

The Evidence for the Role of Concurrent Partnerships in Africa's HIV Epidemics: A Response to Lurie and Rosenthal

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Introduction

Recently a growing number of HIV prevention programs have begun addressing multiple and concurrent partnerships, inspired by the increasing recognition of the association between such types of partnerships and related sexual networks, and the spread of HIV, especially in the most severe epidemics in Africa [1, 2]. In their Commentary, Lurie and Rosenthal raise some valid concerns noting that the evidence of this link is still not thoroughly demonstrated and requires more research [3]. While we agree that HIV epidemics are complex and that prevention efforts should not be based on “magic bullet” solutions, we maintain that addressing concurrency and the resulting sexual networks is one critical component in the prevention response, particularly in the severe “hyper-epidemics” of southern and parts of east Africa. While a causal link between concurrency and HIV infection has not been demonstrated definitively (which has only been achieved for a limited number of potential risk

factors for sexual HIV transmission, such as lack of male circumcision [4]), we believe the totality of the evidence strongly suggests a vital role. In this communication, we aim to correct some misconceptions about concurrency and to provide further evidence indicating a compelling association between concurrency and HIV transmission.

“Empirical Data Does Not Support...Concurrency”?

In our review, we acknowledged that the lack of a consensus definition of and measurement for concurrency poses challenges for comparability of data [5]. However, this lack of direct comparability between data should not result in disregarding the growing and now fairly extensive literature—both qualitative and quantitative—that suggests a compelling link between HIV and concurrency. The empirical data cited in our previous article, while not being directly comparable, strongly indicate that concurrency, especially longer-term overlapping partnerships, is common throughout much of southern Africa [5]. For example, contrary to the claim by Lurie and Rosenthal, regarding an article we cited by Halperin and Epstein [6], that “no reference is provided for the assertion that there is more concurrency in Africa than elsewhere” [3], in fact both that paper and our review provided various data from sources such as World Health Organization surveys. These have clearly found much higher rates of concurrency in the African populations studied, compared to ones in other world regions. For example, 55% of men and 39% of women in Lesotho (which has the world's third highest HIV prevalence, and where polygamy is uncommon) reported having more than one regular partner in the previous year, as compared to 3 and 2% of men and 0.2 and 1% of women in Thailand and Sri Lanka, respectively [6, 7]. While it is

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impossible to know if all these regular partnerships (defined as having sex with someone for over a year) were concurrent, it seems likely that a majority of them were, and in any event the differences between the African and non-African regions are dramatic. That article [6] also described Martina Morris' comparisons of heterosexual behavior in the US, Thailand and Uganda, which found that while Ugandans reported lower numbers of lifetime partners on average than Thais or Americans, they were more likely than either of these groups to have overlapping long-term partnerships [8].

And more recent studies have found similarly high rates of concurrency, such as a survey in Botswana (which has the world's second highest HIV prevalence) that found 29% of individuals reported concurrent partnerships, using a composite of several definitions of concurrency, such as "started an additional partnership during the course of a current partnership" [9]. In a South African study, 38% of sexually active young men reported being currently in a concurrent partnership [10]. A newly released multi-country heterosexual couples study from sub-Saharan Africa, which also measured biological outcomes, found that over a quarter of HIV seroconversions resulted from a partner outside the union [11]. While it is not absolutely certain that these were all or mostly concurrent partnerships, this appears likely since all of the subjects were enrolled together in stable partnerships [11].

Although Lurie and Rosenthal raise a valid question that the presence of concurrency by itself does not necessarily prove its role in HIV transmission, they also dispute the reported practice of concurrency in many parts of Africa. For example, they cite a review of global sexual behavior, concluding that "African adults are less sexually active," which they then argue refutes the concurrency evidence [12]. However, the review's authors themselves interpreted their data differently: "Evidence is available that, although lifetime numbers of partners might be lower, concurrent relationships in men in some African countries might have been more common and of longer duration than in other regions" [12].

Understandably, researchers often assume that an individual's own behaviors are directly linked to his/her probability of acquiring HIV. For instance, having unprotected sex with many partners or having receptive anal intercourse clearly increases an individual's risk of acquiring HIV. However, concurrency is somewhat different than these other behaviors, in that it does not necessarily increase the risk of HIV *acquisition*, beyond having the same number of (non-concurrent) multiple partners. Rather, one's *partner's* concurrency status is the actual risk factor for that individual; concurrency increases the probability that an individual will be a *transmitter* of HIV [13].

Early research investigating concurrency was conducted on sexually transmitted infections other than HIV. While

important differences exist between HIV and other STIs, much can be learned from this literature. For instance, a community, contact-tracing study in the US found that having concurrent partners was the strongest correlate to being a transmitter of Chlamydia [14]. A US partnership study found that one's partner's concurrency was significantly associated with current sexually transmitted infection (i.e. Chlamydia, gonorrhea, or trichomonas) [15]. A cohort study among persons with syphilis in the US found that having concurrent partners was associated with transmitting syphilis at higher rates. Importantly, and in contrast with the arguments put forth by Lurie and Rosenthal, this relationship held even when controlling for having any type of multiple partners in the previous month (OR = 3.1) [16].

This distinction between the risk of acquisition versus transmission is also critical in how concurrency is correlated with HIV. Many studies that attempt to correlate, at the individual level, concurrency with HIV prevalence are therefore fundamentally flawed. Lurie and Rosenthal cite several studies where there was little or no association found between concurrency and HIV [3]. However, neither study, as designed, should have been expected to find a correlation between concurrency and HIV, beyond the association of increased HIV among those with higher number of sexual partners. In order to accurately assess the association between HIV and concurrency, data need to be collected regarding a partner's concurrency status; studies can utilize socio-centric, partner-tracing or partner-matching methodologies [13].

In fact, several studies have examined the link between an individual's HIV serostatus and his/her partner's concurrency. A Ugandan study found that the strongest behavioral association with incident HIV infection was the number of times in the past 6 months that the individual had sex with someone believed to be having sex with others (i.e., they thought their partner had concurrent partners) (adjusted RR = 6.3, 95% CI = 1.73–23.1) [17]. Similarly, a study among young people in Zimbabwe found that among women, prevalent HIV infection was significantly correlated with believing that a recent partner had other partners (OR = 2.06, 95% CI = 1.35–3.14) [18].

As Lurie and Rosenthal point out, there are many different scenarios of concurrency, ranging from long-term 'closed' polygamous marriages, to shorter-term intermittent liaisons and one-off encounters. It is highly unlikely, in most cases, that any form of concurrency would be protective, as Lurie and Rosenthal suggest. A closed polygamous union, where all partners are HIV-negative, is one exception where concurrency would be protective. However, even in such unions, the process of adding new co-wives introduces the potential to open the sexual network. And such closed polygamous unions are no longer very common in many southern or east African contexts.

Lurie and Rosenthal cite an analysis of DHS surveys, which concluded that concurrency was not correlated with HIV at the population level [19]. However, the study had several major limitations. For instance, as the authors noted: “Some of the earlier surveys with HIV testing did not even include questions about... the duration of the respondents’ sexual relationships with their second-to-last or third-to-last partners” [19], which limits comparability across the different countries in the analysis. Another very important limitation, also recognized by the authors, is the likelihood of substantial under-reporting on such household surveys [19]. These limitations, coupled with the problem of temporality associated with cross-sectional data, do not lead to such a strong conclusion to outright reject the importance of concurrency, as Lurie and Rosenthal suggest.

The Value of Qualitative Data

Lurie and Rosenthal fail to appreciate the qualitative evidence regarding concurrency and the resulting sexual networks, asserting that “...interviews with the *right* people in nearly *any* country would reveal that some people are involved in concurrent relationships...,” and that qualitative findings on concurrency are merely “‘interesting cases’ which are often not representative” [3]. Although any data, including qualitative, have inherent limitations, the qualitative data indicating that concurrency is a highly normalized behavior in many parts of southern and east Africa is by now rather overwhelming [20]. For example, a research team commissioned by the Soul City Institute conducted 179 focus groups and 116 in-depth interviews on concurrent partnerships in 10 countries across southern and east Africa [21]. The study found “marked consistency between all ten countries in terms of perceptions, attitudes and practices around sexual relationships [i.e. concurrency] across gender and age.” How likely is it that this research was so flawed that only the (1,900) “right” people were identified for this study?

Over the past two decades social scientists have engaged in HIV/AIDS research in an effort to discern and describe patterns and commonalities in sexual behaviors across various cultures. Delineating basic patterns in the practices and norms for sexuality, as opposed to merely reporting “interesting cases,” is a responsibility that many social scientists have taken very seriously. To suggest otherwise appears to slight an entire body of valuable research and data that can help advance our efforts to address this pandemic. Of course, no individual qualitative study can provide the level of evidence needed to confirm that concurrency is driving the epidemic. (Nor should we expect this from any single quantitative study either.)

While it is true that qualitative data cannot be used to estimate the numeric prevalence of concurrency in a given

population, they do provide compelling evidence that this type of sexual partnering is common in southern and parts of east Africa [5, 22]. We have yet to find any qualitative studies examining concurrency in the region that did not find it to be common. And this qualitative evidence is consistent with various quantitative studies (particularly those using more appropriate and confidential methodologies than household-based ones like the DHS), such as the aforementioned one from Botswana, which found that 53% of those interviewed believed that their friends had more than one partner at a time [9], and the South African study, in which 40% of women believed their partners also had other female partners [9, 10]. Our thorough review of the existing data clearly indicates that such findings simply do not exist from other regions of the world to similarly indicate that concurrent partnering practices are anywhere near as common as in many parts of sub-Saharan Africa.

Improving Definitions and Measurements of Concurrency

Standardizing of definitions and improving methods of measuring concurrency has been a preoccupation of many researchers recently. These discussions are further along than what Lurie and Rosenthal imply. In order to address the need for improved data collection on concurrency, a consultation was recently held by the UNAIDS Reference Group on Estimates, Modeling and Projections, which proposed the following definition of concurrency: overlapping sexual partnerships where sexual intercourse with one partner occurs between two acts of intercourse with another partner [23]. The meeting also proposed, in order to improve the comparability of data, the following primary indicator: the percentage of women and men ages 15–49 reporting more than one ongoing sexual partnership at the point in time 6 months before the interview [23]. While there may still be some limitations to this measurement—particularly in terms of finding more accurate sources of data for this type of sensitive sexual behavior—we hope that this consensus definition and indicator will improve the accuracy and generalizability of further research.

Conclusion

HIV prevention interventions should be based upon the best available evidence to effectively target the key drivers in a given epidemic. However, interventions cannot and should not wait until the perfect evidence base exists to move forward. The totality of evidence—from ethnographic and other qualitative sciences to appropriately designed and analyzed cohort and cross-sectional studies—do strongly

suggest that concurrency is a key driver of the epidemics in southern and parts of east Africa. Further and more refined research will be useful to examine the role of concurrency in HIV transmission. In the meantime, it would be strange and indeed irresponsible for prevention programs to simply ignore the issue of concurrency, which a broad spectrum of key stakeholders (e.g. SADC and UNAIDS) has identified as a key driver of HIV in the high prevalence epidemics of Africa [1, 2]. If the international public health community were instead to wait for a “better understanding of the intricacies” of concurrency and resulting sexual networks, and strictly adhere to the scientific standards of evidence proposed by Lurie and Rosenthal, then only male circumcision and prevention of mother-to-child transmission interventions would be implemented for HIV prevention. This is clearly not an advisable approach to pursue.

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