

## Partnership Concurrency and Coital Frequency in Rural Malawi

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### ABSTRACT

*HIV prevalence estimates for sub-Saharan Africa range from less than 1 percent to over 25 percent across the region (UNAIDS 2008). Recent research proposes several explanations for the observed variation, including prevalence of male circumcision, condom use, presence of other sexually transmitted infections, and multiple and concurrent partnerships (Bongaarts et al. 2008). The importance of partnership concurrency likely depends on how it affects coital frequency. This study examines the effect of multiple concurrent partnerships on the frequency of sexual intercourse in a sample of sexual relationships in Likoma, Malawi. Using innovative sexual network data we are able to compare information on sexual relationships and coital frequency from both partners in the dyad, attempting to mitigate the effect of respondent reporting bias that troubles similar investigations and making a unique contribution to the literature.*

### INTRODUCTION

In an attempt to explain the surprising variation in HIV prevalence across the African continent many scholars point to partnership concurrency as a contributing factor. However, the evidence on the importance of concurrency is mixed, and its influence likely depends on its effect on frequency of sexual intercourse. Contributing to the debate, this study examines the effect of partnership concurrency on coital frequency using a sexual networks study from Likoma, Malawi.

### BACKGROUND

Partnership concurrency has become a popular explanation for the elevated HIV seroprevalence levels in (some) sub-Saharan African countries (Epstein 2007; Halperin and Epstein 2004; Hudson 1993; Morris and Kretzschmar 1997; Watts and May 1992). Recently, the concurrency hypothesis has been challenged by skeptics who highlight the lack of empirical evidence (Lurie and Rosenthal 2010; Sawers and Stillwaggon 2010), which is partly due to the methodological challenges involved in measuring concurrency and demonstrating its effect (Morris 2010). The most convincing evidence to date thus comes from simulations, and these are only loosely based on observed patterns of sexual behavior. In addition, many behavioral factors that could be equally pertinent for the spread of an STI are not modeled at all, and therefore assumed not to co-vary with concurrency. One of these is coital frequency, and several authors have pointed to its potential importance over and above other aspects of sexual behavior that are more conventionally modeled (e.g., concurrency, partnership turnover)<sup>4</sup> (Blower and Boe 1993; Epstein et al. 2010). Reniers and Watkins (2010) suggest that the lower coital frequency in

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<sup>4</sup> Coital frequency is unlikely to be equally important for all STIs. Garnett (2002), for example, speculated about different transmission dynamics of STIs with high (e.g., gonorrhea and syphilis) and low (e.g., HIV) probabilities of infection per sex act. In the first case, the number of sex partners is probably more important than the frequency of intercourse with each of those partners, and rapid partnership turnover is likely to maximize the epidemic potential. In contrast, the number of sex acts per partner is probably more salient for an STI with a low transmission probability per coital act

conjugal dyads of polygynous compared to monogamous unions (i.e., *coital dilution*) may offset potentially adverse concurrency effects.

Aside from cultural prescriptions such as post-partum sexual abstinence that have clear implications for fertility, coital frequency is not as often studied in African populations. One reason is that its role as a proximate determinant of fertility is not as important (Lesthaeghe et al. 1981). Second, such data are subject to obvious validity and reliability concerns. Without claiming to have a fully satisfying solution to this issue, we use data from the Likoma Network Study to assess the association between both formal (polygyny) and informal partnership concurrency and coital frequency. As measures of coital frequency we use a dichotomous variable indicating whether or not the respondent had sex with a given partner in the last month, and an ordinal variable indicating how often on average the respondent had sex with a given partner during their relationship.

## **DATA AND METHODS**

Likoma is a small island located near the Mozambican shores of Lake Malawi. It is roughly 18 square kilometers and is home to more than 7,000 inhabitants. The Likoma Network Study (LNS) is a sociocentric study of the factors of HIV transmission on the island (Helleringer et al. 2007). It was initiated in 2005/06 with a first round of data collection covering individuals aged 18-35 residing in 7 villages of the island. In 2007/08 we conducted a follow-up study during which close to 800 initial respondents were followed-up and a total of more 2,200 respondents were interviewed. The context and methods of the the LNS are described in more details elsewhere (cite attached AIDS and Demographic research papers). During the first round of our study, the prevalence of HIV among adults was 8%.

The data collection for our sociocentric study of sexual partnerships occurred in two stages. First, we conducted a census of every individual on Likoma Island to obtain a roster of potential partners. Second, we conducted a sexual network survey with all inhabitants aged 18–49 years of ten villages of the island, asking respondents for information about their most recent sexual partners. The saturated sampling frame used in this study then allowed us to construct the population-level sexual network by matching the reported sexual partners with the census roster, and then linking the data of all young adults residing in the sample villages.

During the ACASI survey, the names of up to five partners with whom a respondent had been in a sexual relationship within 3 years before the survey were recorded using headsets. The recall period of 3 years was chosen because of the long duration of HIV infectivity. Using this information, we attempted to identify each nominated partner within the roster of potential partners. This partner tracing was initially conducted using phonetic name-matching algorithms in STATA, and the links were then verified or completed by manual inspection. More than 80% of sexual relationships with a partner residing in Likoma were successfully linked to a record in the roster obtained from the island census.

For this study we use sexual relationships ongoing within the last year as the unit of analysis. This results in an analytic sample of 1898 sexual relationships among 1493 individuals. We employ several measures of coital frequency, including whether or not the respondent had sex with a given partner in the last month, and on average how often the respondent has sex with a given partner over the course of their relationship. As our measure of concurrency we use both respondent reports of multiple concurrent partnerships, as well as our own measure of concurrency linking individuals to their partners to validate reported concurrent partnerships. The nature of the sexual network data allows us to compare information on sexual relationships

and coital frequency from both partners in the dyad, making a unique contribution to the literature.

## PRELIMINARY RESULTS

For the preliminary analysis presented here, our measure of coital frequency is reported average frequency of intercourse over the course of the relationship. A response of 1 indicates coital frequency of less than once per week, 2 = once per week, 3 = several times per week, and 4 = daily. In the multivariate logistic regression the base category is less than once per week.

**Table 1: Relative Risk of Coital Frequency Among Current Relationships**

Coital Frequency	RR	p
respondent has concurrent partners	1.13	0.29
age	1.06	0.16
2 age squared	1.00	0.19
respondent is male	0.71	0.00
partner is a spouse	2.34	0.00
respondent is married	0.87	0.22
respondent has concurrent partners	1.31	0.02
age	1.07	0.10
3 age squared	1.00	0.18
respondent is male	0.91	0.33
partner is a spouse	3.72	0.00
respondent is married	0.89	0.28
respondent has concurrent partners	2.05	0.00
age	1.07	0.28
4 age squared	1.00	0.55
respondent is male	1.00	0.98
partner is a spouse	4.88	0.00
respondent is married	1.17	0.36

Our initial findings (see Table 1) suggest that respondents who report having other sexual partners during their relationship have higher coital frequency within that given relationship than those who report being monogamous. This contradicts the findings of Reniers and Watkins (2010). We believe our micro findings must be reconcilable with macro findings using large population based surveys, and we suspect that the source of the contradiction lies in respondent reporting bias. With data collected from both members of the dyad, the Likoma Network Study allows us to investigate and control for this potential reporting bias. Going forward we will link individuals to their reported partners, and restrict our analysis only to a subsample of relationships where partner reports of concurrency and frequency are consistent. In addition, we will take advantage of the longitudinal nature of the data and employ a fixed effects model comparing individuals across two waves of data collection, observing the effect of additional partners on frequency of intercourse in a given relationship.

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