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Across-sectional survey of prevalence and correlates of couple sexual concurrency among married couples in fishing communities along Lake Victoria in Kisumu, Kenya

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Abstract

Objective—Sexual concurrency has been associated with HIV infection. Since HIV in sub-Saharan Africa is mostly spread within the context of heterosexual couples, it is necessary that intervention is focused on such couples. We sought to establish the correlates of couple sexual concurrency in Kisumu, Kenya.

Methods—We conducted 1090 gender-matched interviews in 545 couples in a cross-sectional survey. A random sample of fishermen and their spouses from 33 fish-landing beaches along the shores of Lake Victoria in Kisumu were asked to enrol in the study. Couples were separated into different private rooms for simultaneous interviews that documented socioeconomic and behavioural characteristics, and information on number of sexual partnerships in the preceding 6 months and their status. Based on reported concurrency status of the spouses, a couple was categorised as either concurrent when at least one spouse reported a concurrent sexual relationship or non-concurrent.

Results—Overall, 32.1% of the men and 6.2% of the women had concurrent sexual relationships in the 6 months preceding the study, resulting in 37.6% of the couples being sexually concurrent. Unmet sexual desire, intra-spousal suspicions of infidelity, male dominance scripts, domestic violence, couples' children and women's age were the correlates of couple sexual concurrency.

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Competing interests None.

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Conclusions—Unmet sexual desires, inter-spousal infidelity suspicions, male dominance scripts and domestic violence were the main correlates of couple sexual concurrency in these fishing communities.

INTRODUCTION

In sub-Saharan Africa, a large proportion of HIV infections occur within stable relationships either because of prior infection of one of the partners or because of sexual concurrency.[1] Sexual concurrency, defined as an overlapping relationship when a person engages in sexual intercourse between two sexual acts with another partner,[2] has been hypothesised to result in an elevated risk of HIV infections because of high viral load and infectiousness in the period following infection.[3] Sexual concurrency occurs in many different types of couples, including those who are married.[1] Married couples, who already have an existing long-term sexual relationship, may form complex sexual networks that enhance the chances of HIV entry to the marriage every time any of the partners gets involved in concurrency.[4] Married couples in Kenya as elsewhere in sub-Saharan Africa have been observed to engage in concurrent partnerships which may increase their risk of HIV infections. This is more so in the context of low condom use such as within marriages.[5 6] Concurrent partnerships are common in HIV key populations such as fishing communities on Lake Victoria. These fishing communities are reported to have high rates of multiple sexual partnerships and HIV prevalence of 26.5%, which is much higher than the regional and national averages of 15.4% and 7.4%, respectively.[78]

Previous intervention studies have mainly focused on individuals as informed by individual-level theoretical models. Yet sexual transmission of HIV occurs mostly within the context of a sexual relationship between two partners and the links each one of them might have with others.[9] Thus, a couple more than an individual becomes an important unit for analysis and interventions.[10] Designing interventions to reduce concurrent partnerships require a clear understanding of correlates of concurrency at individual and couple levels. Thus, we sought to establish the correlates of couple sexual concurrency among married couples in fishing communities along Lake Victoria in Kisumu County, Kenya. We defined couple sexual concurrency as a couple with one or both partners reporting extra-marital partnerships within a reference period of 6 months.

METHODS

Design and sample size

We conducted a cross-sectional study to establish the correlates of couple sexual concurrency among 545 married couples in fishing communities on Lake Victoria in Kisumu County between September 2011 and June 2012. Couples were eligible for participation if men were aged 18–45 years, had been in fishing for >3 months, and had been married for >3 months, and if men and women were willing to enrol in the study with their spouse and were willing and able to give written informed consent. At the 95% confidence level, allowing an error margin of 3% points and estimated concurrency prevalence of 15%, the study used Bernard's formula for cross-sectional sample size calculation[11] to obtain a sample of 545 couples (see online appendix).

Sampling procedure

We used proportional to size sampling based on the number of registered boats on each beach to determine the number of couples to be recruited from each beach. On each beach, we first obtained a list of all the fishermen and then with the help of beach management officials we made a second list of fishermen who they knew or suspected were married and between the ages of 18 and 45; this minimised screen-to-enrol ratio. Further, we derived two lists of randomly selected fishermen. The first list consisted of our first target fishermen to recruit. Since we knew from prior experience that it was not possible to contact and recruit all fishermen on the first list for various reasons, including non-contact, ineligibility or decline, we made a second list which had 35% of the total sample size. Each confirmed non-enrolment from the first list was sequentially replaced by participants from the second list (figure 1). Fishermen willing to participate were asked to come to the study clinic with their spouses.

Data collection

Participants were screened using a set of predetermined questions to confirm their identities and spousal status including coupling for convenience (see online appendix). The couples were then invited to a group interactive research education session aimed at orienting them with the essence and value of research, integrity of responses and our measures to ensure privacy and confidentiality. The couples were then consented together and separated into different private rooms for gender-matched concurrent interviews. If we noticed signs of coercion within couples, we asked them to take time to decide. The interview covered socioeconomic details, couple's marital and sexual relationships, non-spousal partnerships in the preceding 6 months and their statuses.

Measurements

Outcome variable—Our outcome variable was couple sexual concurrency, which was a binary variable with couples being either sexually concurrent or non-concurrent. Since our reference point for measuring concurrency was 6 months, we excluded couples who had been married for less than 6 months.

Predictor variables—These variables fell into three categories, namely socio-demographic and sexual behavioural factors, dummy variables created from socio-demographic and sexual behavioural factors and psychometric measures. Socio-demographic and behavioural factors were obtained by directly asking participants about their age, education, income, occupation and sexual behaviours. Some of the responses to these questions were compared between spouses to create dummy variables. For example, from sex desire denial, we created four dummy variables as follows: couples in which neither of the partners is denied sex; men alone are denied sex; women alone are denied sex; and both denied each other sex. From suspicions of infidelity, we also created four dummy variables, namely: couples in which neither suspects each other; men alone suspect spouses; women alone suspect spouses; and both suspect each other of infidelity. We used this method to create all other dummy variables. In converting age into a categorical variable, we used age 24 which is WHO's uppermost age limit for being a youth. To measure masculinity

and sexual satisfaction among couples, we adapted and modified commonly used psychometric scales.[12,13] Each item in the scales was evaluated on a four point Likert-type scale ranging from 0=strongly disagree to 3=strongly agree and internal consistency of the scale confirmed by Cronbach α. The scale for male dominance sex roles included eight items with Cronbach's α of 0.54 for men and 0.53 for women; the mutuality in relationships scale had five items with Cronbach α of 0.70 for men and 0.78 for women; the sexual satisfaction scale had 25 items with Cronbach α of 0.72 for men and 0.86 for women; and the domestic violence scale was created from nine items that had yes/no responses with Cronbach α of 0.61 for men and 0.78 for women (see online appendix). All the scales had fairly good psychometric properties because Cronbach α values were within allowable limits.[14]

Statistical analysis

Using SPSS (V.18.0, SPSS Inc, Chicago, Illinois, USA), we conducted descriptive and inferential statistics. In model building, we first conducted a series of bivariate analyses using binary logistic regression to shortlist variables at a cutoff point of p=0.25 for multivariable analysis. p=0.25 was chosen as the most conservative value in practice because each variable that may not be significant at the usual p=0.05 level may become significant jointly with other variables.[15] The shortlisted variables were directly entered into the multivariate model and resultant adjusted ORs (AORs) and their 95% CIs reported. We suspected and tested for effect modification between male dominance sex roles and domestic violence.

Ethical approval

The study protocol and tools were approved by the Kenya Medical Research Institute Ethics Review Committee under protocol review number SSC 1989. Participants provided written informed consent prior to study participation.

RESULTS

Socioeconomic and demographic characteristics

We screened 708 married couples to obtain our sample size of 545. Of the 708, 121 were not eligible for various reasons, including being over or under age. Out of the 587 eligible couples, 42 (7.2%) declined participation (39 due to men refusing to participate and 3 due to women refusing to participate). The main reasons for refusal to participate in the study were lack of time to come to the study clinic (60.4%), fear of HIV testing (15.9%) and spouse being far away (16.0%).

Of the 1090 individuals (545 couples), most men (81.6%) and women (86.0%) had completed primary level education. One-third of the men professed Protestant faith while 14.2% described themselves as traditionalists (believers in ancestry gods) (table 1). While all the men were fishermen, 40.6% of their spouses were homemakers and 26.4% were fish traders. The rest of the women (33.0%) were involved in assorted income-generating activities. Women were relatively younger with a median age of 24 years (IQR 21–28) compared with men. The couples had a median of two children (IQR 1–3). Men earned a

median monthly income of US$103.5 (IQR 69–115) compared with women's income of US $18.4 (IQR 0–46). Overall couples spent a median of US$77.0 (IQR 60–98) on household expenses per month.

Behavioural characteristics

A tenth (9.4%) of the couples were polygamous and 46.9% of the women were on contraceptives. Forty-six per cent of men and 16% of women reported to have ever been involved in transactional sex. An equal proportion (64.1%) of men and women reported that they were involved in transactional sex in their last non-spousal sexual encounter. Overall, 71.6% of the men and 65.7% of the women reported to have ever used condoms but only 38.6% of the men and 28.2% of the women used condoms in their last non-spousal sexual activity. Comparatively, men started their sexual activities and first married much later compared with women (table 2). The couples in the study had been married for a median of 75 months (6.25 years) and had a median of 3 (IQR 2–3.5) days since last spousal sex. Half typically had 2 (IQR 2–2.5) days of sex per week and performed a median of 2 (IQR 1.5–2.5) episodes of sex each day of sex. Men reported more lifetime number of sex partners compared with women. However, men and women who were concurrent reported a median of one non-spousal partner in the preceding 6 months (table 2).

Correlates of couple sexual concurrency

Cumulative prevalence of sexual concurrency was 32.1% among men and 6.2% among women in the preceding 6 months, translating to couple cumulative concurrency of 37.6%. The point prevalence was 25.9% for men and 4.9 for women. We used couple cumulative prevalence in our modelling. In multivariate logistic regression, we controlled for all factors that met our cutoff criteria of p=0.25 in the bivariate analysis (table 3). Thus, the factors that we found independently associated with increased likelihood of couple concurrency were men alone reporting being denied sex (AOR 2.89; 95% CI 1.36 to 6.11), women alone suspecting their spouses of infidelity (AOR 2.34; 95% CI 1.37 to 4.00), both spouses suspecting each other of infidelity (AOR 3.02; 95% CI 1.35 to 6.73), men's higher score on domestic violence scale (AOR 1.37; 95% CI 1.17 to 1.61) and men's higher score on male dominance scripts scale (AOR 1.11; 95% CI 1.05 to 1.17). Conversely, women's older age—more than 24 years (AOR 0.52; 95% CI 0.30 to 0.89) and increasing number of children with the current spouse (AOR 0.78; 95% CI 0.63 to 0.96) were associated with reduced likelihood of couple sexual concurrency.

We examined for potential effect modification between men's score on domestic violence and men's score on male dominance scripts by including an interaction term in the analysis and assessing its importance using the likelihood ratio test. The interaction was not statistically significant (p=0.66) but the presence of the interaction term slightly altered the contribution of domestic violence to borderline significance (p=0.06).

DISCUSSION

The correlates of couple sexual concurrency were at individual and couple levels. Women's age, men's scores on domestic violence and male dominance scripts scales were correlates

of couple sexual concurrency at the individual level while sex denial, intra-couple suspicions of infidelity and couple's number of children were correlates of couple sexual concurrency at the dyad level. This is one of the few studies that enrolled couples to get balanced accounts by talking to each individual within a couple about issues such as sexual concurrency. Other studies enrol individuals and are only able to get one side of the story.[1617] Our ability to combine couple and individual level measures, obtained from a fairly large sample size of 545 couples, gives our results a level of credibility that is not found in many surveys. Additionally, many studies examining sexual concurrency have analysed data at the individual level thus only being able to report prevalence and correlates at that level. We deviate from this tradition to examine prevalence and correlates of couple sexual concurrency. Targeting a couple as a unit of analysis is important because HIV, and indeed all STIs, are propagated in the context of a couple and the links members of such couples may have with other people.[9] Situating this analysis within fishing communities on Lake Victoria that have a high burden of HIV and other STIs resulting from risky sexual behaviours gives our study unparalleled public health importance.[718] Further, the shift from focusing on individuals to couples makes this study a great contribution to resources available to help in designing interventions against sexual concurrency, even as the debate on its measurement and role in HIV spread in sub-Saharan Africa continues. Because of the robustness of the methods used, our findings and resultant recommendations can be applied to many in-land fishing communities.

Even then, our results need to be interpreted within the context of several limitations observed in this study. Due to the low numbers of women reporting active extra-marital partnerships at the time of the interview, we used cumulative instead of point concurrency prevalence that is commonly used. Additionally, unlike most studies that use a reference period of 12 months, we used 6 months as recommended by the Joint United Nations Programme on HIV/AIDS (UNAIDS) reference groups for estimates on modelling and projections.[2] This may pose challenges when comparing this study with other studies that use point prevalence and a 12-month reference period. By design, cumulative prevalence gives higher estimates of concurrency than point prevalence and hence may pose a risk of overestimation of concurrency in this community. We adapted and slightly modified psychometric measures used in this study but we did not validate the measures. Additionally, one of the measures— male dominance scripts scale—had low internal consistency as measured by Cronbach α but within acceptable limits; thus we need to be a little cautious in interpreting the results that involve the scale.[14] Lastly, this being a face-to-face interview collecting sensitive data, we could not rule out desirability bias even though we educated and reassured our participants of complete privacy and confidentiality to try and bypass this challenge.

The prevalence of sexual concurrency we found among married couples within a reference period of 6 months is, to our knowledge, one of the highest recorded in sub-Saharan Africa.[119] Other rates based on individuals not necessarily married using a reference period of 12 months have given much lower rates.[2021] For instance, national point prevalence using the UNAIDS recommended measure across Africa compiled by Sawers shows a prevalence of 1.5% in Rwanda and Burundi and 13.3% in Cameroun among men, and a prevalence of 0.1% in Rwanda, Malawi and Burkina Faso, and 2.3% in Lesotho among women.[19] The

point prevalence values of 25.9% among men and 4.9% among women found in this study are still high even when we compare them with point prevalence values obtained in other sub-regional and sub-population contexts.[20–23] Thus, these data show the intensity of the problem in these fishing communities that requires further examination to understand its correlates for appropriate intervention.

Unmet sexual desires among spouses have been associated with sexual dissatisfaction that could negatively affect inter-spousal relationships and stability of marriages.[24–26] Sexually dissatisfied spouses find missed satisfaction elsewhere within their social networks that may put the entire couple at risk of HIV. Most responses to sexual concurrency have focused on campaigns to discourage couples without paying attention to the root causes. In Kenya, for instance, '*mpango wa kando*' (side plan) behaviour change campaign focuses on highlighting the socioeconomic consequences of concurrency rather than the causes.[8] Thus, stepping back and taking an approach that addresses possible causes of sexual concurrency such as issues of sexual satisfaction may seem a better option in effecting desired behaviour change in couples.

The revengeful acts that may be associated with inter-spousal suspicions of infidelity have been reported to cause separation, divorce or even death in many marriages.[27] Our findings on infidelity suspicions among couples seem to be consistent with results from other studies that have shown an association between infidelity suspicions and sexual concurrency.[2728] However, some suspicions of infidelity result from spousal jealousy and overprotection more than reality.[29] Creating a suspicion-free environment within relationships can help reduce partner reactions based on such suspicions. Male dominance sex roles raise major concerns because of their relationship with HIV. Traditional male-dominant sex roles have been shown subordinate women and install men as in charge of sexual relationships. As reported by Marks, inequality in matters of sex between the two genders encourages men to pursue multiple sexual relationships and tolerate sexual coercion while expecting women to remain passive in sexual matters.[30] Subordination of women further creates an environment for domestic violence, especially in situations when women are dependent on men. Studies consistently show that women who experience domestic violence are more likely to become infected with HIV compared with their counterparts.[3132]

Sexual networks are important in understanding transmission of infections within communities, such as these with a high prevalence of concurrency. It may be interesting to examine the structures and characteristics of sexual networks formed by people in the fishing communities and the infections that may be circulating within them. This is important in designing effective interventions that disrupt transmission of infections within such networks. Fishing communities on Lake Victoria have a high prevalence of couple sexual concurrency. Unmet sexual desires, inter-spousal infidelity suspicions, male dominance scripts and domestic violence are the main correlates of couple sexual concurrency. Interventions may need to focus on counselling the couples to enhance meeting both their sexual desires and avoiding domestic violence within marriage.

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References

1. Kasamba I, Sully E, Weiss HA, et al. Extraspousal partnerships in a community in rural Uganda with high HIV prevalence: a cross-sectional population-based study using linked spousal data. J Acquir Immune Defic Syndr. 2011; 58:108–14. [PubMed: 21694606]
2. UNAIDS. Consultation on concurrent sexual partnerships. Nairobi: UNAIDS; 2009. UNAIDS Reference Group on Estimates MAP.
3. Neaigus A, Jenness SM, Hagan H, et al. Reciprocal sex partner concurrency and STDs among heterosexuals at high-risk of HIV infection. J Urban Health. 2012; Published Online First: 23 June 2012. doi: 10.1007/s11524-012-9727-1
4. Oyediran K, Isiugo-Abanihe UC, Feyisetan BJ, et al. Prevalence of and factors associated with extramarital sex among Nigerian men. Am J Men's Health. 2010; 4:124–34. [PubMed: 19477757]
5. Mugweni E, Pearson S, Omar M. Traditional gender roles, forced sex and HIV in Zimbabwean marriages. Cul Health Sex. 2012; 14:577–90.
6. Bandali S. Norms and practices within marriage which shape gender roles, HIV/AIDS risk and risk reduction strategies in Cabo Delgado, Mozambique. AIDS Care. 2011; 23:1171–6. [PubMed: 21476146]
7. Kwena ZA, Bukusi EA, Ng'ayo MO, et al. Prevalence and risk factors for sexually transmitted infections in a high-risk occupational group: the case of fishermen along Lake Victoria in Kisumu, Kenya. Int J STD AIDS. 2010; 21:708–13. [PubMed: 21139150]
8. KAIS. Kenya AIDS Indicator Survey (KAIS, 2007) Final Report: National AIDS Control Council (NACC). 2009
9. Burton J, Darbes LA, Operario D. Couples-focused behavioral interventions for prevention of HIV: systematic review of the state of evidence. AIDS Behav. 2010; 14:1–10. [PubMed: 18843530]
10. LaCroix JM, Pellowski JA, Lennon CA, et al. Behavioural interventions to reduce sexual risk for HIV in heterosexual couples: a meta-analysis. Sex Transm Infect. 2013; 89:620–7. [PubMed: 23918756]
11. Bernard, HR. Research methods in anthropology: qualitative and quantitative approaches. Berkeley: Altamira Press; 2011.
12. Harrison A, O'Sullivan LF, Hoffman S, et al. Gender role and relationship norms among young adults in South Africa: measuring the context of masculinity and HIV risk. J Urban Health. 2006; 83:709–22. [PubMed: 16758334]
13. Hudson WW. Index of sexual satisfaction. Handb Sex-Relat Meas. 1998:512–13.
14. Bowling, A. Investigating health and health services. 2. Buckingham: Open University Press; 2002. Research methods in health.
15. Stoltzfus JC. Logistic regression: a brief primer. Acad Emerg Med. 2011; 18:1099–104. [PubMed: 21996075]

16. Tanser F, Bärnighausen T, Hund L, et al. Effect of concurrent sexual partnerships on rate of new HIV infections in a high-prevalence, rural South African population: a cohort study. Lancet. 2011; 378:247–55. [PubMed: 21763937]
17. Reniers G, Tfaily R. Polygyny, partnership concurrency, and HIV transmission in Sub-Saharan Africa. Demography. 2012; 49:1075–101. [PubMed: 22661302]
18. Morris M, Kurth AE, Hamilton DT, et al. Concurrent partnerships and HIV prevalence disparities by race: linking science and public health practice. Am J Public Health. 2009; 99:1023–31. [PubMed: 19372508]
19. Sawers L. Measuring and modelling concurrency. J Int AIDS Soc. 2013; 16:17431. [PubMed: 23406964]
20. Maher D, Waswa L, Karabarinde A, et al. Concurrent sexual partnerships and associated factors: a cross-sectional population-based survey in a rural community in Africa with a generalised HIV epidemic. BMC Public Health. 2011; 11:651. [PubMed: 21849048]
21. Xu H, Luke N, Msiyaphazi Zulu E. Concurrent sexual partnerships among youth in urban Kenya: prevalence and partnership effects. Popul Stud. 2010; 64:247–61.
22. Eaton JW, McGrath N, Newell M-L. Unpacking the recommended indicator for concurrent sexual partnerships. AIDSD. 2012; 26:1037–39.
23. Glynn JR, Dube A, Kayuni N, et al. Measuring concurrency: an empirical study of different methods in a large population-based survey and evaluation of the UNAIDS guidelines. AIDS. 2012; 26:977–85. [PubMed: 22555149]
24. Willoughby BJ, Vitas J. Sexual desire discrepancy: the effect of individual differences in desired and actual sexual frequency on dating couples. Arch Sex Behav. 2012; 41:477–86. [PubMed: 21573707]
25. Byers ES. Relationship satisfaction and sexual satisfaction: a longitudinal study of individuals in long-term relationships. J Sex Res. 2005; 42:113–18. [PubMed: 16123841]
26. Mark KP, Murray SH. Gender differences in desire discrepancy as a predictor of sexual and relationship satisfaction in a college sample of heterosexual romantic relationships. J Sex Marital Ther. 2012; 38:198–215. [PubMed: 22390532]
27. Whisman MA, Gordon KC, Chatav Y. Predicting sexual infidelity in a population-based sample of married individuals. J Fam Psychol. 2007; 21:320–4. [PubMed: 17605555]
28. Goetz AT, Shackelford TK. Sexual coercion in intimate relationships: a comparative analysis of the effects of women's infidelity and men's dominance and control. Arch Sex Behav. 2009; 38:226–34. [PubMed: 18415011]
29. Reniers G. Marital strategies for regulating exposure to HIV. Demography. 2008; 45:417–38. [PubMed: 18613488]
30. Marks MJ, Fraley RC. Confirmation Bias and the Sexual Double Standard. Sex Roles. 2006; 54:19–26.
31. Jewkes R, Morrell R. Gender and sexuality: emerging perspectives from the heterosexual epidemic in South Africa and implications for HIV risk and prevention. J Int AIDS Soc. 2010; 13:6. [PubMed: 20181124]
32. Stieglitz J, Gurven M, Kaplana H, et al. Infidelity, jealousy, and wife abuse among Tsimane forager–farmers: testing evolutionary hypotheses of marital conflict. Evol Hum Behav. 2012; 33:438–48. [PubMed: 23459748]

Key messages

- We found a high prevalence of sexual concurrency in these fishing communities on Lake Victoria.
- Correlates of couple concurrency were at individual and dyad levels and specifically included unmet sexual desires, infidelity suspicions, male dominance scripts and domestic violence.
- Interventions may need to focus on couple counselling to enhance meeting each other's sexual desires and avoiding domestic violence within marriage.

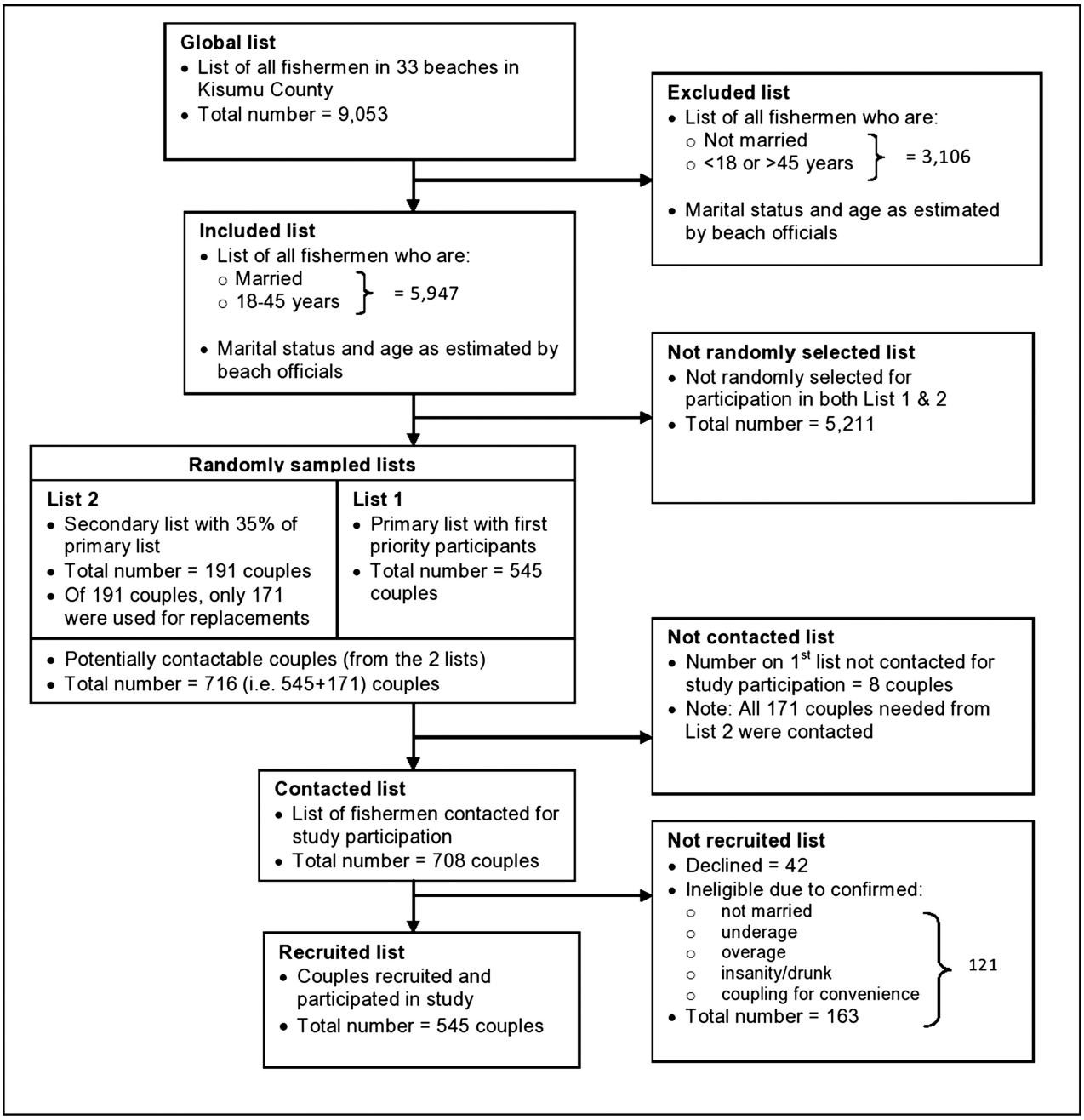

Figure 1.
Flow diagram for sampling of couples.

Table 1

Socioeconomic and demographic characteristics of married couples in fishing communities along Lake Victoria beaches in Kisumu county, Kenya, 2012

	Men		Women	
Characteristic (categorical)	**Count**	**%**	**Count**	**%**
Level of education (n=538)				
Primary	439	81.6	461	86.0
Post primary	99	18.4	75	14.0
Religion				
Protestant	181	33.4	135	25.0
Catholic	110	20.3	99	18.3
African independent churches	174	32.1	306	56.7
Traditionalist (believers in ancestry gods)	77	14.2	0	0
Occupation *				
Fishermen	545	100	–	–
Fish trader	–	–	144	26.4
Homemaker	–	–	221	40.6
Other	–	–	180	33.0
	Men		**Women**	
	Median	**IQR**	**Median**	**IQR**
Age	29	25–35	24	21–28
Total number of biological children	3	1.5–4	2	1–3
Children with current spouse †	2	1–3	2	1–3
Monthly income (US$)	103.5	69–115	18.4	0–46
Monthly household expenditure (US$) †	77	60–98	77	60–98

* Main occupation for all men was actual fish catching—culturally there are no women involved in actual fish catching.

† Couple level variables attributable only to a couple and are the same across men and women.

Table 2

Behavioural characteristics of married couples in fishing communities along Lake Victoria beaches in Kisumu County, Kenya, 2012

	Men		Women	
Characteristic (categorical)	**Count**	**%**	**Count**	**%**
Polygamous marriage *	51	9.4	51	9.4
Currently using family planning methods *†	182	46.9	182	46.9
Ever been involved in transactional sex	253	46.4	87	16
Involved in transactional sex with last non-spousal partner	118	64.1	25	64.1
Ever used condoms	390	71.6	358	65.7
Used condoms in last non-spousal sex	71	38.6	11	28.2
	Men		**Women**	
	Median	**IQR**	**Median**	**IQR**
Age at sex debut	16	15–18	15	13–16
Age at first marriage	22	21–25	18	16–20
Length of current marriage (months) *	75	33–139	75	33–139
Time since last sex with spouse (days) *	2.5	2–3.5	2.5	2–3.5
Typical number of sex days in a week with spouse *	2.5	2–2.5	2.5	2–2.5
Number of sex episodes per day with spouse *	1.5	1.5–2.5	1.5	1.5–2.5
Lifetime number of sex partners	7	7–40	3	2–4
Number of non-spousal partners in last 6 months	1	1–2	1	1–1

* Couple level variables attributable only to a couple and are the same across men and women.

† When men were not aware, women's data were used.

Table 3

Correlates of couple sexual concurrency among married couples in fishing communities along Lake Victoria beaches in Kisumu County, Kenya, 2012

			95% CI	
Variable	**p Value**	**Adjusted OR**	**Lower**	**Upper**
Sex denied				
Neither denied sex	Ref			
Men alone denied sex	0.01	2.85	1.35	6.03
Women alone denied sex	0.06	1.61	0.97	2.66
Both denied sex	0.23	1.54	0.76	3.12
Women's current age				
≤24 years old	Ref			
>24 years old	0.01	0.50	0.29	0.86
Suspicions of infidelity within couples				
Neither suspects each other of infidelity	Ref			
Men alone suspect spouse of infidelity	0.84	1.07	0.53	2.17
Women alone suspect spouse of infidelity	0.01	2.12	1.24	3.61
Both suspect each other of infidelity	0.01	2.93	1.32	6.53
Couples' number of children together	0.04	0.81	0.66	0.99
Men's score on male dominance scripts scale	<0.01	1.11	1.05	1.17
Men's score on domestic violence scale	<0.01	1.37	1.17	1.61

Other factors controlled for: physical separation; men's score mutuality in relationship scale; men's score sexual satisfaction scales; sex position discrepancy; men's current age; women's age at sex debut; women missing one gender of children; payment of bride price.