011b). It is also possible that women engaging in risky sex and drug use are more likely to be in circumstances with increased violence exposure risk. Prospective studies examining violence exposure and subsequent sexual risk and drug use will illuminate potential causal mechanisms and prevention intervention opportunities.

The Young Women's Health Study 2 (YWHS-2) prospectively followed women in Phnom Penh, Cambodia actively engaged in sex work, and who regardless of work venue are referred to as female entertainment and sex workers (FESW). Data were examined for associations of recent violence exposures with sexual risk and drug use behaviors over time. We hypothesized FESW with recent violence exposure would be more likely to engage in sexual risk taking and ATS use during the prospective follow-up, and furthermore that this relationship would be independent of ATS use (Couture et al., 2012, 2011).

2. Methods

2.1. Study settings and participants

YWHS-2 was a prospective observational cohort of young women engaged in sex work in Phnom Penh, Cambodia. Methods have been previously described in detail (Couture et al., 2011, 2012; Maher et al., 2011b; Page et al., 2013). Briefly, between August, 2009 and August, 2010, trained field assistants recruited and screened women for eligibility from YWHS information meetings held by the community partner Cambodian Women's Development Association, and from neighborhood based outreach visits, as well as referrals from previous participants. Women were eligible if they (a) were 15–29 years old, (b) understood spoken Khmer, (c) had two or more past month sexual partners *or* engaged in transactional sex (sex exchanged for money, goods, services, or drugs) in the past three months, (d) planned to stay in the area for the next 12 months, (e) were biologically female, and (f) able to provide voluntary informed consent. Field assistants invited eligible women to group meetings held at a community location used by various sex-worker organizations where detailed study information was provided and written informed consent was obtained. Over the one-year study, 345 women attended information sessions and 220 (64%) consented to participate. At the 3-month visit 91% attended follow-up, 83% at 6 months, and 78% at both 9-month and 12-month visits. The study team offered participants free transportation to and from baseline and quarterly study visits at the YWHS field site where structured surveys were administered in Khmer and they were tested for HIV. Self-collected vaginal swabs from participants at each study visit were tested for Prostate specific antigen (PSA) using the OneStep ABAcard® p30 test (Abacus Diagnostics, West Hills, CA, USA; Evans et al., 2013). Urine samples screened for recent ATS use (Innovacon Multi-Drug Screen Test Panel Dip, Redwood Toxicology Laboratories, Santa Rosa, CA). Participants were given US $5 and condoms at each study visit. The Cambodian National Ethics Committee and the University of California San Francisco Committee on Human Research reviewed and approved the study protocols.

2.2. Measures

The primary independent variable – past 12 month violence exposure – was assessed at baseline using behaviorally specific measures developed by the World Health Organization (WHO) Multi-Country Study of Women's Health and Domestic Violence (Garcia-Moreno et al., 2005). Two questions assessed physical violence: (1) *During the last year have you been slapped, pushed, shoved, or had something thrown at you that can hurt you*? (moderate violence, less likely to leave physical injury) and (2) *During the last year have you been hit, kicked, beaten up, choked, burnt, threatened with a weapon (gun, knife, other) ?* (severe violence, more likely to leave physical injury). Sexual violence included a yes response to: *During the last year have you been physically forced to have sex or had sex when you did not want to?* For each type of violence (moderate physical, severe physical, and sexual violence) women indicated if violence was from a: (a) husband, sangsar (boyfriend), (b) regular sex client, (c) non-regular sex client, (d) an owner, boss, or manager or (e) other person. If a participant indicated violence by an "other" (category e), they were asked to specify from whom, which led to the additional category of police violence.

Sexual risk behavior outcomes included: number of past month sexual partners, consistent condom use with paying and non-paying partners, and sex while high on drugs. Self-reported recent consistent condom use included condom use 100% of the time with the last three male sex partners and whether each respective partner was paying (e.g., regular sex client, non-regular sex client) or non-paying (e.g., husband, sangsar). This measure of recent condom use was chosen for two reasons: to be able to compare to PSA results, and to minimize recall bias. We have previously shown moderate correlation between self-reported condom use and PSA in this population (Evans et al., 2013). A positive PSA (PSA+) swab (greater than 4 ng/mL) indicated exposure to semen (condomless