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Characterizing concurrent partnerships in Cape Town

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Concurrent partnerships (CPs) have been suggested as a risk factor for transmitting HIV (1-3), but their impact on the epidemic depends upon how prevalent they are in populations, the average number of CPs an individual has, and the length of time they overlap (4). However, estimates of prevalence of CPs vary widely, and their definitions and measurements have been problematic ((5-8), to name a few). While UNAIDS has suggested an indicator for measuring CPs - point prevalence of having more than one sexual partnership, six months before the interview (9) – we believe this is only part of the solution. Indeed, we argue that additional steps to improve accuracy must be taken by researchers, as well as combining this indicator with other measures of concurrency in order to produce a more complete and useful picture of CP dynamics. In South Africa, where so many people live with HIV (10), it is important to obtain accurate estimates of CP point prevalence and the duration of overlaps in order to understand why the prevalence of HIV is so high. Furthermore, race and sex are primary determinants of social, health, economic and educational opportunities in South Africa (11), and thus the relationship between them and CPs needs to be studied to determine which groups should be targeted for potential CPs and HIV risk-reduction interventions.

We conducted a sexual behaviour survey (n=878) from June 2011 to February 2012 in Cape Town, using Audio Computer-Assisted Self-Interviewing to collect sexual relationship histories on partners in the previous year. Using the beginning and end dates for the partnerships, we calculated the point prevalence, cumulative prevalence and incidence rate of CPs, as well as the duration of overlap for relationships begun in the previous year. Linear and binomial regression models were used to quantify race (black vs. coloured) and gender differences in

the duration of overlap and relative risk of having CPs in the past year.

Table 1 contains some of the results of the study. The overall point prevalence of CPs 6 months before the survey was 8.4%: 13.4% for black men, 1.9% for coloured men, 7.8% for black women, and 5.6% for coloured women. The 1-year cumulative prevalence for all sexually active participants was 25.4%. The median duration of overlap in CPs was 7.5 weeks. Women had less risk of CPs in the previous year than men (RR 0.43; 95% CI: 0.32-0.57) and black participants were more at risk than coloured participants (RR 1.86; 95% CI: 1.17-2.97). Overall, of the 156 participants who had 2 or more relationships in the past year, 85.9% (n=134) had concurrent as opposed to serially monogamous partnerships.

The results of our analysis indicate that not only is there a high incidence and prevalence of CPs in the study communities, but the duration of overlapping relationships is also long. Importantly, our data also show that most people with two or more relationships in the previous year did not have serially monogamous relationships. The conditions needed to create and maintain a highly connected sexual network have been met in this setting. Although we cannot provide evidence of CPs influencing HIV transmission, we do offer a useful way forward for measuring and defining CPs for future studies. Our estimates have the potential to be used in future modelling studies that attempt to improve our understanding of what combination of CPs incidence, prevalence and duration of overlap would be sufficient to result in sizeable increases in the rate of HIV transmission. We believe it would be useful to repeat our survey and analysis in other settings with varying degrees of HIV prevalence to see if further associations can be found with our proposed suite of CP indicators and HIV.

Table 1. Estimates of concurrent relationships by race and gender

	Total	Black	Men Coloured	Black	Women Coloured
6-months before survey					
Concurrency among all participants n (%)	63 (8.4)	25 (13.4)	1 (1.9)	30 (7.8)	7 (5.6)
Concurrency among sexually active participants n (%)	61 (11.6)	24 (17.8)	1 (3.0)	29 (10.1)	7 (9.7)
Any time in previous year					
Among all participants					
Concurrency n (%)	138 (18.4)	64 (34.2)	7 (13.0)	58 (15.1)	9 (7.1)
Incidence rate of concurrency n per 1000 person-years (95% CI)	557.33 (505.18-613.41)	1117.65 (971.25-1279.88)	500.00 (329.50-727.47)	420.37 (357.94-490.55)	166.67 (103.17-254.77)
Among only sexually active participants					
Concurrency n (%)	134 (25.4)	62 (45.9)	7 (21.2)	56 (19.4)	9 (12.5)
Incidence rate of concurrency n per 1000 person-years (95% CI)	767.05 (694.15-845.51)	1481.48 (1283.27-1701.64)	818.18 (539.19-1190.41)	545.14 (463.20-637.39)	291.67 (180.55-445.84)
Total number of relationships med (Range)	1 (1-12)	1 (1-11)	1 (1-12)	1 (1-11)	1 (1-6)
Total number of relationships n (%)					
1	372 (70.5)	66 (48.9)	23 (69.7)	223 (77.4)	60 (83.3)
2	66 (12.5)	21 (15.6)	2 (6.1)	36 (12.5)	7 (9.7)
>=3	90 (17.0)	48 (35.6)	8 (24.2)	29 (10.1)	5 (6.9)
Number of concurrent relationships med (Range)	0 (0-11)	0 (0-10)	0 (0-11)	0 (0-10)	0 (0-3)
Number of concurrent relationships n (%)					
0	394 (74.6)	73 (54.1)	26 (78.8)	232 (80.6)	63 (87.5)
2	72 (13.6)	27 (20.0)	3 (9.1)	36 (12.5)	6 (8.3)
>=3	62 (11.7)	35 (25.9)	4 (12.1)	20 (6.9)	3 (4.2)
Duration of overlap (weeks) med (IQR)	7.5 (2.2-24)	6.75 (2-17)	4 (1-7.6)	9.4 (2-43)	26.5 (16-32)

IQR, Inter-quartile range

CI, Confidence Interval

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