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THE GENDER CONTEXT OF HIV RISK AND PREGNANCY GOALS IN WESTERN KENYA
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ABSTRACT

***Background*: Intentional childbearing may place heterosexual couples at risk of HIV infection in resource-limited settings with high HIV prevalence areas where society places great value on having children.**
***Objective*: To explore cognitive, cultural, and spatial mapping of sexual and reproductive health domains and services in western Kenya among men and women.**
***Design*: Community-based formative qualitative study design.**
***Setting*: Five administrative/geographical divisions of Nyando District, western Kenya.**
***Subjects*: Adult male 18 years and older and female who were of reproductive-potential ages (15 to 49 years for females)(n=90).**
***Results*:Men and women have disparate goals for number of children and engage in gendered patterns of protective method use (contraceptives used by women often in secret, condoms by men but rarely).**
***Conclusion*: HIV infection was still seen as stigmatising. These study results are relevant to design of effective integrated delivery for reproductive and HIV services in high-burden sub-Saharan African countries.**

INTRODUCTION

Sub-Saharan Africa remains a region where the average total fertility rate(5.1 births per woman)is still double that of Asia and Latin America (1) and also shouldersmore than two-thirds of the global burden of HIV disease. Understanding the interplay of reproductive goals and HIV risk is therefore critical. To do this we conducted formative qualitative research in Nyando District, western Kenya in preparation for a spatially-sampled, community-enrolled cohort of heterosexual couples to undergo home-based HIV and pregnancy testing and audio computer-assisted self-interviews (ACASI) every six months for two years.This area of Kenya remains an epicenter and one of the only regions in the country where HIV prevalence has not declined(2). This qualitative study goal was to describe and compare sexual behaviors, contraception, condom use, couple-level behaviours, factors and sociocultural norms in the community from which the cohort would arise. The ultimate study purpose was to inform effective combination HIV and reproductive service delivery for this high-need, vulnerable population.

Methodologies used for this work included health domain or topic free-listing and pile-sorting as well as reproductive and HIV community service mapping exercises. The two first techniques allow individual cognitive associations (i.e., which topics are linked with each other in someone's mind) as well as cultural associations (how do men and women's prioritisation of key topics match or diverge.) This determination of how members of a group define specific cognitive domains of experience is referred to as cultural domain analysis (CDA)(3). Mathematically analogous to latent-class analysis,(4) CDA assesses the degree to which commonality exists among members of a group around specific a priori domains selected by investigators.Understanding these 'mental models'(5) of a phenomenon and the degree to which they are shared within and between groups (consensus) can help elucidate health decision-making and behaviours(6). For this study those domains centered on reproductive and HIV issues including childbearing, contraception, HIV and male-female sexual and gender relationship dynamics.

MATERIALS AND METHODS

Population and Enrollment Procedures: This work was undertaken in Nyando District, Nyanza Province in western Kenya, the area of the country with the highest HIV prevalence (15.1% among ages 15-64 years) (2) and pregnancy rates(total fertility rate of 5.4) (7)and lowest levels of protective method use such as condoms (nationally, 27.1% among men and only 7.1% among women), contraceptive, and voluntary medical male circumcision (66.3% circumcision coverage vs. 91.2% in Kenya overall) (2).The area includes distinct geographic and economic zones including subsistence farming (Upper Nyakach), sugar cane plantations (Muhoroni, Miwani), rice fields (Lower Nyakach), quasiurban town (Nyando), and lakeshore fishing environments.

This study was approved by the ethical review committees at the Kenyatta National Hospital (P174/7/2008), at New York University Committee for Activities Involving Human Subjects (HS#7225), and the University of Washington (#34904; where AK was located at study start). All participants provided verbal informed consent for the free-list/pile-sort and mapping exercises, per IRB protocol.

The study population was comprised of adult male 18 years and above and female who were of reproductive-potential ages (15 to 49 years for females). Sampling of study sites was done to represent subjects from each of the five administrative/geographical divisions of Nyando District, by randomly selecting two villages from every division. Three teams of two study staff went to the village's chief's house as a central point and moved out from there concentrically, selecting every other household to recruit participants who met inclusion criteria. Study participants gave informed consent in the language of their choice (English, Dholuo). Each study participant engaged in one of three study activities: involved in a group conducted a free-listing exercise, did pile-sorting and undertook HIV/reproductive service mapping procedures. We enrolled nine males age 18-71 years and nine females age 15-49 years from each division (n=90).

Qualitative methods: Free listing is an elicitation method used to generate important themes, and is optimised when conducted by staff of similar linguistic and cultural backgrounds as was the case with our study. Pile sorting is a technique that studies the relation among items within a domain that have been identified through free listing, and can help uncover informants' perceptions of the similarities and differences among items and to look at intercultural variation (8).

Free-list and pile-sort exercises were conducted by Kenyan social science staff in the participants' preferred language (Dholuo or English) in Nyando District. After verbal consenting, the free listing exercise was launched with groups of three participants at a time. Key sexual and reproductive health issues were solicited and written down, as were verbatim comments from participants. Study staff solicited participants' issues in these five topical domains: childbearing, contraception, HIV,gender relations, and other. Specifically, in each of these five domains a set of structured questions were asked and participants freely listed their responses to each of the questions. After this was done, staff tabulated these responses in terms of frequency and came up with a list of the most frequent, first responsefrom each free-listing participant to each question in every domain.

In the pile sorting exercises, these top free listing responses were compiled, written on cards and then given to three new participants one at a time to sort in descending order of importance to them. Participants also were asked to explain their rankings and their comments were captured. For participants who indicated they were not literate, the pile was given in threes to make sorting easier for them. In Kenya, the adult literacy rate of females as a percent of males is 85.6% (9).

A third group of participants were asked to participate in the community resource/service mapping exercise to understand where individuals believe relevant informal and formal sexual and reproductive health services (SRH) exist in the community. Information collected included where they or their peers go when they seek information about childbearing/pregnancy, family planning, HIV/ sexually transmitted infection (STI) support and treatment. Community resource mapping was conducted by asking participants to draw a map of their division, and then to mark on the map all area HIV and reproductive health services, both official (government clinics) and unofficial (traditional healers, herbalists, and others). The group was asked to add any other information or to change the map as needed.

After the participants identified relevant services, study staff used global positioning service (GPS)-enabled handhelds (personal digital assistants) to geomap by latitude/longitude point the locations of both the formal and informal services identified by participants.

Data analysis: Data were analysed using consensus analysis for pile-sort data (Anthropac 4.98, Analytic Technologies) and content analysis for qualitative data (ATLAS.ti Scientific Software Development GmbH).

Pile sort analysis:For each domain, participants were asked to rank the items in order of importance and each item was therefore assigned a priority index. Using the indices, the items were pile sorted grouping

the first two indices into one pile and subsequent indices into another pile prior to data analysis. The pile sorting data were then analysed using cultural domain analysis (CDA)(a module in Anthropac4.98 software, to determine if there was consistency in the ways in which participants ranked the perceptions related to each domain (consensus)(10). Eigen values were calculated to ascertain degree of homogeneity among subgroups of respondents to question domains(11). Eigen values shown represent the largest eigen value for a proximity matrix in one of the five study domains. An eigen ratio (ratio between the first and second eigen values of proximity matrix) of three is widely accepted as the appropriate threshold for determining consensus. Thus for data where eigen ratio was above three, we concluded that there was consensus and noted the top ranked items as the agreed-upon views of the participants for a particular domain. Ratios below three indicated that there were divergent opinions regarding important themes within each domain. Eigen values and ratios were generated and compared by geographic area and by participant gender.

Mapping: Participant drawn maps were digitally photographed for storage. Service geomap data were stored in an Excel database. These service site data were used for referral purposes to inform the cohort phase of the study, so that staff could let enrolled couples know about relevant HIV/SRH services in their area.

RESULTS

Free Listing and Pile Sorting Exercises: Priority themes were identified and ranked in each of the key domains of interest, and a pattern of sex-based differences between men and women emerged. These are outlined below and summarised in the priority score by gender data shown in Table 1.

Table 1
Priority themes related to childbearing, contraception, HIV and relationships among men and women

Domain	Gender	Eigen value	Eigen ratio	Consensus
Childbearing	Male	2.371	10.0	'Future support' and 'having children is a good thing' were top two reasons for wanting children
	Female	8.444	10.0	'Future support' and 'labor support' top 2 reasons for children
Contraception	Male	7.429	4.911	'Child spacing' and 'financial factors' are highest ranked
	Female	10.651	2.945	Data did not fit the consensus model. Multiple reasons were given for or against contraceptive use
HIV	Male	5.516	2.792	Data did not fit the consensus model. Multiple issues noted around HIV
	Female	6.337	3.9	'Knowing HIV status' and ' it is a killer disease' were the main issues
Relationships	Male	4.603	1.495	Data did not fit the consensus model. Multiple issues noted around male/female roles in relationships
	Female	3.337	1.247	Data did not fit the consensus model. Multiple issues noted around male/female roles in relationships

Childbearing: Having children was viewed consistently as a source of family labour and security for aging parents; as one participant said, "Parents are proud of their children when they see their faces. They can be sent to help in house chores and other work." Women reported four children as the ideal family size, for economic reasons; men wanted higher numbers (5-10), as children are to them a source of pride and social respect. In Lower Nyakach women agreed that children are seen as a sign of respect and the other top reason noted for wanting children was perceived reduction of prostitution (their partners frequenting transactional sex workers). In Miwani men ranked labour support and inheritance of parent's wealth as the top priorities for having children. In Muhoroni women agreed that the top priority was that children assist their parents. Nyando, the most urban area, was the only place where men said that they supported family planning (men there agreed that the childbearing priority should be to have few children), and women in this area said that children are perceived as a "blessing from God".

Contraception/Family Planning (FP): These services were said to be mainly used by women. Services used were from both the formal health care sector as well as the informal, non-professional sector including traditional birth attendants (TBAs) in places where there were no formal services readily available. Many women said that they go for family planning secretly. "It is not easy to get a man who does not want children. Women hide and go for family planning at the clinic."Most women preferred services that included injection and pills because they are readily available. Of the available family planning methods, men were said to use condoms but this was noted to be infrequent.

In Lower Nyakach, women said that men discourage use of contraception so that women will have children, however, these respondents felt that contraception gives the women an opportunity to plan their families. In Miwani women agreed that contraception is good and allows babies to benefit from longer breastfeeding periods. In Muhuroni there was extremely strong agreement among the female participants that contraception is good and that it helps to plan the family. The men in this division, however, agreed that injections as a contraceptive method leads to women "not conceiving", therefore expressing distrust in this specific birth control method. Ironically, this method is one that women described as being optimal because they could get it in secret and it would be longlasting.

HIV: It was consistently expressed that HIV-related stigma was still common, with few people admitting that it is "normal" to be HIV infected. Illustrative quotes about this included: "People stay away from you" and "People say, that one will die". It was noted that many people fear going for an HIV test:"I am afraid because people will look at me with suspicion, knowing my status will make me stressed." Non-disclosure of HIV positive status was common among couples for fear of the HIV-positive partner being sent away. This was especially true for women who feared losing their home and children if they disclosed positive HIV status: "Majority of men send away their HIV-positive women unlike if it is the case of the men being HIV-positive."Both men and women said that it is easier for women to go for the HIV test than for men to do so.

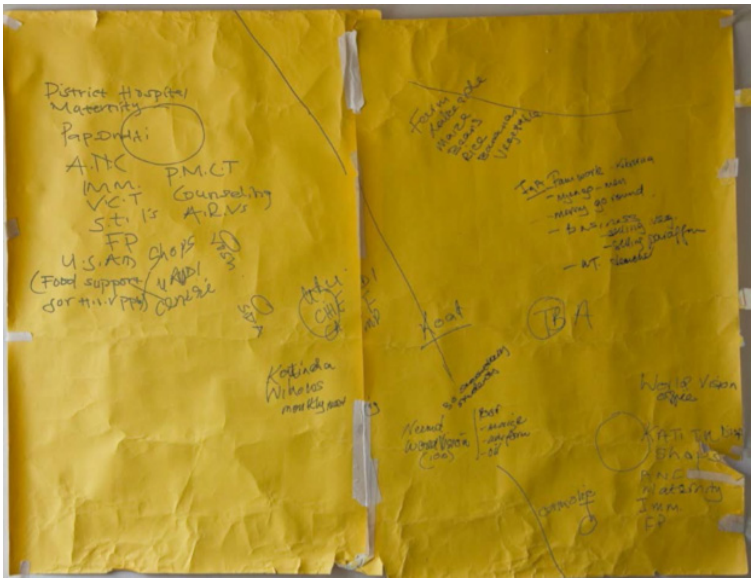
In Lower Nyakach women agreed that those who are HIV positive are abused and especially women are sent away by their husbands. In contrast, Miwani, women were in consensus that couples should know their HIV status and use of condoms for protection. In Muhuroni both men and women were in agreement on the need for protection against HIV and the fact that HIV is a "bad disease" that kills.

Sexual relation between men and women: The groups consistently expressed that it was a community norm to discourage sex among young people who had no intention of ever getting married. Having multiple sexual partners was disapproved of as it was seen as the main source of spreading HIV. Conversely, polygymy is allowed and was taken as a community norm. Some reasons given for having more than one sexual partner at a time included financial support, lust, sexual satisfaction, revenge (in the case of women), prostitution and being a source of pride (among men).

In Lower Nyakach men said that sexual relationship should be heterosexual, with HIV testing done before having sex and that one should be cautious about sexually-related diseases (men in Upper Nyakach also expressed this latter concern). In this region women were in agreement that there should be no sex without marriage. Women in Miwani felt that faithfulness should be a priority in a relationship and there were some fear of relationships due to concerns about HIV. In Muhuroni men similarly expressed that relationship bring unity while for those who were not married and were having sex then considered as prostituting. Women in Muhoroni agreed that unwanted pregnancies and HIV tests were priority as well as expressing concern that men would not consider a permanent relationship.

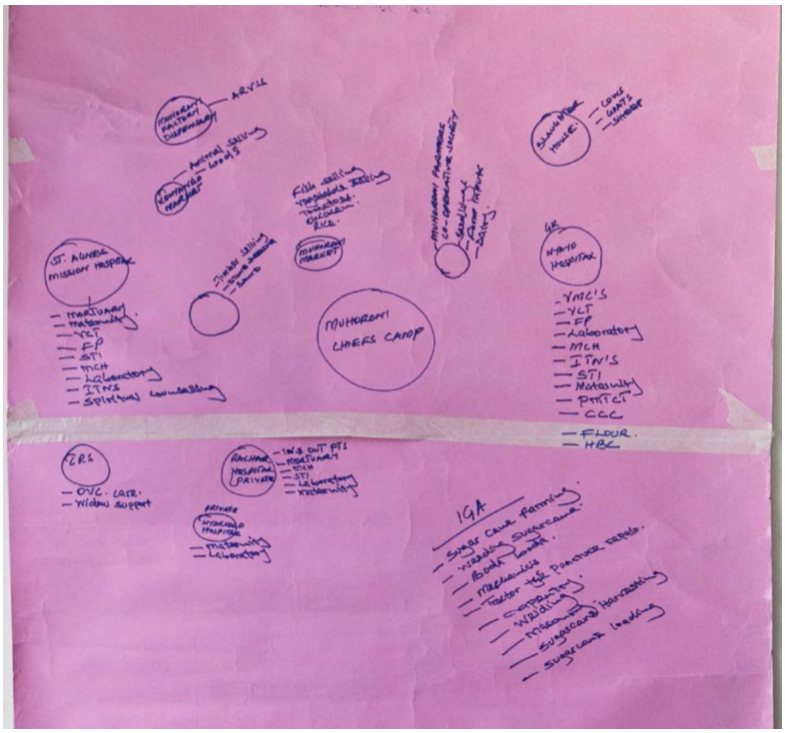
Results from the Service Mapping: The service mapping exercise was successfully conducted throughout the Nyando district. This study participant mapping exercise was conducted separately by men and women, older and younger. It were revealed that SRH services mentioned by the women were both formal and informal (see Figure 1, noting a maternity hospital, food distribution for HIV positive, and traditional birth attendant location).

Figure 1
Service mapping exercise for women



Men were less likely to note SRH services and were more likely to describe economic and political structures in the area, such as the chief's camp and the markets (see Figure 2). This highlights in a sociospatial way the degree to which men and women's mapping of their environment may differ.

Figure 2
Service mapping exercise for men

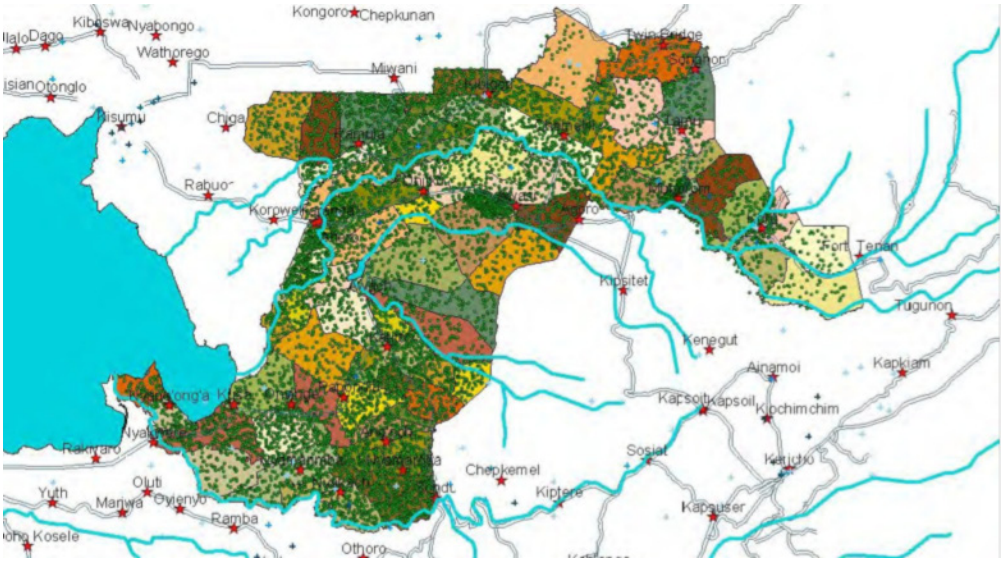


HIV services were known and listed by men and women, despite the stigma mentioned in the free listing/pile sorting. The maps revealed where different groups of men and women tend to access their services.

The staff conducted geomappingthe formally document the relevant HIV and reproductive health services noted by the participants in the map-drawing exercise, as well as those noted from the government of Kenya as official service sites.

Finally, derivation of a cohort sample frame (identified after the formative work described here) involved sampling 10,000 latitude/longitude points in Nyando district (see Figure 3). The formal and informal services identified by the participants and located in the staff geomapping exercise allowed us to determinethe relative distribution of these services within the planned larger cohort study area, as well as confirmed available services to which the cohort enrollees could be referred.

Figure 3
Latitude and longitude points in Nyando district



DISCUSSION

Our study in this high-HIV burden setting (where nearly 1 in 6 people have HIV) (2) found that sexual and reproductive health goals in terms of ideal family size, utilisation of contraception, and HIV sexual risk behavior norms varied widely between men and women. These findings informed our prospective cohort that ultimatelyenrolled 3,522 couples at baseline and documented theirHIV serostatus concordance over time to assess the interplay of reproductive goals and HIV transmission or acquisition risk among heterosexually-active couples. Understanding this interplay is key as couples where at least one member wants to have children may engage in more unprotected sex in order to achieve this goal, thus increasing HIV spread. This is a particular concern among HIV-discordant couples, especially in this region where over one in three of all such HIV discordant couples in Kenya reside (2).

Study limitations of this formative work included relativelysmall numbers that did not allow us to do multidimensional scaling of the data. Strengths included nonetheless obtaining male and female sample sizes of over n=30-40, which has been found to result in free list/pile sortdata reliability of over 90 percent(12).

In conclusion, as evidenced in our study population, gender differences in 'mental maps' of reproductive and sexual health protection goals do not always match between men and women even within similar geographic areas. Understanding and addressing these underlying realities must be acknowledged when undertaking culturally-relevant HIV prevention and contraceptive promotion in high HIV burden areas.

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REFERENCES

1. Bongaarts J. Can family planning programs reduce high desired family size in Sub-Saharan Africa? *International perspectives on sexual and reproductive health*. 2011;**37**:209-216. PubMed PMID: 22227628.
2. NASCOP. Kenya AIDS Indicator Survey 2012: Final Report. Nairobi, NASCOP. June 2014.
3. Bennett I, Switzer J, Aguirre A, Evans K, Barg F. 'Breaking it down': patient-clinician communication and prenatal care among African American women of low and higher literacy. *Annals of family medicine*. 2006;**4**:334-340. PubMed PMID: 16868237. Pubmed Central PMCID: 1522153.
4. Lazarsfeld PF, Henry NW. Latent Structure Analysis: Houghton, Mifflin; 1968.
5. Stone-Jovicich SS, Lynam T, Leitch A, Jones NA. Using Consensus Analysis to Assess Mental Models about Water Use and Management in the Crocodile River Catchment, South Africa.Ecology and Society. 2011;16(1):45. [online] URL: http://www.ecologyandsociety.org/vol16/iss1/art45/.
6. Jones NA, Ross H, Lynam T, Perez P, Leitch A. *Mental Models: An Interdisciplinary Synthesis of Theory and Methods Ecology and Society*. 2011;**16**:46. [online] URL: http://www.ecologyandsociety.org/vol16/iss1/art46/.
7. Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. Kenya Demographic and Health Survey 2008-09. Calverton, Maryland: KNBS and ICF Macro. Available at http://dhsprogram.com/pubs/pdf/fr229/fr229.pdf. Accessed on 9 March 2015.
8. Herman E, Bentley M, Sultana F, Hamzah M, Huzaifah S, Masreah S, *et al*. Beyond data collection: facilitating the application and use of ethnographic information to guide health programmes and further research. In: Scrimshaw NS, Gleason GR, editors. RAP: Rapid Assessment Procedures Qualitative methodologies for planning and evaluation of health related programmes. Boston, Massachusetts: *International Nutrition Foundation for Developing Countries*; 1992. p. 137-45.
9. Unicef.Kenya Statistics.Available at http://www.unicef.org/infobycountry/kenya_statistics.html. Accessed on 9 March 2015.
10. Goicolea I. Exploring women's needs in an Amazon region of Ecuador. *Reproductive health matters*. 2001;**9**:193-202. PubMed PMID: 11468836.
11. Weeks MR, Mosack KE, Abbott M, Sylla LN, Valdes B, Prince M. Microbicide acceptability among high-risk urban U.S. women: experiences and perceptions of sexually transmitted HIV prevention. *Sexually transmitted diseases*. 2004;**31**:682-690. PubMed PMID: 15502677. Pubmed Central PMCID: 1567977.
12. Weller SC, Romney AK. Systematic Data Collection. Qualitative Research Methods Series 10. Newbury Park, California: Sage Publications, Inc.1988.