HPTN
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Longitudinal association between transactional sex and HIV incidence in adolescent girls and young women in South Africa the mediating role of partner selection (HPTN 068)

■ Meghna Ranganathan[1] ■ Kelly Kilburn[2,8] ■ Marie C.D. Stoner[2] ■ James P., Hughes[3,4] ■ Catherine Macphail[5,6,7] ■ F. Xavier Gomez-Olive[7,8] ■ Ryan G. Wagner[7] ■ Kathleen Kahn[7] ■ Yaw Agyei[9] ■ Audrey Pettifor[2,6,7]

[1] London School of Tropical Medicine and Hygiene, London, UK   [2] University of North Carolina, Chapel Hill, North Carolina, USA   [3] University of Washington, Seattle, Washington, USA   [4] Fred Hutchinson Cancer Research Center, Seattle, USA   [5] School of Health and Society, University of Wollongong, Wollongong NSW, Australia   [6] Wits Reproductive Health and HIV Institute, University of the Witwatersrand, Johannesburg, South Africa   [7] MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa   [8] Milken School of Public Health, George Washington University, Washington, DC   [9] School of Medicine, Johns Hopkins University, Baltimore, MD

STUDY DETAILS

BACKGROUND

In sub-Saharan Africa, transactional sex is associated with an increased risk of HIV infection in adolescent girls and young women, but the mechanisms for this relationship remain unclear. We hypothesize that young women who report transactional sex may have multiple partners and older partners, thereby increasing their HIV risk.

OBJECTIVE:

We used longitudinal data from the HPTN 068 trial in rural South Africa where young women aged 13-20 who were HIV-negative at enrolment (n=2362) were followed approximately annually for up to 6 years.

We used the parametric g-formula to estimate the total effect of time-varying, frequent transactional sex (receipt of gifts/money at least weekly vs monthly or less) on HIV incidence and the controlled direct effect for mediation in a simulated cohort using 10,000 observations. We calculated rates and hazard ratios over the entire study period.

CONCLUSIONS

Both partner age difference and partner number mediate the relationship between transactional sex and incident HIV infection. Through this causal mediation analysis, we provide important longitudinal evidence to suggest that young women who engage in frequent transactional sex select multiple partners, often older male partners that may be part of higher risk sexual networks.

Frequent transactional sex increases risk of incident HIV infection through having older partners and having more partners

ADDITIONAL DETAIL

VARIABLE ASCERTAINMENT:

Our exposure variable is frequent transactional sex as our previous paper, Kilburn et al (2018) showed not only an association between transactional sex and HIV incidence in this cohort, but that the effect was strongest among those who engaged in transactional sex with frequent exchanges. Frequent exchanges were defined as receiving money weekly or gifts 'often' or 'always', in contrast to infrequent exchanges (having received money once or monthly and gifts 'a few times' or 'once' or 'none').

We defined the mediator of having an older partner as having had at least one sexual or nonsexual partner >5 years older at each follow-up visit. Partners with whom there was no reported sexual relationship were included to account for potential misreporting about sexual behaviors. The mediator of the number of sexual partners was defined as having zero, 1 or >1 sex partners in the 12 months prior to each follow-up visit.
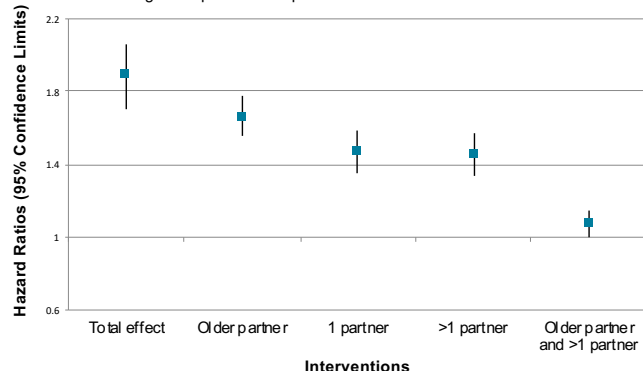
MEDIATION RESULTS

The total effect indicates that if the mediators had taken on their natural values (represented by the coefficients that the simulation model shows before we set the mediators), the incidence rate of HIV per person year over six years of follow-up was ~5% if all young women had frequent transactional sex and ~3% if all had infrequent or no transactional sex. The HR for the total effect was 1.55 (95% CI: 1.36, 1.75). We observed attenuation from the total effect (as HR reaches 1) for CDEs after setting individual mediators to: all young women have an older partner (HR: 1.4; 95% CI: 1.27, 1.53), sex partner number is set to one partner (HR 1.22; 95% CI 1.06, 1.39) and then more than one sex partner (HR: 1.21; 95% CI 1.06, 1.37), as also depicted in Figure 1.

Furthermore, when jointly setting the two mediators – having an older partner and more than one sex partner – CDEs are strongly attenuated in comparison to the total effect. In this joint scenario, the HR is the closest to one out of all scenarios (HR 1.09, 95% CI: 0.99, 1.19).

FIGURE 1: Controlled Direct Effects (CDEs) showing the effect of transactional sex on HIV incidence under different scenarios using older partner and partner number as mediators

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