Introduction

Women who inject drugs are disproportionately affected by co-occurring intimate partner violence (IPV), poor mental health, and substance use, a triad of afflictions that have been independently associated with elevated risk of HIV transmission among female drug users in high-income countries. Little is known about the potentially synergistic effects of these factors on women’s HIV risk behavior and, in particular, to examine these relationships, Indonesia, the world’s 4th populous country with a population of nearly 260 million people, is one of these countries in South East Asia where HIV rates continue to rise rather than stabilize. Approximately 20% of people who inject drugs in Indonesia live with HIV. We conducted Indonesia’s largest study of women who inject drugs to assess:

(1) whether depression, IPV, and crystal meth use are independently associated with elevated HIV sexual risk behavior;

(2) the potential additive effects of aggregate exposure to one or more of these conditions on women’s HIV sexual risk behaviors; and

(3) the extent to which these conditions may interact on the multiplicative and/or additive scales to increase women’s odds of participation in HIV sexual risk-taking behaviors beyond each condition’s individual effects.

Results

More than 1 in 4 women experienced concurrent exposure to IPV, depression, and non-injection crystal meth use (Figure 1). All these syndemic factors were significantly positively associated with STI symptomatology, inconsistent condom use, and survival sex work (Figure 3).

In adjusted marginal effects models, concurrent exposure to all three syndemic conditions was associated with a 4 to 7-fold elevation in women’s reported prevalence of sexual risk behaviors: STI symptomatology (from 12% to 66%), inconsistent condom use (from 3% to 22%), and survival sex work (from 6% to 25%) (Figure 3).

Most two-way effects of syndemic factors showed a greater than additive interaction (Figure 4):

- 38% of inconsistent condom use among women who experienced past-year IPV and used crystal meth was attributable to the interaction of these risk factors.

- The presence of STI symptomatology among women exposed to both IPV and depression was more than 3 times higher than the prevalence of STI symptoms among women without either exposure.

- The interaction between crystal meth use and depression accounted for 61% of reported STI symptomatology and 53% of survival sex work among women with both exposures.

Conclusions

The data should be interpreted with caution given the cross-sectional nature of the data.

Women who inject drugs in Indonesia are exposed to high rates of IPV, depression, and non-injection crystal meth use. The interaction of these syndemic exposures may have a significant impact on women’s HIV risk-taking behavior.

While previous studies have documented the concentration of health and psychosocial problems among drug-involved female drug users, this study extends the field by demonstrating that a substantial proportion of variation in drug-involved women’s HIV risk behaviors may be explained by interactions among syndemic IP, substance use and mental health problems.

- By establishing an empirical basis for the syndemic interactions between mental health, IPV, and substance use among women who inject drugs, this study highlights the urgent need to optimize existing health systems to better address the needs of key populations.

- There is an urgent need for multicomponent interventions aimed at improving women’s health and psychosocial well-being which target the full scope of syndemic vulnerabilities, rather than addressing these in isolation. Implementing such interventions requires not only programmatic improvements, but also attention to the broader social and policy contexts that can reduce adverse health outcomes.

Acknowledgments

This research would not have been possible without the hard work and dedication of the Perempuan Berdaya (PBP) research team, the Indonesian Drugs Users Network and all of the women who participated in the study. We extend our sincere gratitude to Alma Jaya University’s AIDS Research Centre and to the IDU-involved in logistical and advisory roles. Thank you to our funders: The Australian Injecting and Illicit Drug Users’ League (AIDL), Asian Network of People Living with HIV (ANPHLN), Canadian Institutes of Health Research, and the Pierre Elliott Trudeau Foundation.

References

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Received 7 December 2015; revised 29 March 2016; accepted 12 April 2016

Editor: Malcolm MacArthur

Methods & Analysis

Participants

Perempuan Berdaya (Women Speak Out) is a community-based cross-sectional survey developed in collaboration with women who inject drugs, NGOs, and local experts from government and academia.

Participants: 731 women 18 years old who injected any illicit substances in the previous year

Procedures: Data was collected between September 2014 and May 2015 at two urban sites with high burdens of injecting drug use and HIV. Self-completed Jadabatake (Jakarta) and Bandung, West Java. Validated measures and scales with strong psychometric properties were used where available. All study instruments were back translated into Bahasa Indonesia and piloted with our community advisory group.

Sampling: Participants were recruited via mobile respondent driven sampling, a modified form of peer-based, snowball sampling that uses a systematic referral procedure to reduce biases by providing all participants an equal chance to recruit peers into the study. Data was collected by trained female peer fieldworkers using mobile devices and Open Data Kit, an open source data collection software.

Ethics: Voluntary consent and written informed consent was obtained from all women. Strict confidentiality and anonymity was maintained except where participants were at significant harm or requested assistance. Each participant was offered referrals to harm reduction services and/or other support and care services, as needed. Ethics were approved by Oxford University’s Central University Research Ethics Committee and the Ethics Board of Almaw Lichty University.

Analysis: All analyses were cross-sectional, thus findings should be interpreted as preliminary analyses indicating association rather than causality. Multivariate logistic regressions and marginal effects models tested associations and predicted probabilities of exposure to depression, IPV, and past-year non-injection crystal meth use on three major HIV sexual risk behaviours outcomes (i.e. sexually transmitted infection (STI) symptomatology, inconsistent condom use, and survival sex work). Multicollinearity interaction was evaluated through cross-product terms, and additive interaction was assessed by calculating the relative excess risk due to interaction (RERI), attributable proportion due to interaction (AP), and synergy index (S).

Figure 1: Overlap in exposures to syndemic conditions (past-year intimate partner violence, depression, non-injection crystal meth) among women who inject drugs in Indonesia (N=731)

Figure 2: Associations between syndemic factors and HIV sexual risk outcomes among women who inject drugs in Indonesia (N=731)

Figure 3: Predicted probabilities of syndemic exposures on HIV sexual risk behaviors among women who inject drugs in Indonesia (N=731)

Figure 4: Additive interactions between two-way syndemic exposures on HIV sexual risk behaviors among women who inject drugs in Indonesia (N=731)